UNIT-e

Handbook

UNIT-e Report Generator

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4.48 Enhancements

- Report backups (see page 2-15).

  Details on the backup and restore functionality have been added to the handbook.



More information: *For details on enhancements from previous releases, refer to Appendix A: Previous Enhancements on page 9-2.*

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Overview

This guide has been designed to introduce you to UNIT-e Report Generator. Each chapter provides an overview of the concepts and general methodology for a different aspect of writing, managing and using UNIT-e Core Reports in UNIT-e Report Generator:

- Manage Report (see page 2-1)
- Write Report (see page 3-1)
- Define Elements (see page 4-1)
- Define Expressions (see page 5-1)
- Sub-queries (see page 6-1)
- Report Output (see page 7-1)
- Import and Update Reports (see page 8-1)
- Appendix (see page 9-1)

The following areas are covered in this chapter:

- Getting Started (see page 1-5)
- Report Overview (see page 1-6)
- User Interface (see page 1-13)

Searching through the UNIT-e Handbook Catalogue

A table of contents and index are provided in each handbook to help you find the information you need. Where more detailed information is available in another handbook, a hyperlink is provided to take you directly to that handbook.

If you're not sure where to look for information you can carry out a search that checks through all handbooks and release documents, as all UNIT-e user documentation is supplied in PDF format with your platform upgrade DVD:

1. Open Adobe Acrobat.

   Note: *You must be using version 6 or higher of Adobe Acrobat Reader to use this facility. This software is available to download, free of charge, from the Adobe website – www.adobe.com.*

2. Click on the Search button to open the search form.
3. Enter your search criteria in the **What word or phrase would you like to search for?** field.
4. Select the **All PDF Documents in** radio button and search for the appropriate directory.

   Note: *Select the directory where your platform release is stored. There is a **Browse for Location** option at the bottom of the list of directories – use this to select a sub-directory.*

5. Select the appropriate check boxes.
6. The system then carries out a search and displays all platform documents and handbooks with text that matches your selection criteria. You can expand a platform document or handbook entry to view the matches within that document.
7. Click on an option to view the entry in the handbook.

Getting Started

This section contains the following information for getting started with UNIT-e Report Generator:

- Installation Requirements (see below).
- Opening UNIT-e Report Generator (see below).
- Closing UNIT-e Report Generator (see page 1-5).

Installation Requirements

The following installation requirements need to be met before using UNIT-e report Generator:

- Ensure that your database has the correct tables required by UNIT-e Report Generator.
- Ensure that you have a valid licence file in the same location as your UNIT-e Report Generator application.

More information: *Contact the UNIT-e Helpdesk if you require further information regarding licensing problems or requirements.*

- Ensure you have access to the application via Modules and Processes.

More information: *Refer to the Processes Data Sheet for a full list of Property Defaulting:*

- *Processes Data Sheet.*

Opening UNIT-e Report Generator

To open UNIT-e Report Generator:

1. Double-click on the Report Generator shortcut or icon [URG.exe].



Figure 1-1 Report Generator Icon

2. The **System Login** form is displayed.
   i. Select the appropriate database and enter your username and password in the **Username** and **Password** fields.
   ii. Click on the **OK** button to login to UNIT-e Report Generator using the details you have specified.
3. The UNIT-e Report Generator application opens and the main **Report** form is displayed.

More information:

- *Regarding the **System Login** form, refer to the "Working with UNIT-e" Handbook (WWU.pdf).*
- *Regarding the **Report** form, see page 1-16.*

Closing UNIT-e Report Generator

To close the UNIT-e Report Generator application:

1. Click on the **Close** button situated on the top right corner of the **Report** form.

Report Overview

UNIT-e Report Generator enables you to define reports that output data from your UNIT-e system. Each report produces a table of data made up of columns and rows. Functions and parameters can be applied to restrict and tailor the data produced as required. This data can be used in a variety of ways, both internally and externally, by the UNIT-e system.

An explanation of reports is given in the following areas:

- Report Uses (see below).
- Report Theory (see page 1-8).
- Report Writing (see page 1-11).

Report Uses

Reports are used to provide internal data in the UNIT-e system as follows:

- Pick-lists.
- Exception Reporting.
- Global Update.
- Import and Export.

Reports are used to provide external data from UNIT-e via the following options:

- Statutory Returns (see page 1-7)
- Integrated Reports (see page 1-7)
- Crystal Reports (see page 1-7)
- UNIT-e DataView Builder (see page 1-7)
- UNIT-e SpreadSheet Builder (see page 1-7)
- UNIT-e MailMerge Builder (see page 1-7)
- UNIT-e WareHouse Builder (see page 1-8)
- Data Transfer (see page 1-8)

Pick-lists

Reports are used to define the contents of pick-lists used in the UNIT-e system in Manager and Proforma applications, to select records. The pick-list reports specify which properties are displayed and the order of the items in the list.

Exception Reporting

Reports provide the primary means of validating data. Reports can be produced to highlight records that do not meet your specific validation requirements. These reports can be embedded into an application and made available to users via a **Report** menu.

For example, a report containing audit data could be used to identify a user who is not completing certain fields.

Global Update

Reports are used to define global updating and global deleting of large amounts of data.

Import and Export

Reports are used to define Import and Export routines that enable you to import or export large volumes of data.

Statutory Returns

Reports are used to provide a source of data for UNIT-e tools applications that generate statutory returns. This provides a degree of flexibility for the location of data required for these returns.

Integrated Reports

Integrated reports are only available with an appropriate UNIT-e ReportView Builder licence. This enables you to configure the **Report** menu in UNIT-e Manager and Proforma applications to provide Crystal Reports and raw data output.

The UNIT-e ReportView Builder application provides an environment where multiple Integrated Report menus can be configured.

Crystal Reports

The data can be further queried and reformatted to produce high quality reports using a third party application called Crystal Reports. Output from Crystal can be added to the Integrated Report menu of an application to enable users to run the report on an ad-hoc basis.

UNIT-e DataView Builder

UNIT-e DataView Builder (if licensed) is available for client sites with Microsoft Access programming resources who wish to add their own data analysis functionality to the UNIT-e system. In addition, a structured data-browsing environment can be provided for their staff.

It provides tools to allow a local Microsoft Access database to be populated on demand, with live data from the UNIT-e database. This data can be subsequently manipulated using the various programming and reporting tools built into Access to produce required results.

UNIT-e SpreadSheet Builder

UNIT-e SpreadSheet Builder (if licensed) is a tool to allow data to be presented in spreadsheet format and to provide access to the powerful data manipulation facilities built into Microsoft Excel.

It may be used to present tabulated data and to perform basic numerical totalling. In addition it can be used more powerfully with the cross-tabulation and "pivot table" functionality of Excel, to provide complex sub totalling and data aggregation.

UNIT-e Spreadsheet Builder is particularly useful for providing information such as student numbers in a tabulated or graphical format, which can be used by senior managers for planning purposes.

UNIT-e MailMerge Builder

UNIT-e MailMerge Builder (if licensed) extends the mail merge facilities of Microsoft Word in the following ways:

- It allows live data from the UNIT-e system to be mail merged directly from within the Microsoft Word environment.
- It provides simple data aggregation that allows more structured information to be included within the mail merge document.

The most frequent use of UNIT-e MailMerge Builder is for the production of letters to students. Data aggregation tools allow each letter to include a list of the student's enrolments on a single page without repeating the student details.

Notes:

- *To ensure that Person address.address appears on separate lines in Crystal reports, Microsoft Access and Microsoft Word, use the Split function in the Report Generator report that feeds the mail merge.*
- *If you use five lines this is enough to deal with most addresses. The code for this is Split(Address.Address,New line,5).*

More information: *Refer to the Functions Data sheet available in the **Datasheets** folder.*

UNIT-e WareHouse Builder

UNIT-e WareHouse Builder (if licensed) is generally used to "present" data to external applications. It provides facilities for the unattended execution of reports that export data to a file or external databases. Execution is based on a schedule that allows reports to be run at a single, pre-defined time, or on a repeated basis, hourly, daily, weekly or monthly.

A typical use of this would be to populate a set of "data warehouse" tables, used to provide secure internet access to course detail and place availability information drawn from the UNIT-e system.

Data Transfer

UNIT-e Report Generator can also be used to export or import data. These functions can be used as a means to transfer data to or from third party software.

Report Theory

To enable you to write reports, it is important to understand the following concepts:

- The UNIT-e Data Model (see below).
- Report Definition (see page 1-9).
- Report Components (see page 1-9).

The UNIT-e Data Model

A report consists of different components. Each component identifies different report criteria. The components available are defined in the UNIT-e Data Model, as follows:

- Property values
- Property definitions
- Class definitions
- Records
- Extended classes
- Linking
- Pick-list reports

More information: *A good understanding of these components can be obtained from the "Managing the UNIT-e System" chapter in the "Working with UNIT-e" Handbook (WWU.pdf).*

Report Definition

A report defines a snapshot of data. The data included usually focuses on a particular college function, e.g. Enrolments or Applications. The data is returned as a table of values:

- Each column represents a combination of one or more database fields.
- Each row represents a database record.

The content of these columns and rows are specified by a set of criteria. These criteria can be saved in the database as a report definition and used at a later date to generate a fresh snapshot of data.

Any report created using UNIT-e Report Generator is called a UNIT-e Core Report because it extracts data from the UNIT-e Core.

More information: *Regarding Report Uses, refer to page 1-6.*

Report Components

A report consists of different components. Each component identifies different report criteria. The components are as follows:

- Class (see page 1-9).
- Property (see page 1-9).
- Link (see page 1-9).

Class

A class consists of a set of properties. To make these properties available in a report, the class must be added to the report. After the class has been added to the report, properties are only returned if they are selected. Once added, they are represented on the report diagram as objects:

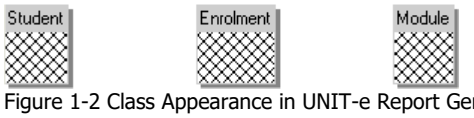


Figure 1-2 Class Appearance in UNIT-e Report Generator

Data stored in the database for a class is called a record. Once a class is selected, all of its records are returned in the report unless restriction criteria are specified.

More information: *Regarding classes and records, refer to the "Working with UNIT-e" Handbook (WWU.pdf).*

Property

When a property is added from a selected class it produces a column of data in the report output. These columns can be refined and developed by applying functions.

Link

When a class is added each of its records produce a row of data in the report output. If more than one class is added to a report they must be linked together to define which records are returned. A link specifies which records are returned from the linked classes.

For example, if the Student and Enrolment classes are added to a report, they can be linked together (Figure 1-3) to return the appropriate Enrolment records with each Student (Table 1-1).

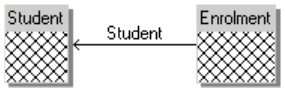


Figure 1-3 Student and Enrolment Classes linked by Enrolment Student Property

student.studentreference	student.surname	student.title	enrolment.name
STUD99001432	Robson	Mr	Maths Year 1 – Stats
STUD99001432	Robson	Mr	Maths Year 1 – Trig
STUD99001432	Robson	Mr	Maths Year 1 – Mech
STUD99001432	Robson	Mr	Physics Year 1 – Mass
STUD99001432	Robson	Mr	Physics Year 1 – Optics
STUD99001432	Robson	Mr	Physics Year 1 – Motion
STUD99004982	Elliot	Mr	Maths Year 1 – Stats
STUD99004982	Elliot	Mr	Maths Year 1 – Trig
STUD99004982	Elliot	Mr	Maths Year 1 – Mech
STUD99004982	Elliot	Mr	Physics Year 1 – Mass
STUD99004982	Elliot	Mr	Physics Year 1 – Optics
STUD99004982	Elliot	Mr	Physics Year 1 – Motion

Table 1-1 Sample of Output - Listing Students and their Enrolments

Links are effectively conditions, which specify the information that is extracted from the database. Classes in a report may be linked in a number of different ways to produce different results. A link between two classes is defined by the following:

- Join Property (see below).
- Join Type (see page 1-11).

Join Property

A Join property links two classes together. Classes can only be linked if they have a link property that relates them. This means that only certain classes can be linked. Some pairs of classes can be linked in either direction. For example, Enrolment can be linked to Student via the Enrolment Student association link (Figure 1-4). However, Student can also be linked to Enrolment via the Tutor Group property link (Figure 1-5).

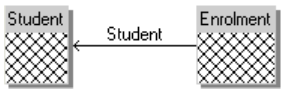


Figure 1-4 Student and Enrolment Linked by Enrolment Student

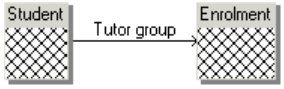


Figure 1-5 Student and Enrolment linked by Student Tutor Group

In Figure 1-4 the Student Tutor group property identifies the Enrolment it is linked to.

Join Type

The Join Type specifies how the link is applied when the report is run. It can be set to return records based on one of the following criteria:

- Only where both Source and Destination records exist. For example, only return Students that have Current Address records.



Figure 1-6 Normal Link

- All Source records returned, Destination records returned if they exist (Outer Join). For example, include all Students regardless of whether they have a Current Address record.

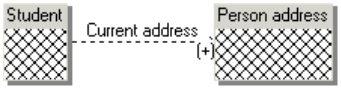


Figure 1-7 Outer Join Link, Returning all Records from Student

- All Destination records returned, Source records returned if they exist (Outer Join). For example, include all Address's regardless of whether they have a Student record.

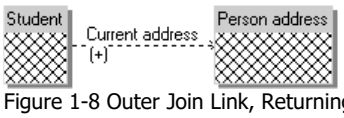


Figure 1-8 Outer Join Link, Returning all Records from Person Address

Outer Join links are those that return all records from the Source or Destination. They are represented by a dotted link line and the (+) symbol next to the class.

Report Writing

UNIT-e Report Generator can be used to perform a number of report related tasks. The main tasks involved in writing reports are as follows:

1. Manage Reports.
2. Write Reports.
3. Define Elements.
4. Define Expressions.
5. Report Output.

Manage Reports

UNIT-e Report Generator also enables you to manage your reports through the following functions:

1. Plan the Report.
2. Create a New Report.
3. Name and Save Report.
4. Open an Existing Report.
5. Copy an Existing Report.
6. Report Distribution.
7. Report Maintenance.

More information: *Planning, creating, naming, saving, opening, copying, publishing and maintaining report refer to Chapter 2.*

Write Reports

Having understood the basic report theory, UNIT-e Report Generator can be used to write a basic report. To write a basic report, perform the following:

1. Select Classes.
2. Define Links.
3. Select properties.



More information: *Regarding selecting classes, defining links and selecting properties refer to Chapter 3.*

Define Elements

Basic reports can be refined to provide more specific information and further analysis. This is achieved by defining the "select", "where", and "order" elements for the report, as follows:

1. Define Columns.
2. Define Rows.



More information: *Defining elements refer to Chapter 4.*

Define Expressions

Each report element is defined by an expression. These expressions are a combination of properties, functions and values. Expressions can be worked with as follows:

1. Define Expression.
2. Dismantle Expression.
3. Edit Expression.
4. Save Expression.
5. Edit Saved Expression.
6. Copy Saved Expression.



More information: *Defining expressions, refer to Chapter 5.*

Report Output

UNIT-e Report Generator also enables you to produce output from the reports you have written. This output can be printed, saved to a text file or saved to an Access Database. Report output can be used in the following ways:

1. Test Report.
2. Optimise Report.
3. Save Results.
4. Output Results.
5. Print Results.



More information: *Testing reports, optimising reports, produce results, printing results refer to Chapter 6.*

User Interface

This section provides a brief introduction to the forms used in UNIT-e Report Generator. The main forms available are as follows:

- Search for Report Form (see below).
- Open Report Form (see page 1-14).
- Report Diagram Form (see page 1-15).
- Report Form (see page 1-16).
- Test Report Form (see page 1-17).

Search for Report Form

The **Search for Report** form (Figure 1-9) is used to search the current database for existing reports. The fields provide the same search functionality as Manager and Proforma fields. The results are displayed in the **Open Report** form.

This form is opened as follows:

- Clicking on the **Search** button on the **Open Report** form.
- Clicking on the **Open Report** button or selecting **File | Open** from the menu bar.

Note: *Once you have performed a search, clicking on the **Search** button on the **Open Report** form or selecting **File | Open** from the menu bar opens the **Open Report** form.*

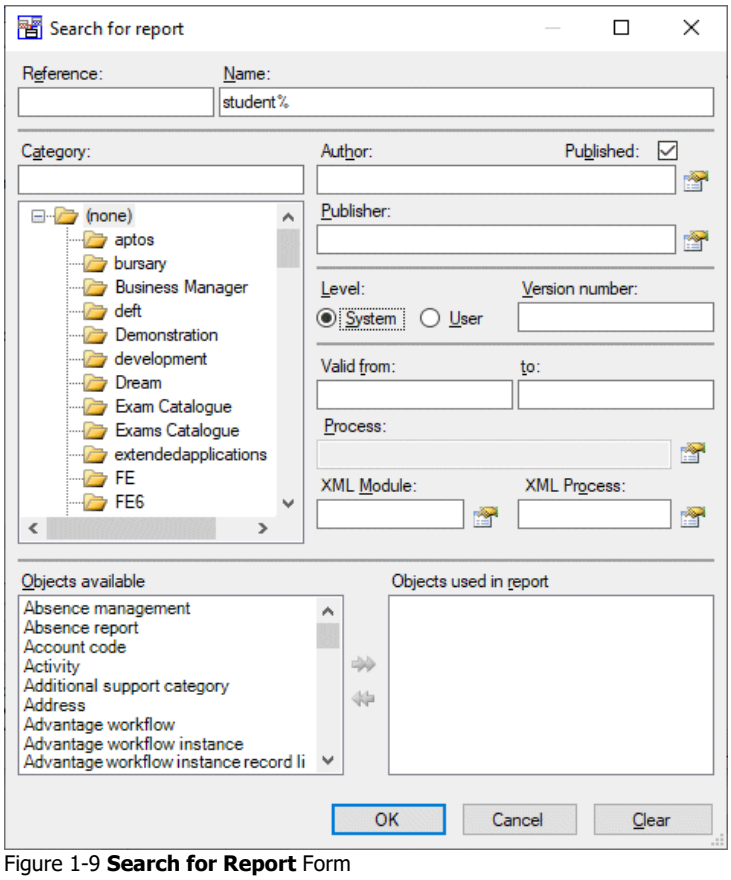


Figure 1-9 **Search for Report** Form

More information: *Refer to the **Search for Report** form section on page 2-10.*

Open Report Form

The **Open Report** form is used to open reports. It is populated with reports matching the search criteria specified in the **Search for Report** form. The list is retained until another search is performed or UNIT-e Report Generator is closed.

This form is opened as follows:

- Performing a search via the **Search for Report** form.
- Clicking on the **Open Report** button or selecting **File | Open** having previously performed a report search.

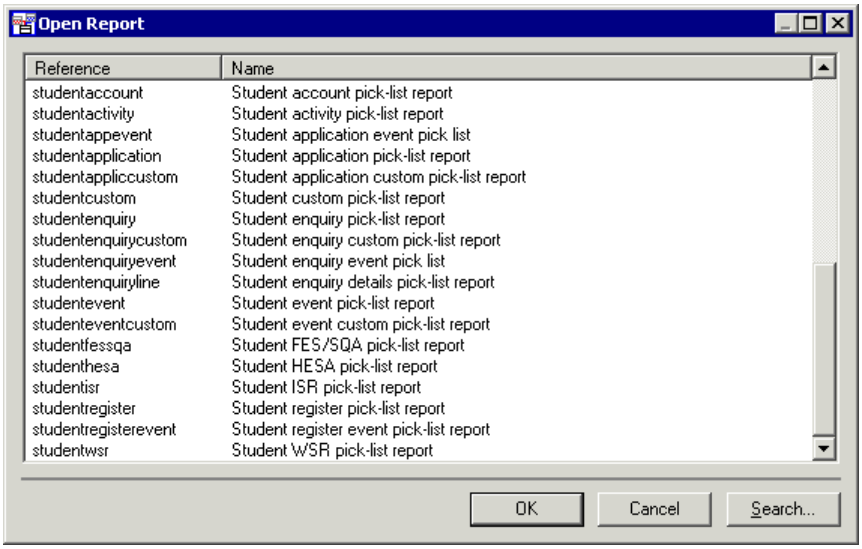


Figure 1-10 **Open Report** Form

More information: *Refer to the **Open Report** Form section on page 2-11.*

Report Diagram Form

The **Report Diagram** form enables you to select and link classes and their properties to form a basic report. It provides a graphical overview of the report structure. Each instance of the form represents an open report.

This form is opened as follows:

- Open an existing report via the **Open Report** form.
- Create a new report by clicking on the **New Report** button or selecting **File | New** from the menu bar.

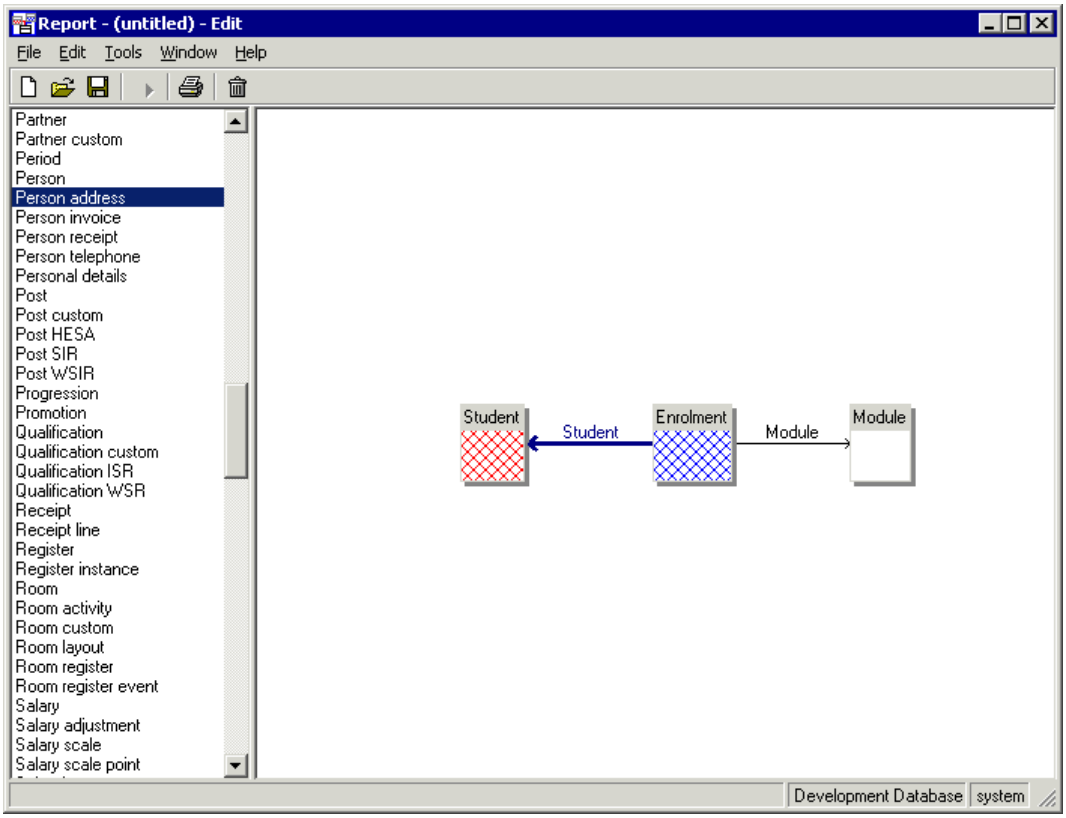


Figure 1-11 **Report Diagram** Form

Class List: The left pane provides a list of all available classes in your database.

Note: *Selecting a class using the keyboard will only work if the left pane has the focus. If it does not respond press the **Tab** key once to change the focus.*

More information: *Regarding adding classes and reports, refer to the following:*

- *Add Object (see page 3-3).*
- *Append Object (see page 3-3).*

Diagram Pane: The right pane provides a graphical representation of the classes and links defined for the report. Classes appear here when they have been selected.

More information:

- *Regarding appearance of links on the Diagram pane refer to the Link Appearance section on page 3-9.*
- *Regarding appearance of objects on the Diagram pane refer to the Object Appearance section on page 3-6.*

Report Form

The **Report** form is used to develop the basic report specified via the **Report Diagram** form. It can be accessed in the following ways:

- Double-click on the background of the **Report Diagram** form.
- Right-click and select **Report** from the pop-up menu.
- Select **Edit | Report** from the menu bar.

It provides the following tabs:

- The **Report** tab enables you to record information about the report (see page 2-6).
- The **Select** tab enables you to specify the columns of the report by adding "select" elements (see page 4-3).
- The **Where** tab enables you to define which rows are included in the report by adding "where" elements (see page 4-7).
- The **Order** tab enables you to define the order that the rows are returned by the report by adding "order" elements (see page 4-10).

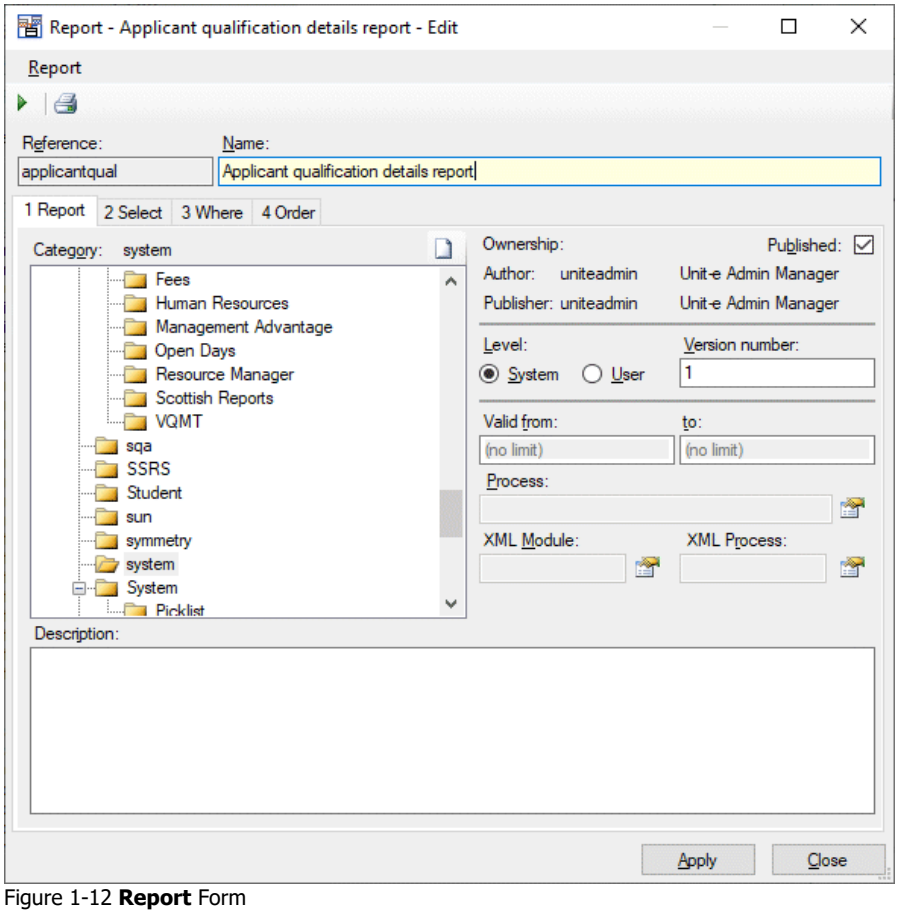


Figure 1-12 **Report** Form

More information:

- *Regarding the **Report** tab, refer to page 2-6.*
- *Regarding the **Select** tab, refer to page 4-3.*
- *Regarding the **Where** tab, refer to page 4-8.*
- *Regarding the **Order** tab, refer to page 4-11.*

Expression Form

The **Expression** form enables you to define expressions for the "select", "where" and "order" elements in the report. This form enables you to build expressions using the following components:

- Properties (see page 5-3)
- Functions (see page 5-5).
- Elements (see page 5-12).
- Values (see page 5-15).

This form can be opened as follows:

- Double-click an element on the **Report** form.
- Click on the **New** button on the **Report** form.
- Click on the **Edit Expression Definition** button on the **Expressions** form.

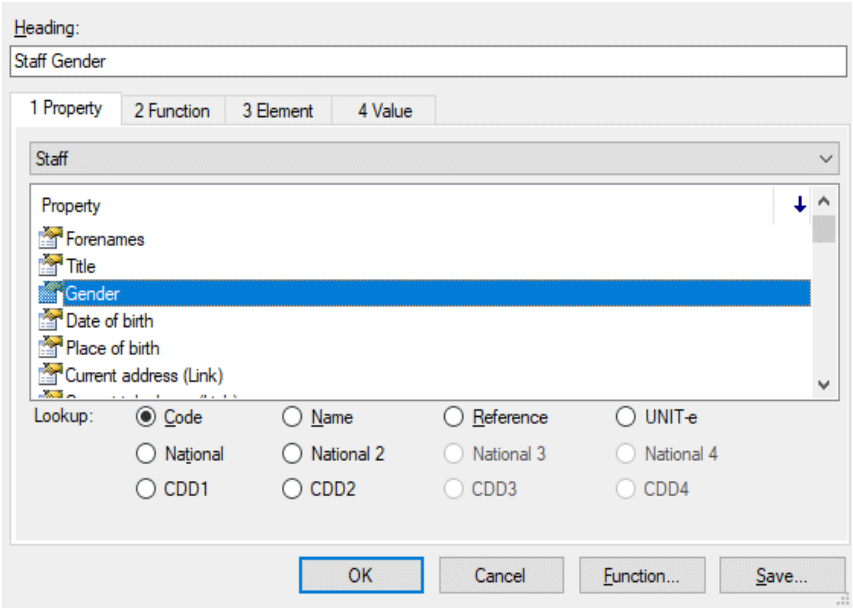


Figure 1-13 **Expression** Form - **Property** Tab

More information:

- *Regarding the **Property** tab, refer to page 5-4.*
- *Regarding the **Function** tab, refer to page 5-6.*
- *Regarding the **Element** tab, refer to page 5-13.*
- *Regarding the **Value** tab, refer to page 5-15.*

Expressions Form

The **Expressions** form enables you to work with saved expressions. It enables you to perform the following:

- Save Expressions (see page 5-18).
- Edit Saved Expressions (see page 5-21).
- Copy Saved Expressions (see page 5-22).

This form can be opened as follows:

- Click on the **Configure** button on the **Elements** tab of the **Report** form.
- Click on the **Save** button on the **Report** form, then complete the **Add New Expression** wizard.

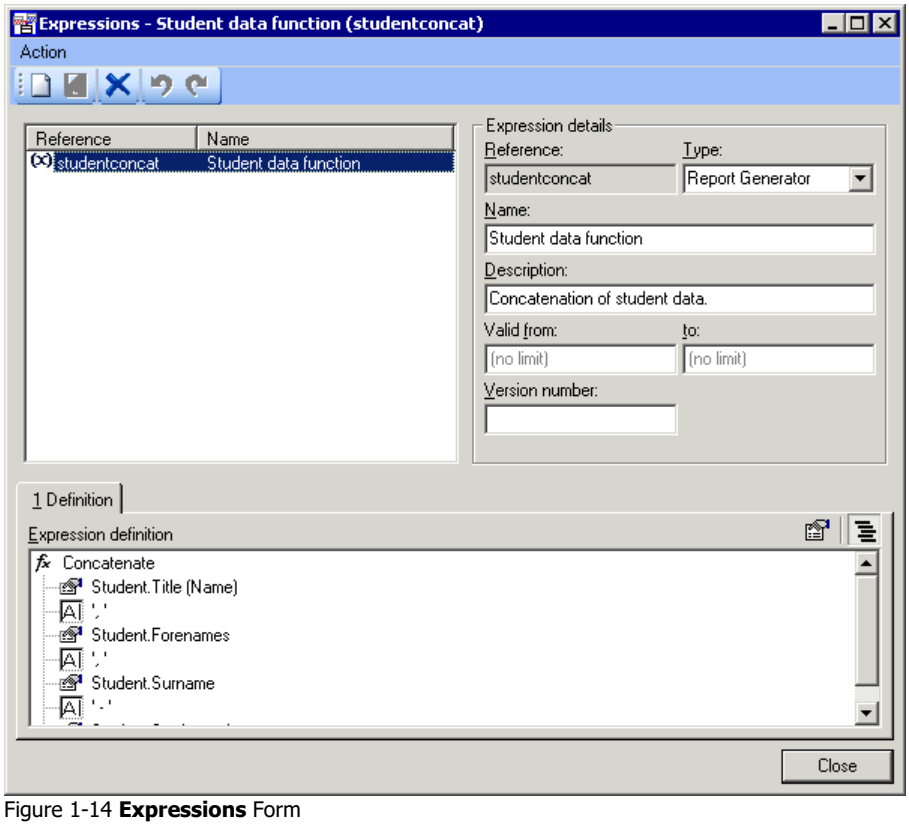


Figure 1-14 **Expressions** Form

More information: *Refer to the **Expressions** form section on page 5-19.*

Test Report Form

The **Test Report** form provides the ability to perform the following:

- Test Report (see page 7-7).
- Save results (see page 7-11).
- Output results (see page 7-12).
- Print results (see page 7-14).

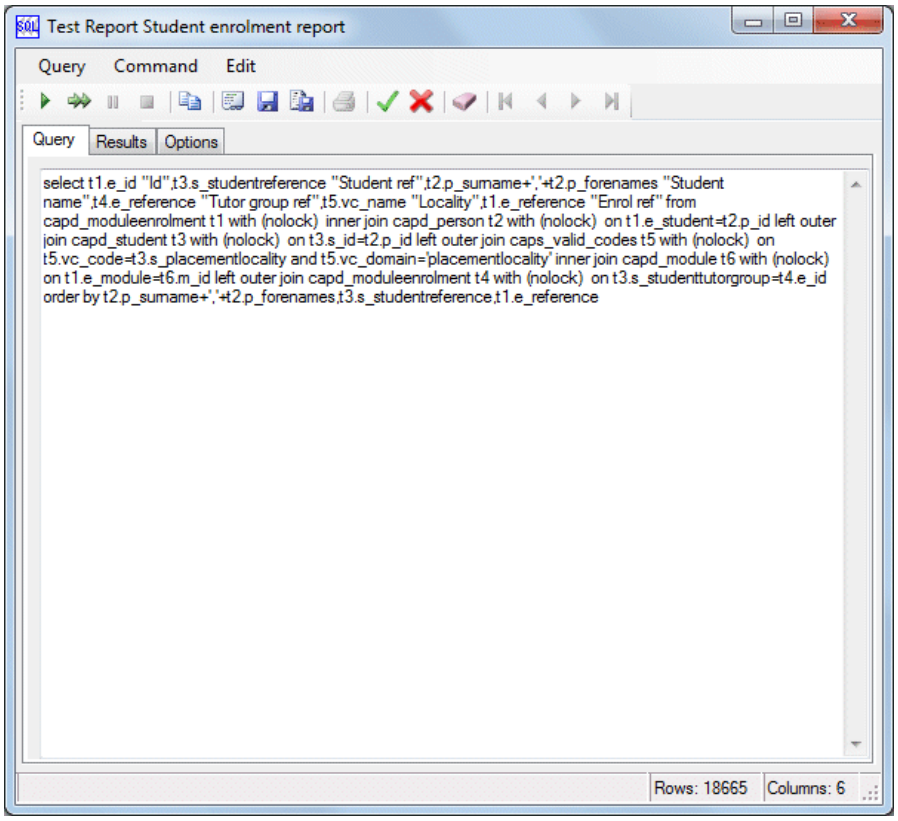


Figure 1-15 **Test Report** Form

More information:

- *Regarding the **Query** tab, refer to page 7-3.*
- *Regarding the **Results** tab, refer to page 7-4.*
- *Regarding the **Options** tab, refer to page 7-5.*
- *Regarding the **Parameters** tab, refer to page 7-6.*

Chapter 2: Manage Report

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Introduction

UNIT-e Report Generator enables you to manage your reports. It provides functionality to save, open, and delete report definitions. It also provides control of report distribution through publishing functionality.

To create and manage a report, perform the following steps as required:

1. Prerequisites (see page 2-3)
2. Plan the Report (see page 2-4)
3. Create a New Report (see page 2-5)
4. Name and Save Report (see page 2-6)
5. Open an Existing Report (see page 2-9)
6. Copy an Existing Report (see page 2-13)
7. Report Distribution (see page 2-19)
8. Report Maintenance (see page 2-25)
9. Component Protection (see page 2-26)

Prerequisites

The following functions provide you with tools to manage your reports. Use of these functions is optional.

- Tracing SQL Statements into a Debug Log (see below)
- Timeout settings (see below)

Tracing SQL Statements into a Debug Log

This option enables you to trace SQL statements into a debug log. To switch on and use this functionality:

1. Open UNIT-e Report Generator and select **Options | Debug Mode** from the menu. The option is switched on if there is a tick against it.
2. Create and run reports as usual.
3. The system generates a log called 'sqldebug' in the UNIT-e Report Generator directory (if the application is run directly from that directory) or the UNIT-e Workplace directory (if the application is run from Workplace).
4. Open the file to view the details.

Timeout settings

If you're running particularly complex reports, you may need to specify a longer timeout period. To do this, amend the following setting values in UNIT-e Database Settings [UDMSE.exe]:

- Oracle users - System\Database\oracle\timeout
- SQL Server users - System\Database\sqlserver\timeout

No default settings are provided but Oracle will default to 60 seconds if the entry is a null.

Plan the Report

Effective reports require planning. Spending time at this stage can maximise the value that a particular report can deliver.

Before writing the report, the following questions should be considered:

- Consider the table of information you are aiming to produce.
- Identify each column of that table. Express these columns in terms of classes and properties.
- Identify any columns that cannot be expressed as simple property expressions. Identify expressions for these columns using classes, properties and functions.
- Identify the rows of that table. Express these rows in terms of records to be included/excluded.
- Identify which classes are required to provide the required properties.
- Consider how the classes need to be linked to limit the report to the required records.
- Consider what further parameters may be required to bring back the required data.
- Decide whether the problem can be solved with one report, or if two or more reports are required.

In answering these points, it may help to use the Entity Diagram tool to view the links that exist between classes. It may also help to experiment with UNIT-e Report Generator itself.



Tip: *It is a good idea to document details of reports for future reference, especially in a college environment where other staff members may need to pick up a particular report set.*

Create a New Report

Having planned the report, the next step is to create a new blank report definition.

To create a new report, perform the following:

1. Open UNIT-e Report Generator.
2. UNIT-e Report Generator opens with a new report ready for editing.
3. To create additional reports either:
   - Click on the **New** button to open a new report.
   - Select **File | New** from the menu bar.
   - Press the **Ctrl-N** keys.
4. A new **Report Diagram** opens to enable you to define the new report.



Note: *The **Window** menu provides a list of all open reports and enables you to view them as required.*

Name and Save Report

Before the report can be saved it must be named and referenced. To name or rename a report perform the following:

1. Select the **Report Diagram** form that represents the report to be saved.
2. Open the **Report** form (see page 1-16).
3. Select the **Report** tab (see below).
4. Complete the fields to describe the report as required (see below).

Note: *The report Reference and Name fields are available on all the tabs of the **Report** form.*

5. Close the **Report** form.
6. To save the report either:
   - Click on the **Save** button.
   - Select **File | Save** from the menu bar to save the report.
   - Press the **Ctrl-S** keys.

Report Tab on the Report Form

The **Report** tab on the **Report** form is used to record general information about the report.

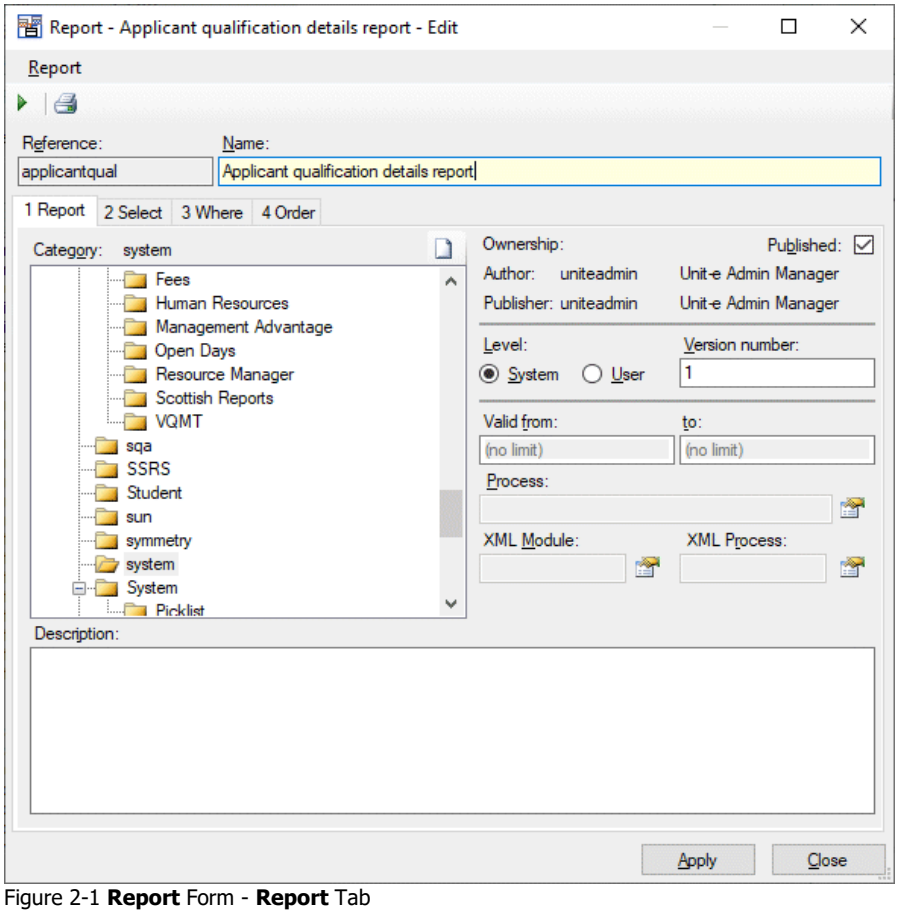


Figure 2-1 **Report** Form - **Report** Tab

Reference: Specify a unique reference for the report.

Note: *The reference is the unique identifier for the report.*

Tip: *It is a good idea to have meaningful report references, as this will make it easier to identify the report. A report needs a reference before it can be saved.*

Name: Specify a descriptive name for the report.

Category: This is used to categorise reports into sets. The **Category** tree-list displays the categories currently specified by the reports on your database. Either:

- Pick an existing category from the list.
- Click on the **New** button and specify a new Category. The new Category is created under the currently selected Category.

Ownership: This specifies the Author and Publisher of the report.

- **Author** specifies the last user to edit the report or the user specified when the report was last un-published.
- **Publisher** specifies the last user to publish or un-publish the report.

Published: Select or de-select this check box to publish or un-publish the report (see page 2-21). When a report is un-published a dialogue is displayed to enable you to choose the author. The specified author can then make changes to the report.

Warning: *Un-published reports are only available to the author and users with publishing rights.*

Level: Specify the level of the report.

- System reports are those that are supplied and integral with the UNIT-e system.
- User reports are those that you have written yourself.

Version number: This specifies the version of the report. This is rounded to the nearest whole number.

Valid from: Enter the date the report was written.

Valid to: Enter the date when the report becomes invalid.

Note: *The Valid from and Valid to dates will not stop you using a report. They are for information purposes only.*

Process: Displays the reference of the report Process assigned to the report. Report Processes are used to control which users are able to view and edit the report.

To assign a report Process or change the report Process that is currently assigned, click on the **Select Process** button.

Note:

- *This field is disabled if you do not have Manage rights to the Report Access module.*
- *Only those report Processes for which you have Write or Manage rights are available to assign to a report.*

More information: *For details on report Processes and report Process rights, refer to page 2-22.*

XML Module: Populate this field if you wish to specify that this report can only be run by users with these module rights. This information is published in the XML definition.

XML Process: Populate this field if you wish to specify that this report can only be run by users with these process rights. This information is published in the XML definition.

Current owner: This is read-only and specifies the last person to edit the report.

Author: This field is read-only and specifies an Author when the report is published. The Author is the last User to edit the report. The Publisher is the last User to publish the report.

Publisher: This field is read-only and specifies the user who published the report.

Notes: Enter any additional notes about the report. This can be used to record any unusual aspect of the report functionality to help maintain the report at a later date.

 **Note:** *Carriage returns should not be used in this field.*

Apply: Clicking on this button will apply the changes to the report.

Close: Clicking on this button will close the **Report** form and apply any changes.

 **Note:** *To close the **Report** form without applying changes click on the **Close** button.*

Open an Existing Report

Once a report has been saved it is available for use in the UNIT-e system. Access to reports is restricted through reporting user rights. These reporting user rights define which reports you can open.

The following modes are available:

Report Rights	Level	Available actions
Publisher	System	Access any system report. Publish any un-published system report. Un-publish system reports they have published.
Author	System	Access published system reports. Author system reports. Access and alter system reports where they are the author.
User	System	Access published system reports.
Publisher	User	Access any user report. Publish any un-published user report. Un-publish user reports they have published.
Author	User	Access published user reports. Author user reports. Access and alter user reports where they are the author.
User	User	Access published user reports.

Table 2-1 Table of Reporting User Rights

User Rights are specified via UNIT-e System Manager.

More information: *Regarding setting up user rights refer to "UNIT-e Database Manager (Users)" Handbook (UDMUS.pdf).*

If you wish to view or edit an existing report, it can be opened again in UNIT-e Report Generator. A report can be opened in either Edit or Browse mode:

- Edit: Opening a report in Edit mode enables you to amend the report. When a report is opened in Edit mode it is locked for other users – they may open it in Browse mode, but cannot make any changes to it. Edit is the default mode if the report is not open elsewhere.
- Browse: Opening a report in Browse mode enables you to view the report only. The report is not editable and all fields on the **Report** form are greyed-out. If another user has the report open in Edit mode, Browse mode is the only option available.

To open a report perform the following:

1. Open UNIT-e Report Generator and select **File | Open** to open the **Search for Report** form.

   Note: *The **File** menu provides a list of the most recently used reports, to enable you to quickly access common reports.*

2. Complete the search criteria on the **Search for Report** form (see below).
3. A list of matching reports is returned in the **Open Report** form (see page 2-11).
4. Select the report from the list and click on the **OK** button on the **Open Report** form.
5. If the report is not currently open in Edit mode by another user, the **Report Diagram** form is displayed and the report is opened in Edit mode.

If the report is currently open in Edit mode by another user, the dialogue below is displayed. Click on the **Yes** button to open the report in Browse mode and the **No** button to return to the main **Report** form.

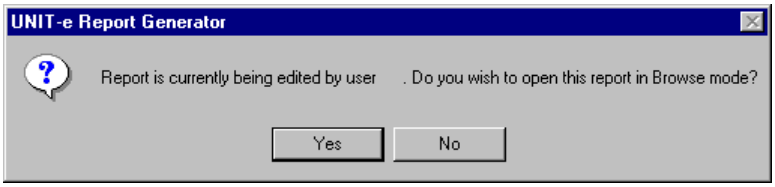


Figure 2-2 Browse Mode Dialogue

Search for Report Form

The **Search for Report** form is used to search the current database for existing reports. The fields provide the same search functionality as Manager and Proforma fields. Leaving all the fields blank will return all the reports in the database. The results are displayed in the **Open Report** form.

More information: *For details of the available search functionality refer to the "Working with UNIT-e System" Handbook (WWU.pdf).*

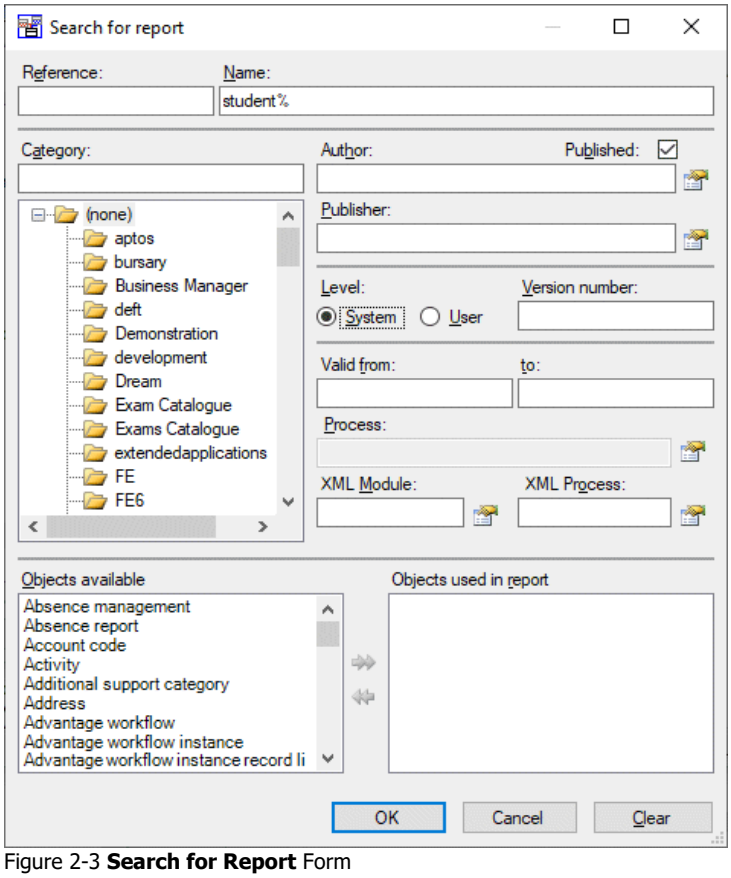


Figure 2-3 **Search for Report** Form

Reference: Specify a reference on which to search, e.g. student% to search for report references starting with student.

Category: Select a category to search from the tree-view.

Name: Enter the name of the report as a search criteria, e.g. "Student%" to search for report names starting with "Student".

Note: *Searches are case sensitive unless preceded with a tilde "~".*

Author: Enter an Author or click on the **Select Author** button, then select one from the **Users** list. Only reports with the specified Author are returned.

Publisher: Enter a Publisher or click on the **Select Publisher** button, then select one from the **Users** list. Only reports with the specified Publisher are returned.

Level: Select a level of report on which to search, leave as unspecified to return both types.

Version: Enter a report version.

Valid from: Enter the date the report was written.

Valid to: Enter the date when the report becomes invalid.

Note: *The **Valid from** and **Valid to** fields have no effect on the availability of the report, they are for information purposes only.*

Process: Displays the reference of the report Process assigned to the report. To select a report Process on which to search, click on the **Select Process** button.

Note: *This field is disabled if you do not have Manage rights to the Report Access module.*

More information: *For details on report Processes and report Process rights, refer to page 2-22.*

XML Module: Populate this field if you wish to specify that this report can only be run by users with these module rights. This information is published in the XML definition.

XML Process: Populate this field if you wish to specify that this report can only be run by users with these process rights. This information is published in the XML definition.

Objects: Select classes from the left list in the normal way. Only reports that include the selected classes, in the right list, will be returned.

Add/Remove: The right/left arrow buttons can be used to select/remove highlighted objects.

OK: Click on this button to perform the search, using the specified criteria.

Cancel: Click on this button to cancel the search and close the form.

Clear: Click on this button to clear the current search criteria.

Open Report Form

The **Open Report** form lists the reports matching the specified criteria. The list is retained until another search is performed or UNIT-e Report Generator is closed.

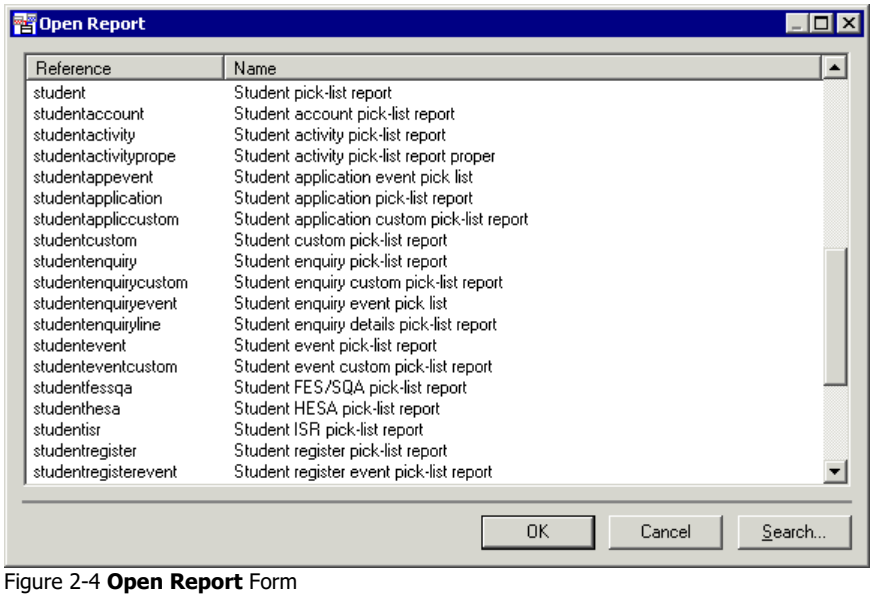


Figure 2-4 **Open Report** Form

Report list: This displays a list of reports that match the search criteria entered in the **Search for Report** form. It provides Name, Reference, Category and Level columns. The list can be ordered by each of these columns by clicking on the appropriate heading.

OK: Click on this button to open the currently highlighted report.

Cancel: Click on this button to cancel opening a report and close the form.

Search: Click on this button to open the **Search for Report** form, to populate the report list.

Copy an Existing Report

Before making changes to an existing report it is worth creating a backup copy of the report. To copy an existing report, perform the following:

1. Open UNIT-e Report Generator and select **File | Open** to open an existing report.
2. When the report has opened, select **File | Save as** to save a copy of the report.
3. Complete the **Save Report As** form.
4. The copied report is then available for editing.

Save Report As Form

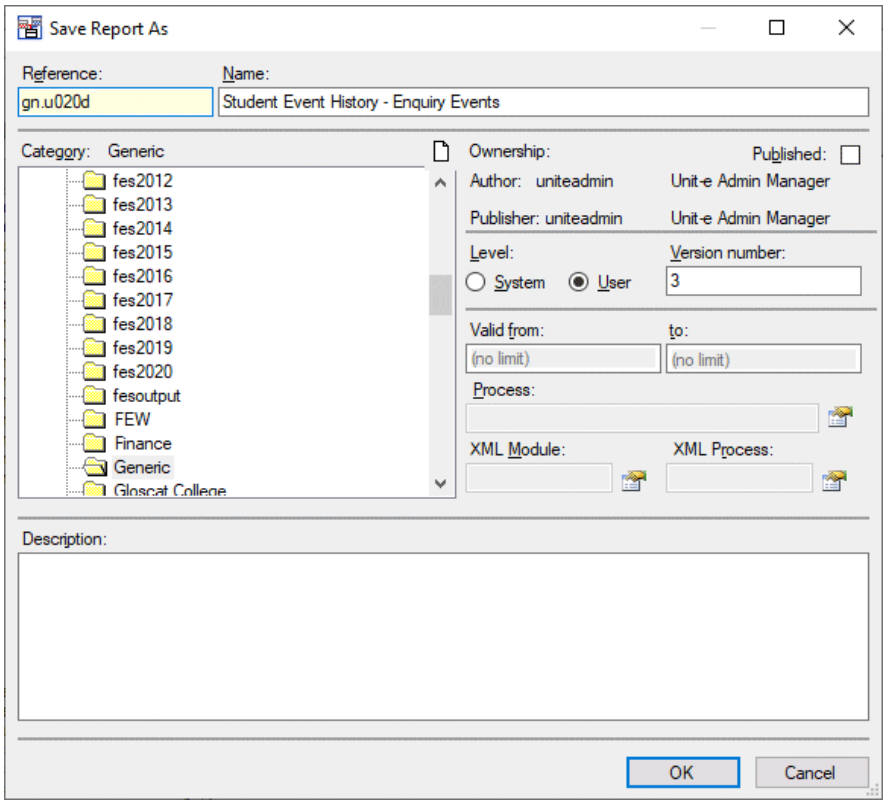


Figure 2-5 **Save Report As** Form

Name: Enter the new Name of the report.

Category: Enter or pick a new category.

Reference: Enter a new unique reference for the copied report.

Level: Specify the level of the new report.

Process: Displays the reference of the report Process assigned to the report. Report Processes are used to control which users are able to view and edit the report.

To assign a report Process or change the report Process that is currently assigned, click on the **Select Process** button.

Note:

- *This field is disabled if you do not have Manage rights to the Report Access module.*
- *Only those report Processes for which you have Write or Manage rights are available to assign to a report.*

More information: *For details on report Processes and report Process rights, refer to page 2-22.*

XML Module: Populate this field if you wish to specify that this report can only be run by users with these module rights. This information is published in the XML definition.

XML Process: Populate this field if you wish to specify that this report can only be run by users with these process rights. This information is published in the XML definition.

OK: Click on this button to create the new report. The new report remains open and can be edited as required.

Cancel: Click on this button to cancel the copy.

Backup an Existing Report

Backing up an existing report allows you to save a version of the report from a given time. All details of the report are backed up, thereby enabling you to use the **Version number** and **Description** fields to identify report versions and keep record of what is included in each version. The backup date and time are also recorded in each backup created.

This can be used both to maintain a version history and as a restore point should you need to revert from the current version of a report for any reason. For example, if a supplied report wasn't protected using the Component Protection function (see page 2-26) prior to an import/upgrade and custom changes to it were lost, you can restore the backup, protect the report and then reimport the upgrade script.

Note: *UNIT-e Database Manager (System Transfer) [UDMST.exe] can be set up to automatically backup reports each time new versions of them are imported.*

More information: *For details on UDMST, refer to the 'UNIT-e Database Manager (System Transfer)' handbook (UDMST.pdf).*

The following options are available in the **Backup** menu in UNIT-e Report Generator for managing report backups:

- Create (see below)
- View (see page 2-16)
- Restore (see page 2-16)
- Delete (see page 2-17)

Create

Create a backup of one or more reports, as follows:

1. In Report Generator, select **Backup | Create** from the menu bar and search for the report(s) you wish to back up.
2. The search results are displayed in the **Create Report backup(s)** form. Select the report(s) you wish to back up, using the standard multi-select functionality if you wish to back up more than one report.

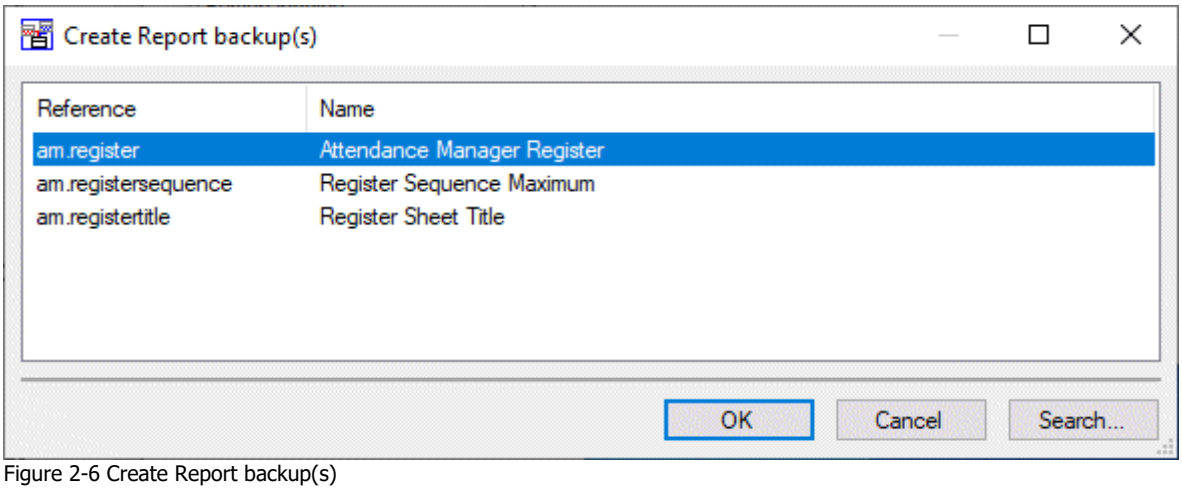


Figure 2-6 Create Report backup(s)

3. Click on the **OK** button. A dialogue is displayed asking you to confirm that you wish to proceed with creating the backup(s):

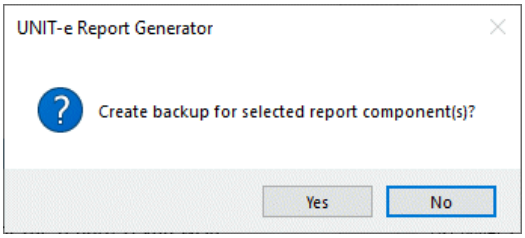


Figure 2-7 Confirm report backup

4. Click on the **Yes** button to create the backup(s). A dialogue is displayed indicating the number of reports that were successfully backed up:

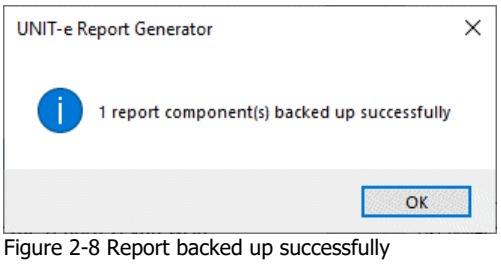


Figure 2-8 Report backed up successfully

5. Click on the **OK** button to close the dialogue and return to main **Report** form in UNIT-e Report Generator.

View

Backups of reports created manually and by UDMST can be viewed (read-only) as follows:

1. In UNIT-e Report Generator, select **Backup | View** from the menu bar and use the **Search for backup report** form to search for the backup you wish to view.

Note: *In place of the **Valid from** and **Valid to** date fields included on the standard report search form, the **Search for backup report** form includes a **Backup date** field that can be used to search for backups by the date on which they were created.*

2. The search results are displayed in the **View Report backup** form. Select the required backup and click on the **OK** button to view the report backup in read-only mode via the standard **Report** forms.

Note: *The column headers can be used to sort the list, enabling you to order by backup date, if required.*

Restore

Restore one or more report backups, thereby reverting the report(s) to the backed-up version, as follows:

1. In UNIT-e Report Generator, select **Backup |Restore** from the menu bar and use the **Search for backup report** form to search for the backup you wish to restore.

Note: *In place of the **Valid from** and **Valid to** date fields included on the standard report search form, the **Search for backup report** form includes a **Backup date** field that can be used to search for backups by the date on which they were created.*

2. The search results are displayed in the **Restore Report backup(s)** form. Select the backup(s) you wish to restore, using the standard multi-select functionality if you wish to restore multiple backups.

Note: *The column headers can be used to sort the list, enabling you to order by backup date, if required.*

3. Click on the **OK** button. A dialogue is displayed asking you to confirm that you wish to proceed with restoring the backup(s):

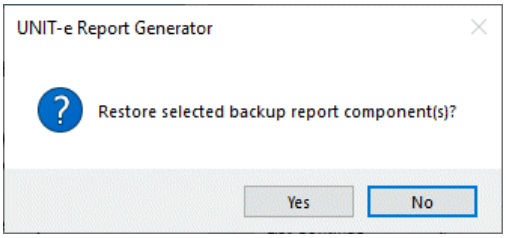


Figure 2-9 Confirm backup restore

4. Click on the **Yes** button to restore the backup(s). A dialogue is displayed indicating the number of backups that were successfully restored:

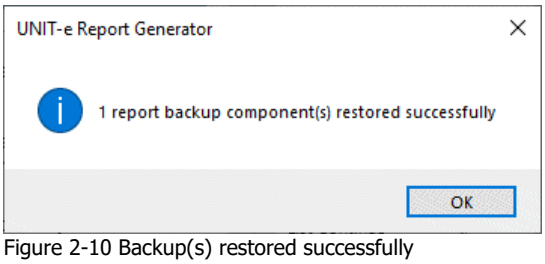


Figure 2-10 Backup(s) restored successfully

5. Click on the **OK** button to close the dialogue and return to main **Report** form in UNIT-e Report Generator.
6. Open and save the restored reports to update the stored Report XML definition.

Delete

Delete existing report backup(s), as follows:

1. In UNIT-e Report Generator, select **Backup | Delete** from the menu bar and use the **Search for backup report** form to search for the backup(s) you wish to delete.

> **Note:** *In place of the **Valid from** and **Valid to** date fields included on the standard report search form, the **Search for backup report** form includes a **Backup date** field that can be used to search for backups by the date on which they were created.*

2. The search results are displayed in the **Delete Report backup(s)** form. Select the backup(s) you wish to delete, using the standard multi-select functionality if you wish to delete multiple backups.

> **Note:** *The column headers can be used to sort the list, enabling you to order by backup date, if required.*

3. Click on the **OK** button. A dialogue is displayed asking you to confirm that you wish to proceed with deleting the backup(s):

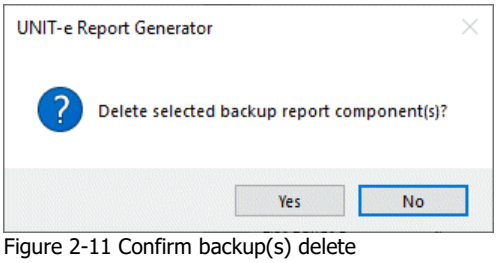


Figure 2-11 Confirm backup(s) delete

4. Click on the **Yes** button to delete the backup(s). A dialogue is displayed indicating the number of backups that were successfully deleted:

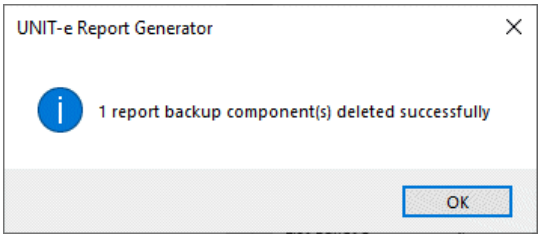


Figure 2-12 Backup(s) deleted successfully

5. Click on the **OK** button to close the dialogue and return to main **Report** form in UNIT-e Report Generator.

Report Distribution

Report distribution is controlled via the following:

- Locking (see below).
- Publishing (see page 2-21).
- Report Process Rights (see page 2-22)

Locking

In addition to publishing, control of reports is also provided via the ability to lock particular components. The following aspects of a report can be locked:

- Report (see below).
- Element (see below).
- Objects (see page 2-20).
- Links (see page 2-21).

Note: *The ability to lock reports and components is not available to customers.*

Report

If a report is locked it is not possible to perform the following:

- Move objects on the diagram
- Edit properties
- Add properties
- Edit objects
- Add objects

Reports that are locked appear greyed out as follows:

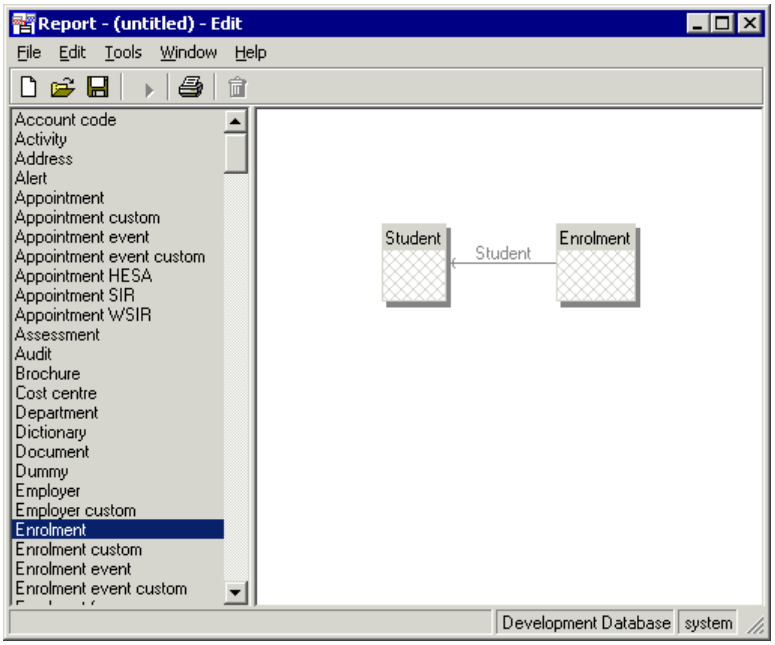


Figure 2-13 **Report Diagram** Form - Locked Report

Element

If an element is locked, it is not possible to perform the following:

- Edit element
- Move element

Elements that are locked appear greyed out as follows:

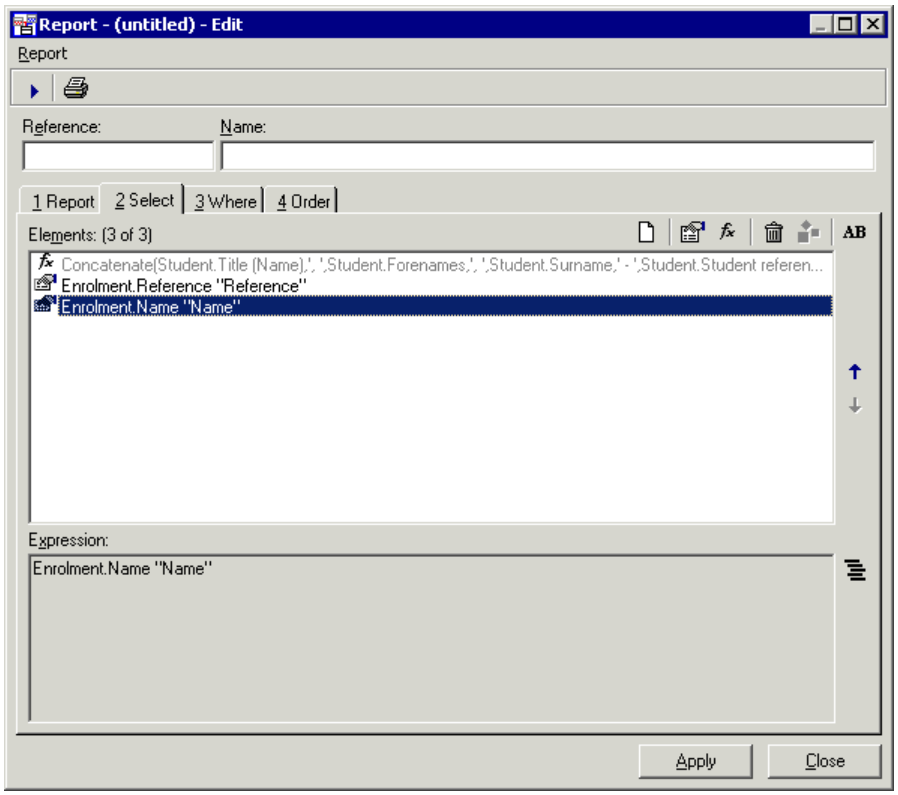


Figure 2-14 **Report** Form - Locked Element

Objects

If an object is locked, it is not possible to perform the following:

- Edit object
- Delete object
- Add properties for locked object

Objects that are locked appear greyed as follows:

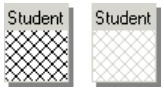


Figure 2-15 Locked **Object** – Right Student Object Locked

Links

If a link is locked, it is not possible to perform the following:

- Edit link
- Delete link

Links that are locked, appear greyed as follows:



Figure 2-16 Locked **Link**

Publishing

To enable you to control access to your reports, UNIT-e Report Generator provides the following functionality:

- Publish Report (see below).
- Un-publish Report (see below).

In general, reports are not available to other users until they have been published.

The status of a report defines who can run and edit it. Reports can have the following status:

Report Status	Available actions
Un-published	Editable by the user who authored it. Available to the user who authored it. Available to users with Publish rights at the same level as the report.
Published	Available to users with User report rights at the same level as the report.

Table 2-2 Table of Report Accessibility

Publish Report

Once you have completed a report, it is necessary to publish it before any other users have access to it.

To publish a report, perform the following:

1. Open the report in UNIT-e Report Generator.
2. Select the **Report Diagram** form (see page 1-15).
3. Open the **Report** form.
4. Select the **Report** tab (see page 2-6).
5. Select the **Publish** check box to publish the report.
6. Close the **Report** form and select **File | Save** to save the report.

Un-publish Report

Reports may be un-published to stop other users from running them while they are being updated or if they are no longer valid.

To un-publish a report, perform the following:

1. Open the report in UNIT-e Report Generator.
2. Select the **Report Diagram** form (see page 1-15).
3. Open the **Report** form.
4. Select the **Report** tab (see page 2-6).

5. De-select the **Published** check box to un-publish the report.
6. A dialogue opens to enable you to specify which user the report is un-published to.

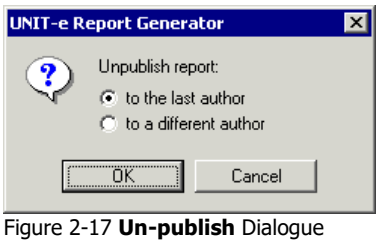


Figure 2-17 **Un-publish** Dialogue

   i. Select **to the last author** to un-publish the report to the last user who edited the report. This enables them to make further changes.
   ii. Select **to a different author** to un-publish the report to a different user, to enable them to make changes to the report. A dialogue opens to enable you to select a user.

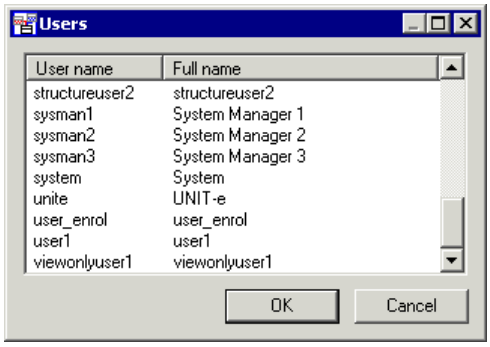


Figure 2-18 **Users** Form

   iii. Select a User from the list and click on the **OK** button.
7. Close the **Report** form and select **File | Save** to save the report.

Report Process Rights

Processes can be assigned to a report and then access to the report can be controlled via user rights to these Processes. This enables you to control which reports can be edited by which users and enables you to provide reports for specific departments only.

To use report Process rights, complete the following:

1. Create Report Process (see below).
2. Grant User Rights (see page 2-23).
3. Assign Report Process to Report (see page 2-23).

Note: *In order to assign a report Process to a report, you must have Manage rights to the Report Access module and Write or Manage rights to the report Process itself (see page 2-23).*

Create Report Process

Create a report Process as follows:

1. Open UNIT-e Database Manager (Users) [UDMUS.exe].
2. Select your own user name, or a group to which you belong.
3. Select the **Menus** tab and highlight the Report Access Menu in the **Menus** list. The Report Access menu items are displayed in the **Menu items** pane.
4. Select the bottom Report Access menu item and click on the **Properties** button. The **Menu Item Properties** form is displayed.

5. Click on the configure button to open the **Modules** form. Ensure the Report Access module is selected in the **Module** list and click on the **New** button on the **Processes** tab.
6. The **Add New Process** form is displayed. Enter a Name, Description and Unique reference for the report Process and click on the **Finish** button to return to the **Modules** form.
7. The new Process is listed in the **Available** pane. Close this form and the **Menu Item Properties** form, ensuring you save the changes when prompted.
8. The new report process is now displayed beneath the Report Access menu item. If you wish to assign the report Process to reports, grant yourself Manage rights to it.
9. Save your changes and close UNIT-e Database Manager (Users).

More information: *For further details on creating Processes, refer to the "UNIT-e Database Manager (Users)" Handbook (UDMUS.pdf).*

Grant User Rights

In order to use report Processes to control access to reports, rights must be set up on both the Report Access module and the report Process.

The report Process and Report Access module rights are applied as follows:

Report Access Module / Report Process	Read	Write	Manage
Read	Allow user to read report	Allow user to read report	Allow user to read report
Write	Allow user to amend report	Allow user to amend report	Allow user to amend report and assign a new Process (to which they have Manage rights) to the report.
Manage	Allow user to amend report	Allow user to amend report	Allow user to amend report and assign a new Process (to which they have Manage rights) to the report.

Table 2-3 Report Process Rights

This matrix has the following implications:

- The Read and Write rights on the Report Access module have no impact, i.e. users with Read or Write rights to the report Process can view or edit the report respectively, regardless of their Report Access module rights.
- Users with Manage rights to the report Process cannot assign the Process to a report without also having Manage rights to the Report Access module.
- Users with Manage rights to the Report Access module cannot assign a report Process to a report without also having either Write or Manage rights to that Process.

Users with no Read, Write or Manage rights to a report Process are unable to see any reports to which that Process is assigned, i.e. the reports are not returned in searches, etc.

For users without sufficient rights to assign report Processes, the **Process** field on the **Report**, **Search for report** and **Save Report As** forms is disabled (see pages 1-16, 1-13 and 2-13).

Set up your user rights as required via UNIT-e Database Manager (Users) [UDMUS.exe].

More information: *For details on assigning user rights, refer to the "UNIT-e Database Manager (Users)" Handbook (UDMUS.pdf).*

Assign Report Process to Report

Note: *In order to assign a report Process to a report, you must have Manage rights to the Report Access module and Write or Manage rights to the report Process itself.*

Assign a report Process to a report as follows:

1. Open UNIT-e Report Generator [URG.exe].
2. Open the report to which you wish to assign the report Process and open the **Report** form (see page 1-16).
3. Click on the **Select Process** button beside the **Process** field. The **Process** form is displayed:

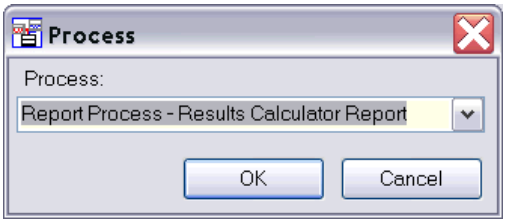


Figure 2-19 **Process** Form

4. Select the Process you wish to assign to the report. Only those for which you have Write or Manage rights are displayed in the drop-down list.
5. Click on the **OK** button to assign the Process and return to the **Report** form. The report Process reference is displayed in the **Process** field.
6. Click on the **Close** button and save your changes.

Note: *A report Process can also be assigned via the **Save Report As** form (see page 2-13) and searched on via the **Search for report** form (see page 1-13).*

Report Maintenance

Once a report has been written it may need altering to work in subsequent years. The following aspects of a report should be reviewed each year:

- Start and End date Elements in the **Where** tab.
- Fields returned for Mandatory return reports.

Housekeeping Reports

Table 2-4 lists reports that you can use to identify reports which are out-of-date or which need amendment in order to run correctly.

Name	Code	Purpose
Oracle to SQL Migration	gn.osql.datecheck	Returns a list of the reports contained in your database which include a concatenate function on dates. This enables you to identify reports that need amending (i.e. by adding the To Text(Date) function) when performing an Oracle to SQL migration. Once the To Text(Date) function is applied to the date elements in the report, the Date Check report no longer returns that report.
Orphan Classes	gn.rg.orphanclasses	Returns a list of the reports that include classes which have been deleted from the UNIT-e dictionary.

Table 2-4 Housekeeping Reports

Component Protection

Component Protection allows you to protect some supplied Report Generator reports from being overwritten during a DMST import, thereby preserving any customisations you have made to it. A report can be protected in this way if a Component Protect record exists for it. Component Protect records associated with RG reports are assigned the Type 'Report Generator'.

Report Generator Component Protect records are created by:

- The QX post upgrade script, for any supplied RG reports contained in your database that are required by the Advantage software.
- The QX pre upgrade script, for some generic (non-Advantage) RG reports, including:
  - All those prefixed am., cgn., cm., gn., and rm2.
  - Amended picklist reports, which to date are; am.student, cm.block.enrolment, rm2.class.module and rm2.materialregister.

Note: *The scripts don't protect the components, but add them to the Component Protect class to enable you to protect them via Report Generator if required (i.e. if you have previously amended them and don't want them overwritten).*

For details on component protection, refer to the Importing System Components chapter in the 'UNIT-e Database Manager (System Transfer)' handbook (UDMST.pdf).

A **Component Protection** form (see page 2-26) is available in UNIT-e Report Generator that allows you to view/edit the component protection data relating to each RG report for which a Component Protect record exists (i.e. each Component Protect record of Type 'Report Generator').

The **Component Protection** form can be accessed any time via the **Protection** menu item in the **File** menu in UNIT-e Report Generator. In this mode you are able to search for any Report Generator Component Protect record. It can also be displayed automatically when attempting to save changes made to a report for which a Component Protection record exists. If the report is already flagged as protected the **Component Protection** form (Figure 2-20) is automatically displayed. If it isn't already protected, a dialog is displayed asking if you wish to protect it. If you select 'Yes' the **Component Protection** form is displayed and the **Protect** check box is automatically selected.

Note: *When the **Component Protection** form is displayed as a result of saving an applicable report, it isn't possible to use it to search for other reports/Component Protect records.*

For each Report Generator Component protect record you are able to select/deselect the Protect flag, thereby protecting/unprotecting it from being overwritten during an import. You can also view and create Component Protect Events associated with the report, which detail any imports where the report was skipped to avoid overwriting it, any changes made to the report while it was protected and any times the report was protected/unprotected.

Note: *A report, cgn.dm.0017, is provided that lists any protected components skipped by System Transfer when upgrading to a specific release version. The version element of each System Transfer script (e.g. '432') can be entered as the search parameter.*

More information: *For further details on Component Protection, refer to the 'Importing System Components' chapter in the 'UNIT-e Database Manager (System Transfer)' handbook (UDMST.pdf).*

Component Protection Form

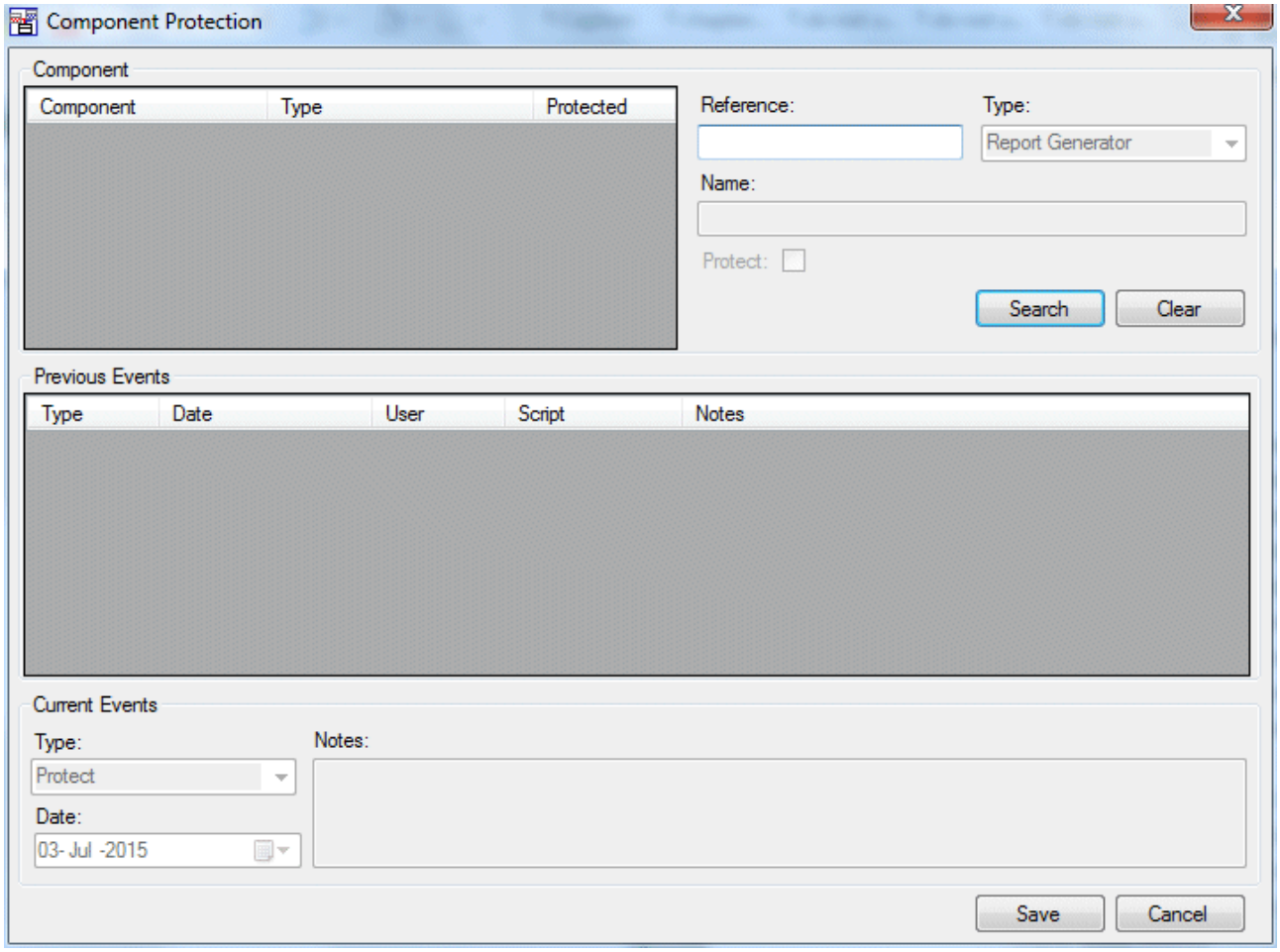


Figure 2-20 Component Protection Form

More information: *For details on the **Component Protection** form, refer to the 'UNIT-e Database Manager (System Transfer)' handbook (UDMST.pdf).*

Chapter 3: Write Report

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Introduction

This section enables you to create the basic structure of a UNIT-e core report.

Perform the following steps to create a basic report:

1. Select Classes (see page 3-3).
2. Define Links (see page 3-7).
3. Select Properties (see page 3-10).
4. Adjust Layout (see page 3-12).



More information: *Classes, links and properties refer to Report Components section on page 1-9.*

Select Classes

Classes are selected to make their properties and records available in a report. Only add those classes to the report that you require.

An instance of a class in a report is represented as an object in the report diagram. They are shown as boxes that display the class that they represent.



Figure 3-1 Classes Represented as Objects in the Report Diagram

As many class instances can be selected as required, although normally once is enough. For example, to return a course structure it is necessary to select multiple Module classes in one report.

More information: *Refer to classes in Report Components section on page 1-9.*

Select classes as follows:

- Add Object (see below).
- Remove Object (see page 3-4).
- Edit Object (see page 3-5).

Add Object

A class can be added to a report as follows:

- Add Object (see below).
- Append Object (see below).

Add Object

Objects can be added to a report via the **Class list**. To add an object to a report, perform the following:

1. Select the **Report Diagram** form.
2. Select the **Class list** pane by clicking on it.
3. To add a class to the report, perform one of the following steps:
   - Highlight it in the class list with the **Cursor Up/Down** keys, and then press the **Return** key.
   - Highlight it in the class list by typing the first few characters of the class name, and then press the **Return** key.
   - Use the mouse to locate the class, then double-click on the required class.
   - Use the mouse to locate the class, then click on it and drag it to the **Diagram** pane.

Note: *Selecting a class using the keyboard will only work if the left pane has the focus. If it does not respond, press the **Tab** key to change the focus.*

4. The selected class appears on the diagram as an object.

Append Object

Objects can be appended to the report structure via the currently selected objects. This enables you to build up the report by appending the required objects one by one. Objects added in this way are linked to the existing object that they were added from.

To append an object to an existing report structure, perform the following:

1. Select the **Report Diagram** form.

2. Right-click the object to which you wish to link a new class and select **Add** from the pop-up menu. The **Add** form opens (see page 3-4).
3. Specify the **To object**, **Link by property** and **Join type**.
4. Click on the **OK** button.
5. The new object appears on the report diagram, linked to the current object as specified.

Add Form

The **Add** form is used when adding objects to the report diagram.

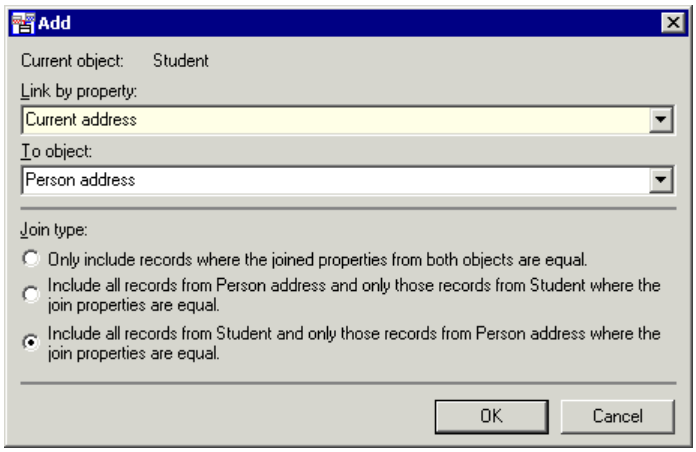


Figure 3-2 **Add** Form

Current object: Displays the object that was right-clicked.

Link by property: This is populated with the properties that can be used to link to the select object in the **To object** pick-list. Select the property to link from the current object to the new object.

To object: This is populated with the objects that the current object can link to. Select an object to add to the report.

Join type: Select the Join type for the link from the current to the new object.

Remove Object

Objects that are not required can be removed as follows:

Warning: *Removing objects cannot be undone and may affect functions that use its properties.*

1. Select the **Report Diagram** form.
2. To delete an object from the report either:
   - Select the object using the cursor keys or mouse, then press the **Delete** key.
   - Right-click on the object and select **Remove** from the pop-up menu.
   - Double-click on the object to open its **Object** form then click on the **Delete** button.
3. The object is removed from the report.

Edit Object

Once added to a report, objects can be edited as follows:

- Change Object Name (see page 3-5).
- Add Properties (see page 3-10).

Notes:

- *It can be useful to rename objects to distinguish between two objects representing the same class in a report.*
- *It is also useful to be able to label classes for their purpose in the report. For example, where a "Module" class is used to return Tutor Group information it is helpful to rename it as "Module (Tutor Group)".*

Change Object Name

To change a particular object name, perform the following:

1. Select the **Report Diagram** form.
2. Open the **Object** form for the object to be renamed (see below).
3. Alter the **Name** field, to specify a new object name.
4. Click on the **OK** button when finished.
5. The new object name is now displayed in the report diagram.

Note: *Renaming an object in UNIT-e Report Generator only affects the instance in the current report.*

More information: *Changing an object name establishes an alias which can be used to apply Search form parameters to a particular object. Refer to the "UNIT-e Database Manager (Settings)" Handbook (UDMSE.pdf) for more information.*

Object Form

The **Object** form is used to edit objects once they have been added to a report. To open this form either:

- Double-click on the object.
- Select the object with the **Cursor Up/Down** keys then press the **Return** key.
- Right-click on the object and select **Object** from the pop-up menu.

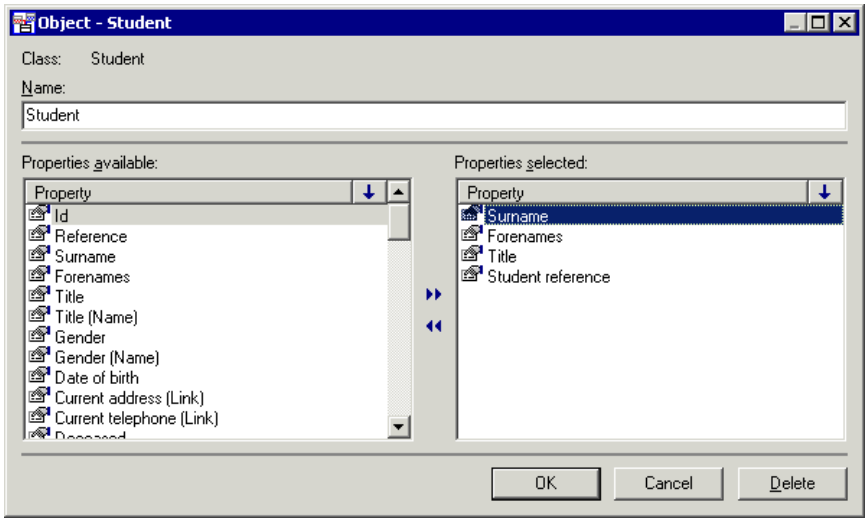


Figure 3-3 **Object** Form

Class: Displays the class of which the selected object is an instance. This is a read-only field.

Name: Displays the name of the current object. This initially defaults to the class name. It can be altered as required, particularly to distinguish between two instances of the same class in a report.

Properties available: This list displays the properties that can be selected for the current object.

Properties selected: This list displays the properties that have been selected for the current object.

Property lists: These lists can be sorted by property name by clicking on the property column. It can be sorted in the order defined by the class definition by clicking on the **Arrow** column. Clicking on either of these columns a second time, reverses the order.

Add/Remove: The right/left arrow buttons can be used to select/remove highlighted properties.

Note: *Valid Value Names and Codes can be selected from this form. To select Valid Value References refer to the Define a Property section on page 3-10.*

Delete: Click on this button to delete the object from the report.

Warning: *The **Delete** button will remove the current class and all its properties from the report.*

Note: *Changing the name of an object in a report has no effect on the class name.*

Object Appearance

Instances of classes selected for a report are represented as objects on the **Report Diagram** form. The appearance of the object depends on the currently selected class/link, as follows:

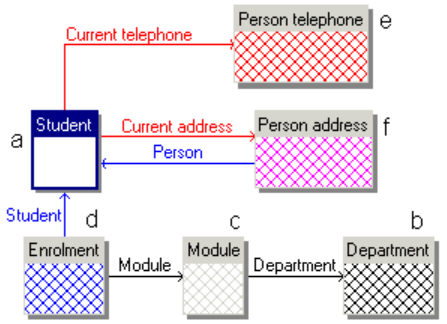


Figure 3-4 Object Appearance in Report Diagram

a. **White** – Object selected

b. **Black hatched** – Cannot be linked to by selected object.

c. **Grey hatched** – Can be linked to by selected object.

d. **Blue hatched** – Class links to the selected object.

e. **Red hatched** – Class links from selected object.

f. **Purple hatched** – Class links to and from selected object.

For example, in Figure 3-4 objects appearance represents the following:

- Student is selected.
- Enrolment, Person telephone, Person address and Department can be linked to Student.
- Module cannot be linked to Student.
- Enrolment is linked to Student.
- Person Telephone is linked from Student.
- Person Address is linked from and to Student.

Define Links

Once classes are selected for the report, they must be linked together to ensure that the report produces coherent data.

A particular collection of classes can be linked together in a number of ways. A set of links defines the selection criteria for the report and limits the data returned.

For example, Student and Person Address can be linked to return just one address per student, or to return all the student's addresses.

More information:

- *Refer to Links in Report Components section on page 1-9.*
- *Links are a particular kind of "where" element, for more information regarding "where" elements in general refer to page 4-7.*

Define links as follows:

- Add Links (see below).
- Remove Links (see page 3-8).
- Edit Links (see page 3-8).

Add Links

To add a link, perform the following:

1. Select the **Report Diagram** form.
2. Ensure that you have added at least two objects to the report (see page 3-2).
3. Click on the source object (the object to be linked from).
   - Objects it can link to have a white or grey-hatched body. For example, Student can link to Enrolment (Figure 3-5).
   - Objects it cannot link to have a black-hatched body. For example, Student cannot link to Module (Figure 3-5).

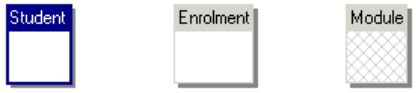


Figure 3-5 Classes Highlighted - Ready for Linking

Note: *Objects can link to each other if one of them has an appropriate link property for the other.*

4. Create a link between two compatible objects by clicking and dragging the mouse from the source object's body to the destination object's body. For example, Student links to Enrolment using the Student Tutor Group linking property:

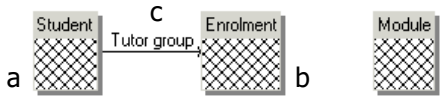


Figure 3-6 Class Link Created

Links are shown as an arrow between objects. The arrow identifies the link as follows:

a. The arrow points from the source object, which contains the linking property.

b. The arrow points towards the destination object.

c. The linking property is displayed close to each link.

Note: *UNIT-e Report Generator will attempt to link the objects in the direction specified. If this is not possible, it will attempt to link the objects in the opposite direction.*

More information: *Links can also be specified via the **Where** tab, see page 4-7.*

Remove Links

If a link has been added by mistake or is no longer required, it can be removed from the report diagram. To remove a link either:

- Click on the link to select it then press the **Delete** key.
- Right-click on the link and select **Remove** from the pop-up menu.
- Delete the link in the **Where** tab on the **Report** form (see page 4-7).

Edit Links

Once a link has been established it can be edited. The following attributes can be changed:

Attribute	Description
Join Property	The property in the source object that is used to link.
Join Object	The object being linked to.
Join type	The way the link is applied when the report is run.
Link direction	The direction of the link.

Table 3-1 Link Attributes

To edit links perform the following:

1. Select the **Report Diagram** form.
2. Open the **Link** form for the link to be altered (see below).
3. Alternatively the following changes can be made via keyboard shortcuts:
   - Cycle through the available join properties by pressing **Ctrl-L**.
   - Cycle through the available join types by pressing **Ctrl-J**.
   - Reverse the direction of the link by pressing **Ctrl-R**.
4. Click on the **OK** button when finished.

The Link Form

The **Link** form provides control of the selected link. To open this form either:

- Double-click on the link.
- Select the link with the **Cursor Up/Down** keys then press the **Return** key.
- Right-click on the link and select **Link** from the pop-up menu.

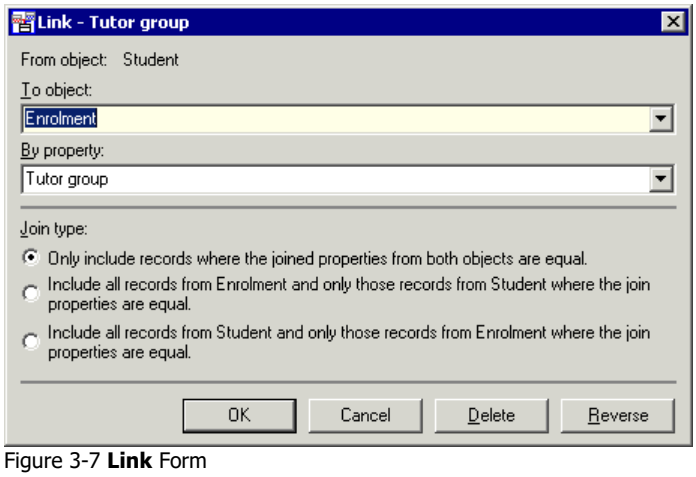


Figure 3-7 **Link** Form

From object: Displays the currently selected source object, which is being linked from. This is a read-only field.

To object: Provides a list of objects to which the selected **From object** can link. Alter this field to change the destination object.

By property: Provides a list of properties that can be used to create the specified link. Alter this field to change the Join property.

Join type: Select the appropriate Join type from the three available options. Each type has a description that explains its effect on the report (see Link section on page 1-5).

Delete: Click on this button to delete the current link, and close the **Link** form.

Reverse: Click on this button to reverse the link. A dialogue opens if it is not possible to reverse the link.

Link Appearance

Any changes made to links will appear on the **Report Diagram** form. The appearance of the links in this form relates to the currently selected class/link as follows:

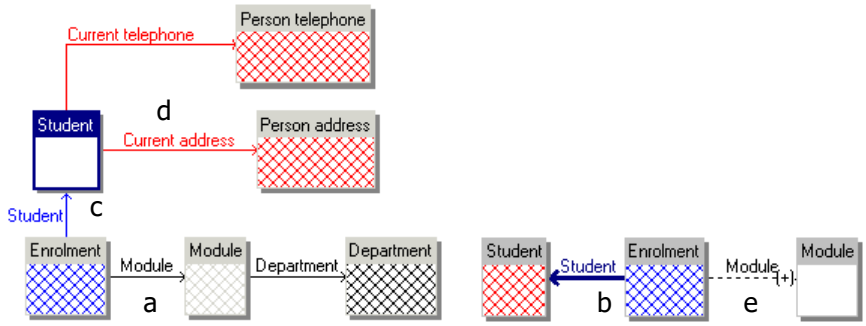


Figure 3-8 Link Examples

a. Black when de-selected.

b. **Bold and Blue** when selected.

c. Blue when it links to the selected class (Student).

d. Red when it links from the selected class (Student).

e. Dashed with a (+) when it is an outer join.

More information:

- *Regarding links, refer to the Link section on page 1-9.*
- *Regarding outer joins on page 1-9.*

Select Properties

Properties define the basic content of the report output. Properties are selected from the objects in a report. Each selected property will be returned in the report. This defines the columns of the results table.

More information: *Properties can also be added, removed and edited via the **Report** form, refer to the "Select" Element section on page 4-3.*

Select properties as follows:

- Add Properties (see below).
- Remove Properties (see page 3-10).
- Edit Properties (see page 3-11).

Add Properties

To add properties to a report perform the following:

1. Select the **Report Diagram** form.
2. Ensure that you have added the required objects to the report (see page 3-3).
3. Open the **Object** form (see page 3-5).
4. To add properties, perform the following:
   i. Highlight property in the **Properties available** list.
   ii. Click on the **Right Arrow** button to add the property to the **Properties selected** list.

   Note: *Only Valid Value Names and Codes can be selected from this form. To select Valid Value References refer to the Define a Property section on page 5-3.*
5. Click on the **OK** button to close the form.

Remove Properties

Properties that are no longer required, or have been added by mistake can be removed from the report.

Warning: *Removing properties that are used in functions or parameters may stop the report from working. A safer way to remove properties is via the **Report** form; refer to the "Select" Element section on page 4-3.*

1. Select the **Report Diagram** form.
2. Open the **Object** form (see page 3-5).
3. To remove properties perform the following:
   i. Highlight property in the **Properties selected** list.
   ii. Click on the **Left Arrow** button to add the property to the **Properties available** list.
4. Click on the **OK** button to close the form.

Edit Properties

Once added to a report, properties can be altered in the following ways:

- Alter Order (see page 4-15).
- Alter Heading (see page 4-5).
- Property Expression (see page 5-3).

More information: *This is achieved via the following forms:*

- ***Report*** *form (see page 1-16).*
- ***Expression*** *form (see page 1-17).*

Adjust Layout

The position of objects on the report diagram can be altered. The links are automatically redrawn depending on the position of the objects.

Although the position of the objects has no affect on the report's performance, it is worth arranging them so the structure of the report is clear.

To move an object:

1. Select the **Report Diagram** form.
2. To move objects, either:
   i. Click and drag the objects to the desired position.
   ii. Highlight an object and press the **Ctrl-Cursor left/right/up/down** to move the object.



Note: *Other objects can be selected by pressing the Cursor left/right/up/down keys.*

Chapter 4: Define Elements

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Introduction

Having created a basic structure, you can now develop the report to provide precisely the required output. UNIT-e Report Generator enables you to do this via the **Report** form (see page 1-16) and **Expression** form (see page 1-17).

To develop a report, perform the following:

1. Define Columns (see page 4-3).
2. Define Rows (see page 4-7).

Define Columns

The properties selected in Chapter 3 define the basic columns of the report output. These columns can be developed to provide more complex output by creating expressions consisting of functions, properties and values.

To develop your report columns, perform the following:

1. "Select" Elements (see below).
2. Headings (see page 4-5).

"Select" Elements

"Select" elements define the columns of the report. This definition is achieved by an expression consisting of properties, functions and values.

"Select" elements are controlled via the **Select** tab on the **Report** form (see page 1-16). The expression for each element is controlled by the **Expression** form (see page 1-17).

You can perform the following operations to "select" elements:

- Edit Element (see page 4-13)
- Add Element (see page 4-13)
- Copy Element (see page 4-14)
- Delete Element (see page 4-14)
- Order Elements (see page 4-15)

Select Tab on the Report Form

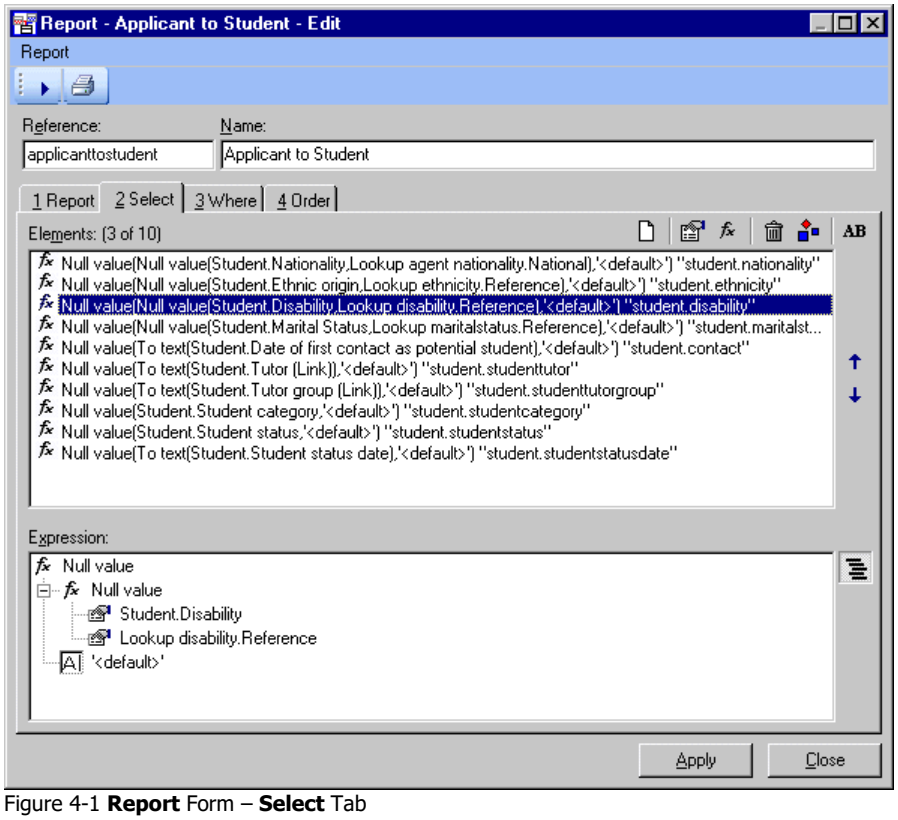


Figure 4-1 **Report** Form – **Select** Tab

More information: *For the **Where** and **Order** tabs, refer to pages 4-8 and 4-11 respectively.*

Test: Clicking on this button will open the **Test Report** form to test the report (see Report Output chapter).

Print: Print the report definition.

Reference: Specify a unique reference for the report.

Note: *The reference is the unique identifier for the report.*

Tip: *It is a good idea to have meaningful report references, as this will make it easier to identify the report. A report needs a reference before it can be saved.*

Name: Specify a descriptive name for the report.

Elements: Each item represents a column in the report.

- The text for each item describes the properties, functions and values that define it, followed by the column name (see "Select" Element section on page 4-3).
- The order of the list determines the order the columns will appear in the report output (see Order section on page 4-15).

New: Clicking on this button creates a new element. The **Expression** form opens to enable you to define it (see Add Element on page 4-13).

Edit: Clicking on this button opens the **Expression** form for the currently highlighted element. Any associated functions will automatically be selected ready for editing (see page 5-3).

Function: Clicking on this button also opens the **Expression** form for the currently highlighted element. This enables you to create an additional function that applies to the existing element, including any previously defined functions for that element (see page 5-7).

Delete: Clicking on this button deletes the currently highlighted element. Before deleting, a confirmation dialogue is displayed (see page 4-14).

Dismantle: Clicking on this button dismantles a highlighted element to its constituent parameters. Choose to retain all parameters whether they are values or properties or to retain just property parameters (see page 5-16).

Headings: Clicking on this button opens the **Heading** form, which is used to specify the default heading type and apply headings to the existing columns (see page 4-5).

Up/Down: Clicking on either of these buttons moves the currently highlighted column up/down one position (see page 4-15).

Expression: This displays the properties, functions and values, followed by the column name in quotes, for the currently highlighted element in the **Elements** list.

Show Expression Tree: Clicking on this button enables the tree-view function of the Expression box. This displays the currently highlighted function in a tree-view format, grouped by functions. Any part of the expression can be directly edited by double-clicking a corresponding part of the tree-view.

Apply: Clicking on this button will apply the changes to the report.

Headings

Where set, headings appear in quotes at the end of each column description in the **Elements** list on the **Select** tab of the **Report** form. For example, the first column in the report in Figure 4-1 will be labelled "Student nationality". Heading types are defined on the **Headings** form (Figure 4-2).

Warning: *If the report is to be exported to an Access Database table, it must not contain two identical column headings, or headings with spaces at the beginning or end.*

Headings Form

The **Headings** form can be opened by clicking on the **Headings** AB button.

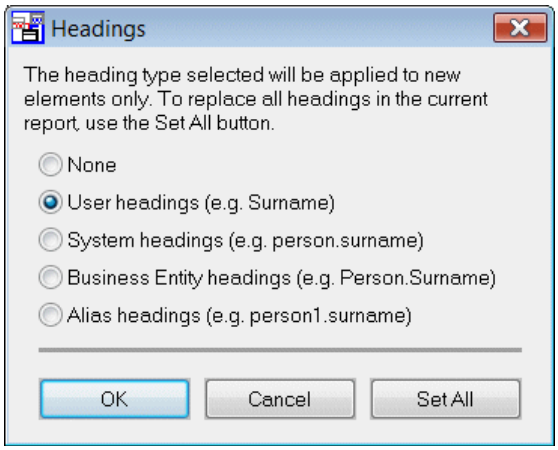


Figure 4-2 **Headings** Form

None: No headings. The report generates column headings ("c" followed by the column number) for columns with no headings specified.

User headings: The report uses user-defined field headings. This enables you to make the headings more descriptive in your report.

System headings: The report uses the class and property headings from the data dictionary.

Business entity headings: The report uses .NET system headings, as seen by .NET applications. This is particularly useful when you're creating reports for applications such as UNIT-e XML Exporter.

Alias headings: If you've used the same class several times in a report, this option enables you to access a specific field. This is particularly useful for IB and warehouses.

OK: Click on this button to apply the selected heading type to new elements only.

Set All: Click on this button to replace all headings in the current report with the selected heading type.

Using Heading Types

The different types of headings can be applied to columns as follows:

- Defaulted (see below)
- Individually (see page 4-6)
- All together (see page 4-6)

Defaulted

When a property is added to a report it is given a default heading. This defaulting can be defined as follows:

1. Open the **Report** form (see page 1-16).
2. Select the **Select** tab (see page 4-3).
3. Click on the **Headings** button to open the **Headings** form. The current defaulting option is selected.

4. Select the required heading defaulting option.
5. Click on the **OK** button.
6. Any new properties are now added with the specified style of heading.

Individually

After columns have been added to a report, the defaulted headings can be individually altered as follows:

1. Open the **Report** form (see page 1-16).
2. Select the **Select** tab (see page 4-3).
3. To open the **Expression** form, either:
   - Double-click on the highlighted element.
   - Press **Return** with the element highlighted.
   - Click on the **Edit** button with the element highlighted.
4. Select the **Property** tab on the **Expression** form.
5. Alter the **Heading** field (Figure 1-13).
6. Click on the **OK** button, or press **Return**.

The altered field heading appears in the **Elements** list after the column description.

All Together

After all the columns have been added to a report, they can be set to User or System headings as follows:

1. Open the **Report** form (see page 1-16).
2. Select the **Select** tab (see page 4-3).
3. Click on the **Headings** button to open the **Headings** form.
4. Select the type of headings from the **Headings** frame.
5. Click on the **Set All** button.
6. Specify whether existing headings should be replaced.
7. The altered headings appear in the **Elements** list after the column description.

Define Rows

The rows of a report are defined by their content and order.

1. Links (see below).
2. "Where" Elements (see page 4-7).
3. Distinct Rows (see page 4-9).
4. "Order" Elements (see page 4-10).

Links

Links define the relationship between the records included in the report.

The links specified in the Write Report chapter on page 3-7 restrict the records that will be included in the report. Effectively they are the first step in defining which records are returned in the report.

To view and edit links perform the following:

1. Open the **Report** form (see page 1-16).
2. Select the **Where** tab (see page 4-8).
3. Select the **Show Links** check box to include the "link" elements in the **Elements** frame.



Note: *Links are "where" elements. They are rules between two classes, which state that they must have a particular matching property.*

4. Edit the "link" "where" element as required (see page 5-5).

"Where" Element

"Where" elements define which records are included in the report. This is achieved either by an expression consisting of properties, functions and values; or by the use of sub-queries (sub-reports).



More information: *For details on sub-queries refer to "Chapter 6: Sub-queries"on page 6-1.*

"Where" elements are controlled via the **Where** tab on the **Report** form (see page 1-16). The expression for each element is controlled by the **Expression** form (see page 1-17).

You can create as many "where" Elements for a report as required.

For example, to restrict the report to only contain male students, the following "where" element could be created: Student Gender Equals Male. This element consists of the following components:

- Student Gender (property).
- Equals (function).
- M (value).

You can perform the following operations to "where" elements:

- Add Element (see page 4-13).
- Edit Element (see page 4-13).
- Copy Element (see page 4-14).
- Delete Element (see page 4-14).
- Order Elements (see page 4-15).

Notes:

- *The order of "where" elements determines the order in which they are applied. As "where" elements are often the most complex part of a report, their order can affect the overall speed of a report.*
- *Selecting the Show links check box enables you to order the links in relation to other "where" elements.*

Where Tab on the Report Form

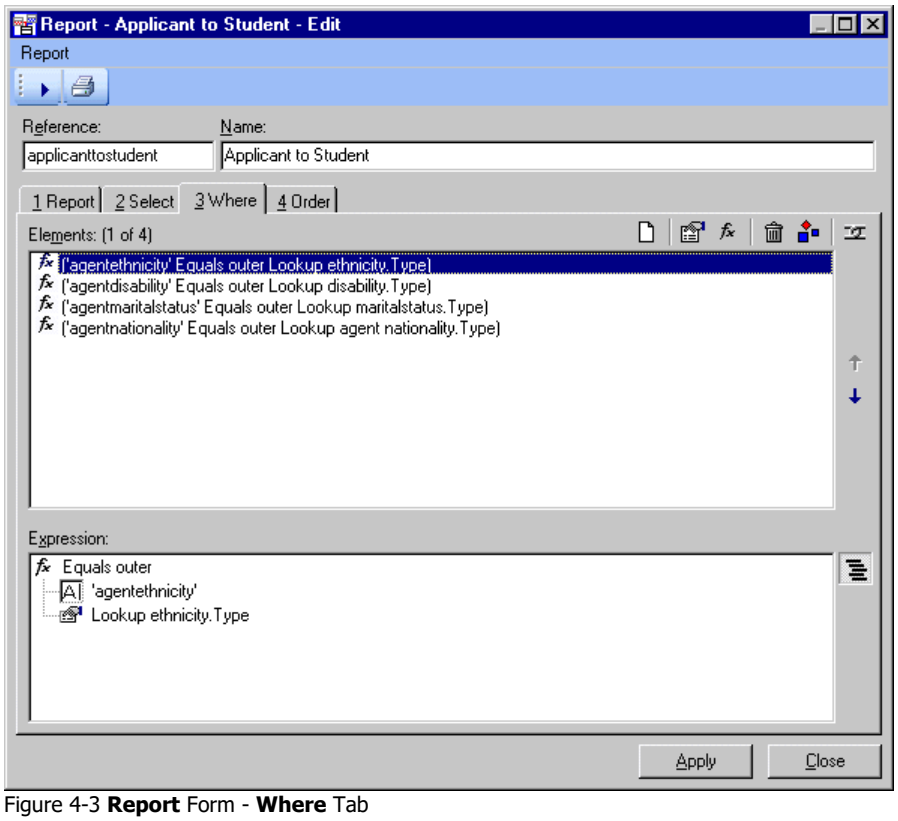


Figure 4-3 **Report** Form - **Where** Tab

More information: *For the **Select** and **Order** tabs, refer to pages 4-3 and 4-11 respectively.*

Test: Clicking on this button will open the **Test Report** form where you can test the report (see page 7-3).

Print: Print the report definition.

Reference: Specify a unique reference for the report.

Note: *The reference is the unique identifier for the report.*

Tip: *It is a good idea to have meaningful report references, as this will make it easier to identify the report. A report needs a reference before it can be saved.*

Name: Specify a descriptive name for the report.

Elements: Each item represents a column in the report.

- The text for each item describes the properties, functions and values that define it, followed by the column name (see "Select" Element section on page 4-3).
- The order of the list determines the order the columns will appear in the report output (see Order section on page 4-15).

New: Clicking on this button creates a new element. The **Expression** form opens to enable you to define the Element (see Add Element section on page 4-13).

Edit: Clicking on this button opens the **Expression** form for the currently highlighted element. Any associated functions will automatically be selected ready for editing (see page 5-3).

Function: Clicking on this button also opens the **Expression** form for the currently highlighted element. This enables you to create an additional function that applies to the existing element, including any previously defined functions for that element (see page 5-7).

Delete: Clicking on this button deletes the currently highlighted element. Before deleting, a confirmation dialogue is displayed (see page 4-14).

Dismantle: Clicking on this button dismantles a highlighted element to its constituent parameters. Choose to retain all parameters whether they are values or properties or to retain just property parameters (see page 5-16).

Show Links: The link relationships depicted by the arrows on the report diagram are essentially "where" elements. Checking the **Show Links** check box includes these links "where" elements in the **Elements** list (see page 4-13).

Up/Down: Clicking on either of these buttons moves the currently highlighted column up/down one position (see page 4-15).

Expression: This displays the properties, functions and values, followed by the column name in quotes, for the currently highlighted element in the **Elements** list.

Show Expression Tree: Clicking on this button enables the tree-view function of the Expression box. This displays the currently highlighted function in a tree-view format, grouped by functions. Any part of the expression can be directly edited by double-clicking a corresponding part of the tree-view.

Apply: Clicking on this button will apply the changes to the report.

Distinct Rows

Distinct rows enables you to ensure no identical rows are duplicated in the report.

Note: *If an aggregate function has been applied to a column in the **Select** tab, the rows are already distinct, therefore the **Distinct rows** check box has no effect.*

Checking this box ensures that each row included in the report is distinct, eliminating any duplicates from the report. Only the first row of any identical rows is included. For example, the output in Table 4-1 would be reduced to the output in Table 4-2:

Student Surname	Student Forename	Student Title
Richard	Robertson	Mr
Richard	Robertson	Mr
Richard	Robertson	Mr
Richard	Robertson	Mr
Timothy	Ansell	Mr
Claire	Upchurch	Miss
Claire	Upchurch	Miss

Table 4-1 Report Without Distinct Rows Checked

Student Surname	Student Forename	Student Title
Richard	Robertson	Mr
Timothy	Ansell	Mr
Claire	Upchurch	Miss

Table 4-2 Report with Distinct Rows Checked

To set distinct rows perform the following:

1. Open the **Report** form (see page 1-16).
2. Select the **Order** tab (see page 4-11).
3. Select the **Distinct rows** check box.

Warning: *If you apply distinct rows, any elements selected in the **Order** tab must also exist in the **Select** tab.*

"Order" Element

"Order" elements define the order records are returned in the report. Each "order" element is defined by an expression consisting of properties, functions and values. The value generated by these expressions is used to order the report.

"Order" elements are controlled via the **Select** tab on the **Report** form (see page 1-16). The expression for each element is controlled by the **Expression** form (see page 1-17).

For example, to order the rows by Student Surname and Student Forenames, apply the following two "order" elements:

- Student Surname
- Student Forenames

More complex "order" elements provide more powerful ordering. For example, to order the report by Student Age, apply the following "order" element:

- To Age (function) on Student Date of Birth (property)

You can create as many "order" elements for a report as required. They are applied from the top down.

Each "order" element is applied in ascending or descending order, specified by the **Ascending / Descending** option on the **Expression** form.

You can perform the following operations to "where" elements:

- Edit Element (see page 4-13).
- Add Element (see page 4-13).
- Copy Element (see page 4-14).
- Delete Element (see page 4-14).
- Order Elements (see page 4-15).

Note: *The order of "order" elements normally determines the order in which they are applied. Refer to the Optimise Report section on page 7-9.*

Order Tab on the Report Form

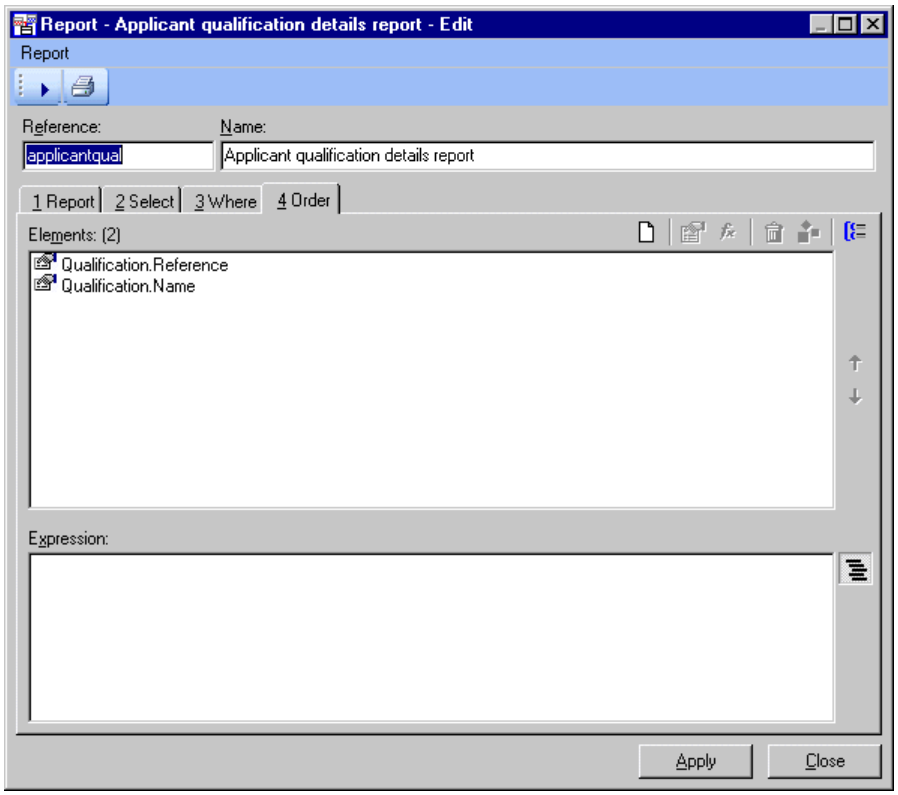


Figure 4-4 **Report** Form - **Order** Tab

More information: *For the **Select** and **Where** tabs, refer to pages 4-3 and 4-8 respectively.*

Test: Clicking on this button will open the **Test Report** form where you can test the report (see page 7-3).

Print: Print the report definition.

Reference: Specify a unique reference for the report.

Note: *The reference is the unique identifier for the report.*

Tip: *It is a good idea to have meaningful report references, as this will make it easier to identify the report. A report needs a reference before it can be saved.*

Name: Specify a descriptive name for the report.

Elements: Each item represents a column in the report.

- The text for each item describes the properties, functions and values that define it, followed by the column name (see "Select" Element section on page 4-3).
- The order of the list determines the order the columns will appear in the report output (see Order section on page 4-15).

New: Clicking on this button creates a new element. The **Expression** form opens to enable you to define it (see Add Element section on page 4-13).

Edit: Clicking on this button opens the **Expression** form for the currently highlighted element. Any associated functions will automatically be selected ready for editing (see page 5-3).

Function: Clicking on this button also opens the **Expression** form for the currently highlighted element. This enables you to create an additional function that applies to the existing element, including any previously defined functions for that element (see page 5-7).

Delete: Clicking on this button deletes the currently highlighted element. Before deleting, a confirmation dialogue is displayed (see page 4-14).

Dismantle: Clicking on this button dismantles a highlighted element to its constituent parameters. Choose to retain all parameters whether they are values or properties or to retain just property parameters (see page 5-16).

Distinct Rows: Selecting this check box restricts the rows in the report so that only one instance of identical rows is returned. Duplicates are suppressed (see Distinct Rows section on page 4-12).

Up/Down: Clicking on either of these buttons moves the currently highlighted column up/down one position (see page 4-15).

Expression: This displays the properties, functions and values, followed by the column name in quotes, for the currently highlighted element in the **Elements** list.

Show Expression Tree: Clicking on this button enables the tree-view function of the Expression box. This displays the currently highlighted function in a tree-view format, grouped by functions. Any part of the expression can be directly edited by double-clicking a corresponding part of the tree-view.

Apply: Clicking on this button will apply the changes to the report.

Elements

Elements represent the components of a report. The following elements can be created:

- Select – Defining the contents of report columns.
- Where – Restricting the records included in the report.
- Order – Defining the order of report columns.

The content of each of these elements is defined by an expression.

Elements are controlled via the **Report** form (see page 1-16). Expressions are controlled via the **Expressions** form (see page 1-17).

The following actions can be performed to elements:

- Add Element (see below).
- Edit Element (see below).
- Copy Element (see page 4-14).
- Delete Element (see page 4-14).
- Order Elements (see page 4-15).

Add Element

To create a new element, perform the following:

1. Open the **Report** form (see page 1-16).
2. Select the tab requiring the new element (see page 4-3).
3. Click on the **New** button to open the **Expression** form (see page 1-17).
4. Complete the **Expression** form to specify an expression for the element.

> **More information:** *Expressions are discussed in full in 'Chapter 5: Define Expressions', page 5-1.*

5. Click on the **OK** button.
6. The new column element appears in the list.

Edit Element

To edit an existing element, perform the following:

1. Open the **Report** form (see page 1-16).
2. Select the tab with the element to be edited (see page 4-3).
3. Highlight the element to be edited.
4. Open the **Expression** form to edit the element's expression, by either:
   i. Double-click the element to be edited.
   ii. Click on the **Edit Element** button.
5. Complete the **Expression** form to edit an expression for the element (see page 1-17).

> **More information:** *Expressions are discussed in full in 'Chapter 5: Define Expressions', page 5-1.*

6. Click on the **OK** button.
7. The altered expression appears in the list.

Copy Element

To copy an existing element, perform the following:

1. Open the **Report** form (see page 1-16).
2. Select the tab where the element is required.
3. Click on the **New** button to open the **Expression** form.
4. Select the **Element** tab (see page 5-13).
5. Select the type of element to be copied from the list. The related elements are displayed in the list-box.
6. Highlight the element to be copied by clicking on it.
7. Click on the **OK** button to copy it and close the form.
8. The copied element appears in the **Elements** list.
9. Edit the copied element as required.

Alternatively, elements can be copied using the copy and paste functionality, as follows:

1. Open the **Report** form (see page 1-16).
2. Select the tab where the element is to be copied.
3. To copy the element, either:
   i. Right-click the element to be copied and select **Copy** from the pop-up menu.
   ii. Highlight the element by clicking on it, then press the **Ctrl-C** keys.
4. Select the tab to paste the element.
5. To paste the copied element, either:
   i. Right-click the element to be copied and select **Paste** from the pop-up menu.
   ii. Highlight the element by clicking on it, then press the **Ctrl-V** keys.
6. The copied element appears in the **Elements** list.
7. Edit the copied element as required.

Note: *This functionality can also be used to copy elements from one report to another.*

Remove Element

To delete an element, perform the following:

1. Open the **Report** form (see page 1-16).
2. Select the tab with the element to be deleted.
3. Highlight the element in the **Elements** list by clicking on it.
4. Click on the **Delete** button, or press the **Delete** key to delete the highlighted element.
5. You are prompted to confirm the deletion.
6. Click on the **Yes** button to confirm.
7. The element is then removed from the report.

Order Elements

The order of the elements in the **Elements** list can affect the way that the report behaves as follows:

- On the **Select** tab the order of the elements defines the order of the columns in the report.
- On the **Where** tab the order of the elements defines the order that the elements are applied to the report, starting at the bottom of the list.
- On the **Order** tab the order of the elements defines how they are applied to order the report, starting at the bottom of the list.

To define the order of elements in the list, perform the following:

1. Open the **Report** form (see page 1-16).
2. Select the tab that requires ordering.
3. Highlight an element by clicking on it.
4. Click on the **Up/Down**  buttons to move the highlighted element up/down the list.

Chapter 5: Define Expressions

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Introduction

UNIT-e Report Generator enables you to create expressions to return data in a specific format. Expressions are managed in the following ways:

- Define Expression (see page 5-3)
- Dismantle Expression (see page 5-16)
- Edit Expression (see page 5-17)
- Save Expression (see page 5-18)
- Edit Saved Expression (see page 5-21)
- Copy Saved Expression (see page 5-22)
- Migrate scalar functions tool (see page 5-23)

Define Expression

UNIT-e Report Generator enables you to define an expression for an element via the **Expression** form. This form will open when you are defining "select", "where" and "order" elements.

Expressions can be created by performing one of the following:

- Define a Property (see below).
- Define Function (see page 5-5).
- Define Parameters (see page 5-7)
- Select an Existing Element (see page 5-12).
- Select a Saved or Imported Expression (see page 5-13).
- Define a Value (see page 5-15).

Define a Property

An expression can define a single property. This expression returns the data from that property, unchanged, as a column in the report.

A property expression for an element can be defined via the **Report Diagram** or **Expression** form. The **Expression** form enables you to select Valid Value References and define the Element heading.

Define a property expression via the **Expression** form as follows:

1. Add a new element by clicking on the **New** button on the **Report** form (see page 4-13).
2. The **Expression** form opens.
3. Select the **Property** tab (see page 5-4).
4. Select a class from the pick-list.

   Note: *Only classes that have been added to the report are normally available in this list. However, when creating a saved Expression all the classes you can access are available.*

5. Select a property from the list.
6. If the expression is for a "select" element, complete the **Heading** field with a meaningful heading.
7. Click on the **OK** button.
8. The element appears in the element list.

Property Tab on the Expression Form

This tab is used to select properties. Once the **Expression** form is open, a subsequent **Expression** form will open if you click on a **Function** button of the **Expression** or **Report** form.

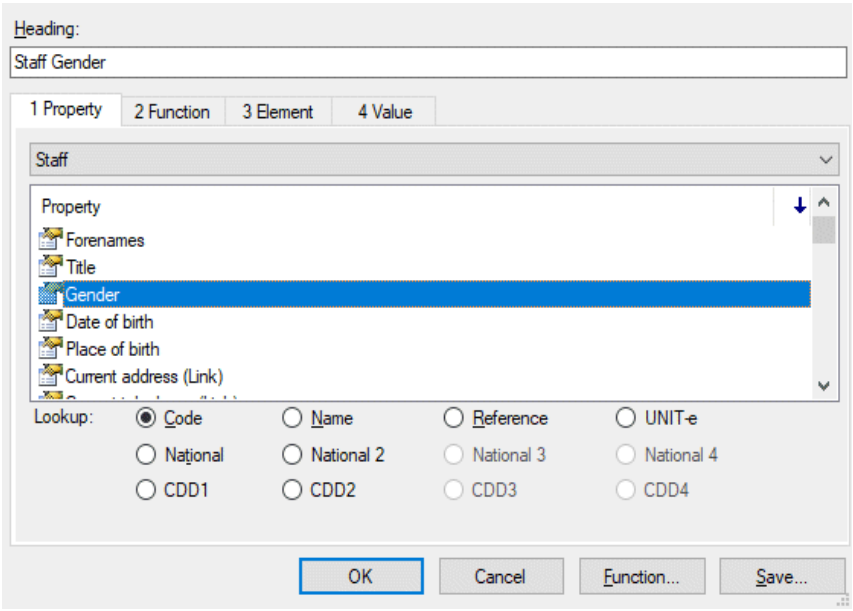


Figure 5-1 **Expression** Form - **Property** Tab

Heading: Specify a name for this column. This is only available when defining "select" elements.

Property: This pick-list is populated with the classes in the report. Properties for the selected class are available in the list below. Select "(all)" to make all class properties available.

Note: *The "(all)" option is not available when you are working with saved expressions.*

Property List: This list can be sorted by property name by clicking on the property column. It can be sorted in the order defined by the class definition by clicking on the **Arrow** column. Clicking on either of these columns a second time, reverses the order.

Lookup: These radio buttons are only available when a Lookup property is selected in the **Property** list. The radio buttons provide access to Lookup Code, Name and Reference, National code and CDD code values. These values are used in the system as follows:

- **Code** – This value is not normally seen by the user. It is a unique reference string for each Lookup used in reports etc.
- **Name** – This is the value displayed in the Lookup pick-lists.
- **Reference** – This is an additional value used to record other information relating to a Lookup, e.g. the VAT valid value set records the actual VAT rate figure in this field.

Notes:

- *When adding properties via the **Object** form (see page 3-5), only the Code and Name are available for Valid Value fields.*
- *Once a Valid Value property reference has been selected in the **Expression** form, it appears in the **Object** form and elements lists with "(Reference)" after the property name.*

- **UNIT-e** – Stores a standard set of supplied codes that the UNIT-e software is then able to use in core reports, etc when necessary.
- **National** – Records the National code values for the Lookup. This field is populated by the installation scripts, with the same value that is imported into the **Code** field.
- **National 2** to **4** and **CDD 1** to **4 –** Used if and when a new set of codes are required for the Lookup list for a return, for example if a funding body implements a new coding standard for a particular field. Each

time an entire set of codes is changed, the new codes are added to the next available National field (or CDD field for CDD codes). These values can then be used in reports where the new codes are required.

Note: *By default these fields are disabled, to prevent them being used for alternative purposes before they are required by the mapping process. As and when they are required, a new Setting is updated to enable the fields for the relevant Lookup values.*

OK: Click on this button to accept any changes and close the form.

Cancel: Click on this button to cancel any selection and close the form.

Function: Click on this button to apply a function to the selected property.

Save: Click on this button to save the current expression (see page 5-18).

Define a Function

Functions alter the values that properties return in the report. They enable you to provide complex information in a report column not possible using just database values.

Functions are one of the most powerful features of UNIT-e Report Generator. Most standard SQL functions are available here in addition to UNIT-e specific ones.

Functions are used in select and "order" elements as follows:

- To return values based on the conditions of the records properties, e.g. the "decode" and "in string" functions.
- To return complex calculations in a single column, e.g. the "add", "divide", "multiply" functions.
- To perform basic grouping and aggregation calculations, e.g. the "sum" and "count" functions.
- To select part of a property to be returned, e.g. the "substring", "truncate" and "round" functions.
- To format the data returned, e.g. the "to date" and "to text" functions.

Functions are used in "where" elements as follows:

- To specify criteria for records to be included in report, e.g. the "equals", "is null" and "is not null" functions.
- To refine records link criteria, e.g. the outer "equals" functions.

Different operations are available when defining functions for different elements:

- "where" functions specify the criteria, by which records are included.
- "Select" or "order" functions produce a value that is either returned in the report or used to order the report.

Note: *Although only a certain type of function is initially available in each form, nested functions can make use of any of the functions, see page 5-8.*

In addition to these two types of functions, select and order functions can also be broken down into different categories. These different function types are as follows:

Type	Purpose	Availability	Example
Calculation	Calculation based on database properties and predefined values	"select", "order"	Add
Combination	A combination of database fields and predefined values	"select", "order"	Concatenate
Format	Formatting database fields	"select", "order"	To Text

Type	Purpose	Availability	Example
Conditional	Output value depends on whether database value match certain criteria	"select", "order"	Decode
Aggregate	Perform a calculation on all matching rows of data	"select", "order"	Sum
Logical	Defines a criteria	"where"	Equals

Table 5-1 Function Types

System Managers: *Most standard SQL functions are available in UNIT-e Report Generator in addition to some UNIT-e specific ones. The ability to apply functions to the report is one of the most powerful features of UNIT-e Report Generator.*

Warning: *If you define elements with aggregate functions in the **Where** or **Order** tabs, these elements must also exist in the **Select** tab.*

To define a function expression, perform the following:

1. Add a new element by clicking on the **New** button on the **Report** form (see page 4-13).
2. The **Expression** form opens.
3. Select the **Function** tab (see page 5-6).
4. Select a **Function** from the pick-list.

   More information: *Refer to the Functions Data sheet available in the **Datasheets** folder.*

5. Complete the parameters by clicking on their related **Edit Parameter** button. A second **Expression** form opens to enable you to specify the parameter.

   More information: *Refer to the Define Function Parameters section on page 5-7. The following parameters can be defined:*

   - *Define **Property** Parameter (see page 5-7).*
   - *Define **Nested Function** Parameter (see page 5-8).*
   - *Select **Existing Element** Parameter (see page 5-10).*
   - *Define **Value** Parameter (see page 5-11).*

6. If the expression is for a "select" element, complete the **Heading** field with a heading.
7. Click on the **OK** button.
8. The element appears in the **Element** list.

Function Tab on the Expression Form

This tab is used to select functions and define their parameters. Once the **Expression** form is open, a subsequent **Expression** form opens if you perform the following:

- Click on an **Edit Parameter** drill button on the **Function** tab of the **Expression** form.
- Click on a **Function** button of the **Expression** or **Report** form.

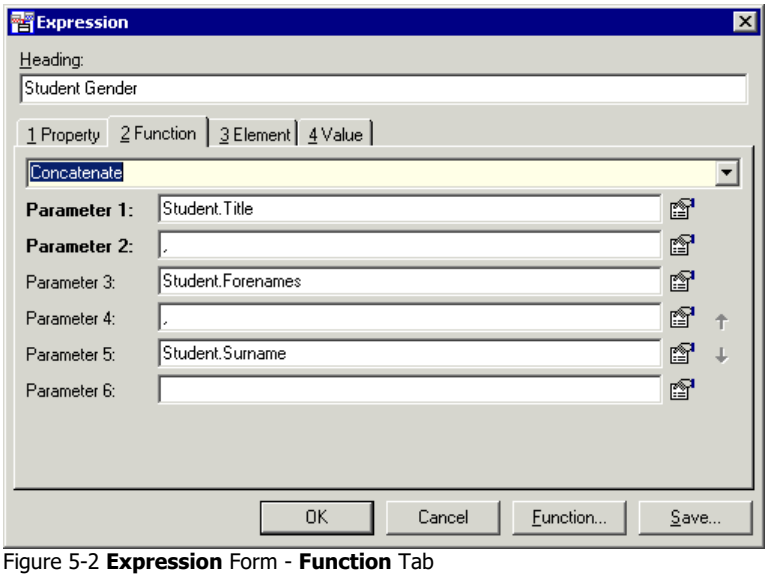


Figure 5-2 **Expression** Form - **Function** Tab

Function: This pick-list is populated with all the available functions. Different functions are available when specifying select/order and "where" elements. Select a function from this list.

Parameters: When you select a function from the **Function** pick-list the required number of parameters is provided.

More information: *Refer to the Functions Data sheet available in the **Datasheets** folder.*

If the function selected can have a variable number of parameters, additional Parameters are provided as required. A bold label indicates mandatory parameters, which must be completed for the function to work.

Parameters can be completed by typing text into the field or by clicking on the associated **Edit Parameters** button.

Up/Down: Click on these buttons to move the currently highlighted parameter up/down the list.

OK: Click on this button to accept any changes and close the form.

Cancel: Click on this button to cancel any selection and close the form.

Function: Click on this button to apply a function to the selected property.

Save: Click on this button to save the current expression (see page 5-18).

Define Function Parameters

Once a function has been selected, its parameters need to be completed. This is achieved via a second **Expression** form, which opens when you click on the **Edit Parameter** button. This form enables you to specify the function parameter as follows:

- Define Property Parameter (see below).
- Define Nested Function Parameter (see page 5-8).
- Select Existing Element Parameter (see page 5-10).
- Define Value Parameter (see page 5-11).

Note: *Functions require parameters of the correct format. For example the "To Age" function requires a Date format parameter value.*

Define Property Parameter

A property can be selected as a function parameter. Its value is used when evaluating the function for each record. Only properties from classes included in the report can be selected.

To complete a parameter with a database property:

1. Having selected a function, click on the **Edit Properties** button for the appropriate parameter to open a second **Expression** form.
2. Select the **Property** tab.
3. Select a **Property** to use as a parameter.
4. Click on the **OK** button. The parameter is displayed in the field on the original **Expression** form.

Figure 5-3 shows the Student Title property selected for **Parameter 1** of the Concatenate function.

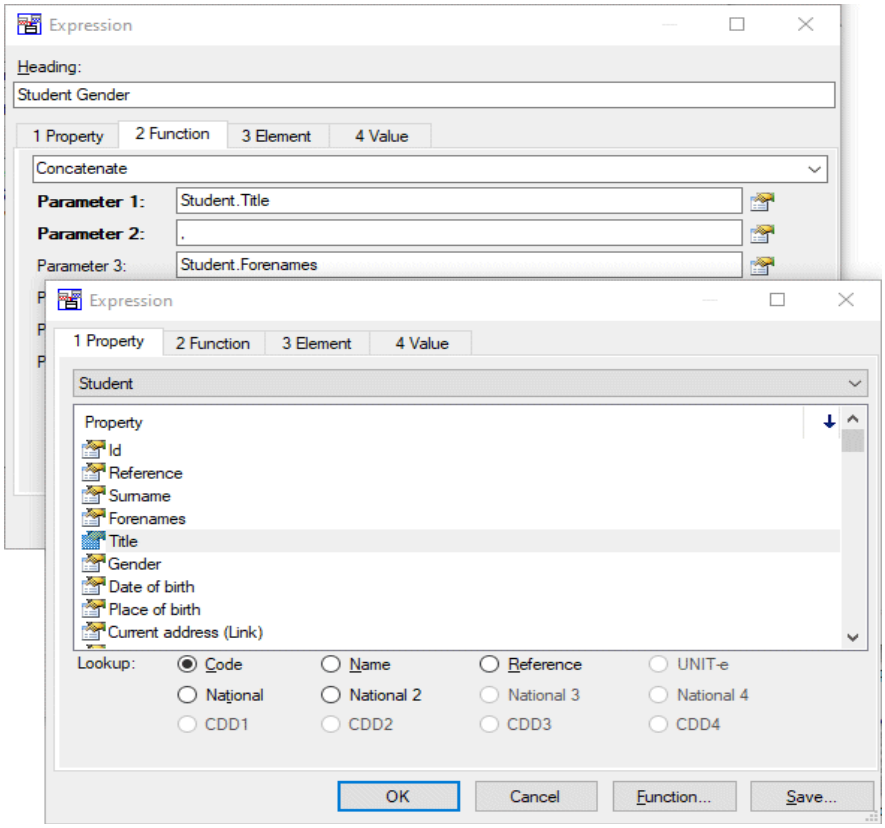


Figure 5-3 Selecting a Property Parameter from a Second **Expression** Form

Define Nested Function Parameter

When completing parameters, you are able to specify a second function as the parameter of the first.

Note: *This second function will then have its own parameters that must be completed.*

This method enables one function to be applied to another and is a powerful way of building complex expressions. This use of functions inside each other is known as nesting because it establishes two functions, one "nested" inside the other. Multiple levels of nesting can be created using this method. Nesting functions in this way enables you to combine different functions to achieve almost any required result.

When the report runs, the inner function is evaluated first, the result is then passed as a parameter to the first function so it can be evaluated.

For example:

Outer Function	Parameter 1	Parameter 2 (Nested Function)	
To Age on Date	Student Date of Birth	To Date	"01-Aug-1999"

Table 5-2 Nested Functions

This function statement calculates the students' age on the 01-Aug-1999.

Function 1 - "To Age on Date" requires two date parameters. Parameter 1 is provided by the Student Date of Birth property. Parameter 2 is provided by the result of function 2.

Function 2 - "To Date" requires one parameter. Parameter 1 is provided by the value "01-Aug-1999".

Note: *Function 2 is required to format the value "01-Aug-1999" as a date for function 1.*

To create a nested function, perform the following:

1. Having selected a function, click on the **Edit Properties** button for the appropriate parameter to open a second **Expression** form.
2. Select the **Function** tab.
3. From the second **Expression** form, select the nested function.

   More information: *Refer to the Functions Data sheet available in the **Datasheets** folder.*

4. Click on the **Edit Parameters** button for the parameters, to open a third **Expression** form.
5. Complete the parameters for this function.
6. Click on the **OK** button to accept the specified parameters, which appears in the parameter of the second function.
7. Click on the **OK** button to accept the specified function and parameters, which appears in the parameter of the first function.
8. Click on the **OK** button to accept the whole nested function, which appears in the elements list.

Figure 5-4 depicts a function that returns the Student Age for full-time students. To Age function is selected as Parameter 3 for the Decode function.

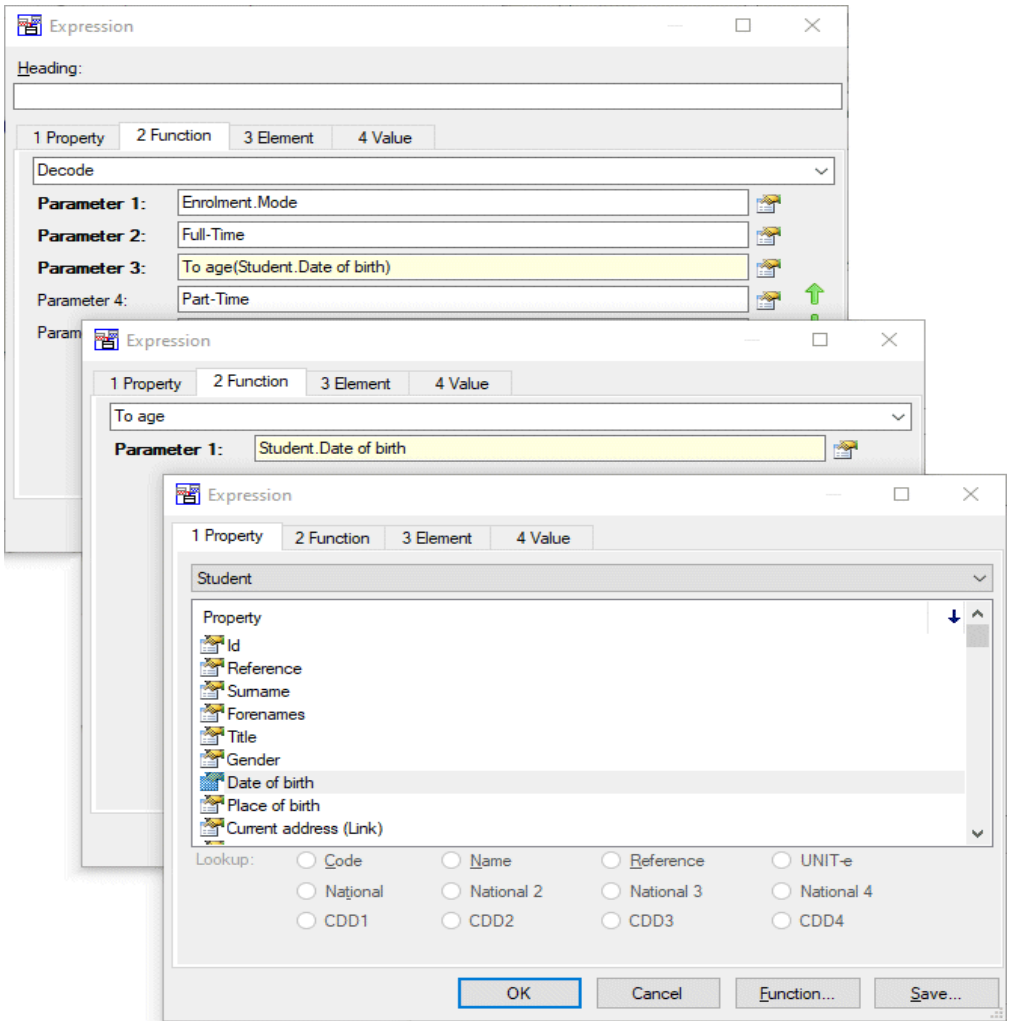


Figure 5-4 Selecting a Function for Parameter 1 from a Third **Expression** Form

Select an Existing Element Parameter

Existing "select", "where" or "order" elements that are defined for other elements of the report, can be selected as parameters for functions. The value returned by the existing element is used as the parameter value for the new function.

For example, a column that returns Student Age could be used as a parameter for the average function to return the average age of students on a module.

Re-using existing elements in this way can save time when writing reports. It enables you to build up nested functions separately then combine the elements as required.

To select an element as the parameter for a new function, perform the following:

1. Having selected a function, click on the **Edit Parameter** button where the element is to be used.
2. A second **Expression** form opens.
3. Select the **Element** tab (see page 5-13).
4. Select the type of element required from the following:
   - Expression – saved expressions in the current database
   - Order – "order" elements used in the current report
   - Select – "select" elements used in the current report
   - Where – "where" elements used in the current report

5. The elements of the selected type are available in the list-box below.
6. Select an element from the list.
7. Click on the **OK** button. The parameter is displayed in the field on the original **Expression** form.

Figure 5-5 shows the existing To Age element being selected as Parameter 1 for the Subtract function.

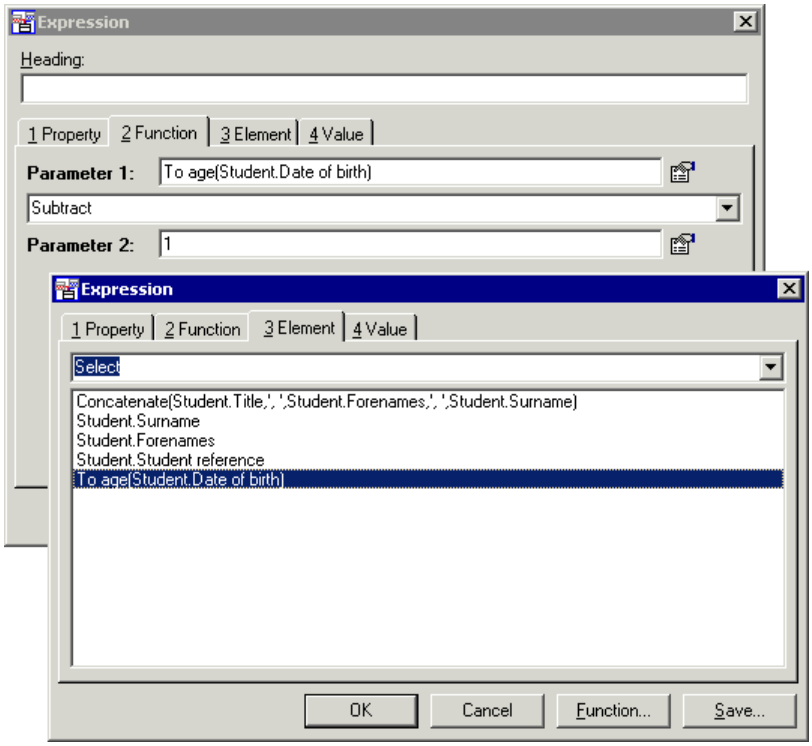


Figure 5-5 Selecting an Existing Element for Parameter 2 from a Second **Expression** Form

Define Value Parameter

A static value can be specified as a parameter. This same value is then used to evaluate the function for all records.

To complete a parameter with a static value:

1. Having selected a function, click on the **Edit Parameter** button where the element is to be used.
2. A second **Expression** form opens.
3. Select the **Value** tab.
4. Enter the required value.

> **Note:** *To ensure that the value is the correct format, you may need to apply a formatting function on the value. See Define Nested Function Parameter on page 5-8.*

5. Click on the **OK** button. The parameter is displayed in the field on the original **Expression** form.

Figure 5-6 shows the value 4 being specified for Parameter 2 of the "Multiply" function.

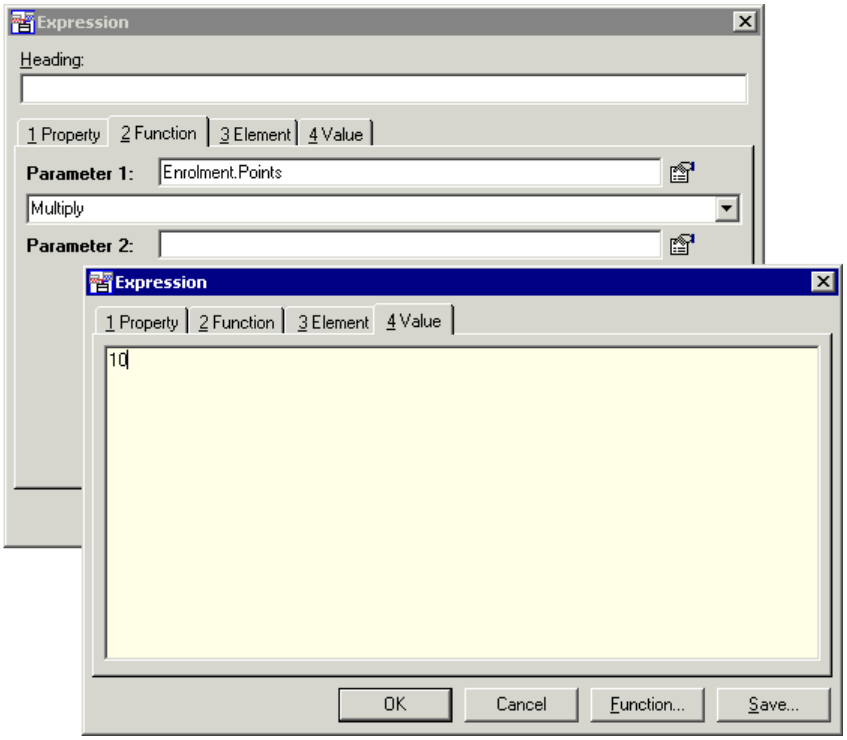


Figure 5-6 Specifying a Value for Parameter 2 from a Second **Expression** Form

Adding Decimal places to a Value

The example below (Figure 5-7) shows how you can add decimal places to a value.

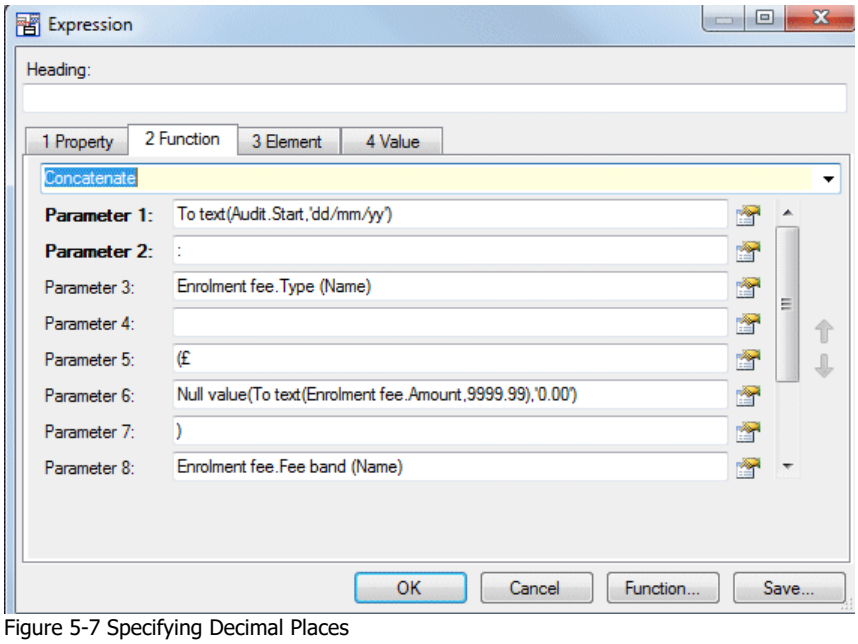


Figure 5-7 Specifying Decimal Places

Select an Existing Element

It is possible to select an existing element to be the basis of a new expression. This new expression can then be altered as required without affecting the original.

Perform the following to select an existing element:

1. Add a new element by clicking on the **New** button on the **Report** form (see page 4-13).
2. The **Expression** form opens.

3. Select the **Element** tab (see page 5-13).
4. Select the type of element for which the element exists. This can be one of the following:
   - Order – "order" elements used in the current report.
   - Select – "select" elements used in the current report.
   - Where – "where" elements used in the current report.
5. Select an Element from the list.

> **Note:** *Once you have created a new element from an existing element, it can be edited without affecting the original element.*

6. If the expression is for a "select" element complete the **Heading** field with a meaningful heading.
7. Click on the **OK** button.
8. The element appears in the element list and can be edited as required.

Element Tab on the Expression Form

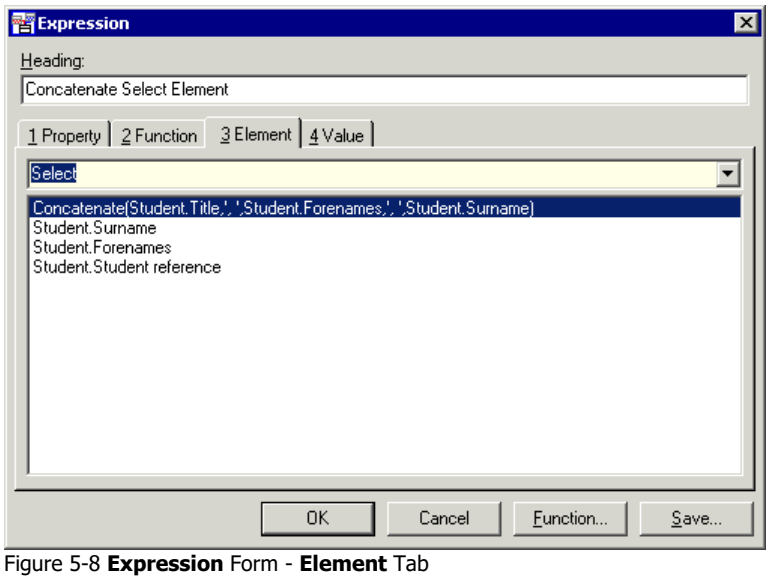


Figure 5-8 **Expression** Form - **Element** Tab

Heading: Specify a name for this column. This is only available when defining "select" elements.

Element Pick-list: Select the type of element required. The appropriate elements are populated in the list-box below.

Element List-box: Select the required element.

OK: Click on this button to accept any changes and close the form.

Cancel: Click on this button to cancel any selection and close the form.

Function: Click on this button to apply a function to the selected property.

Save: Click on this button to save the current expression (see page 5-18).

Select a Saved or Imported Expression

It is possible to select a saved or imported expression for use in your report. This expression can then be altered as required without affecting the original.

Expressions may have been saved previously (see page 5-18) or imported via UDMST. Several default expressions are provided for use in your reports, or as examples of uses of some Report Generator functions.

More information: *For details on supplied Expressions, refer to* 'Appendix C: Default Expressions' *on page 9-8.*

Perform the following to select a saved or imported expression:

1. Add a new element by clicking on the **New** button on the **Report** form (see page 4-13).
2. The **Expression** form opens.
3. Select the **Element** tab (see page 5-13).
4. Select 'Expression' from the **Element** list.
5. The saved or imported Expressions that use objects currently selected for the report are displayed in the list.
6. Select an Expression from the list to add it to the report.
7. Click on the **Configure** button to open the **Expressions** form and edit the expression if required (see page 5-19).

   Note: *Once you have created a new element from the expression, it can be edited without affecting the original element.*
8. If the expression is for a "select" element, complete the **Heading** field with a meaningful heading.
9. Click on the **OK** button.
10. The element appears in the element list and can be edited as required.

Element Tab on the Expression Form with Expression Selected

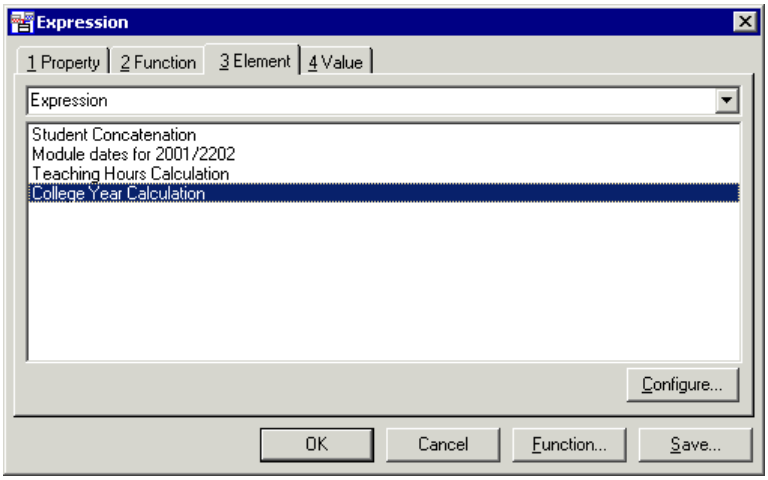


Figure 5-9 **Expression** Form - **Element** Tab with Expression Selected

Heading: Specify a name for this column. This is only available when defining "select" elements.

Element Pick-list: Select the type of element required. The appropriate elements are populated in the list-box below.

Element List-box: Select the required element.

Configure: Click on this button to open the **Expressions** form and edit, add or delete expressions (see page 5-19).

OK: Click on this button to accept any changes and close the form.

Cancel: Click on this button to cancel any selection and close the form.

Function: Click on this button to apply a function to the selected property.

Save: Click on this button to save the current expression (see page 5-18).

Define a Value

An expression can define a static value, which is returned identically for each row of the report. Values are usually used as parameters for functions.

Perform the following to define a value expression:

1. Add a new element by clicking on the **New** button on the **Report** form (see page 4-13).
2. The **Expression** form opens.
3. Select the **Value** tab (see page 5-15).
4. Enter a value.

   Note: *To ensure that the value is the correct format, you may need to apply a formatting function on the value. See Define Nested Function Parameter on page 5-8.*

5. If the expression is for a "select" element complete the **Heading** field with a heading.
6. Click on the **OK** button.
7. The element appears in the element list.

Note: *A new line is created if you click on the **Enter** key after entering a Value. You must click on the **OK** button to exit from the Expression. In earlier versions of the software, clicking on the **Enter** key took you out of the Expression; the functionality of the **Enter** button has been altered to bring it in line with standard Windows applications.*

Value Tab on the Expression Form

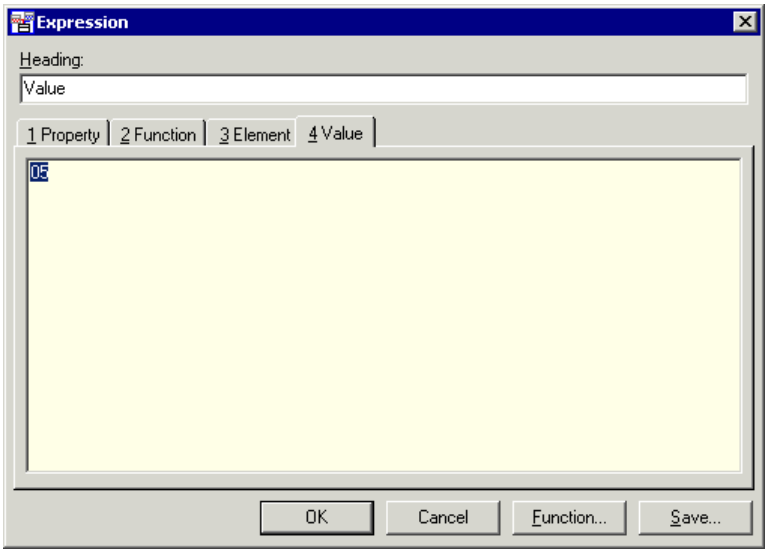


Figure 4 14 **Expression** Form - **Value** Tab

Heading: Specify a name for this column. This is only available when defining "select" elements.

Value: Specify the value to be returned.

OK: Click on this button to accept any changes and close the form.

Cancel: Click on this button to cancel any selection and close the form.

Function: Click on this button to apply a function to the selected property.

Save: Click on this button to save the current expression (see page 5-18).

Dismantle Expression

To dismantle an expression, perform the following:

1. Open the **Report** form (see page 1-16).
2. Select the tab appropriate to the element to be dismantled.
3. Highlight the element to be deleted from the **Elements** list.
4. Click on the **Dismantle**  button to dismantle the highlighted element.
5. When the dialogue opens, choose the following:
   - "Dismantle, retaining all parameters" if you wish to keep single value properties that may be contained in the function.
   - "Dismantle, retaining property parameters only" if you only want to keep parameters if they are properties.
6. The element is then dismantled into its constituent parts as specified.
7. If the element contained nested functions, you may wish to dismantle the resulting parts a second time.

Edit Expression

To edit an expression, you need to navigate to the part of the expression that requires editing. This can be achieved via the following:

- Drill Down to Expression
- Tree View to Expression

Drill Down to Expression

To edit an expression using the drill down navigation, perform the following:

1. Open the **Report** form (see page 1-16).
2. Select the tab appropriate to the element to be edited.
3. Highlight the element to be edited from the elements list.
4. Click on the **Edit Element** button to open the **Expression** form.
5. Use the **Edit Parameter** button to open additional **Expression** forms to edit parameters.
6. Once the part of the function is available for editing, use the **Expression** form to make any required changes (see page 4-13).
7. Click on the **OK** button to close the form.

Tree View to Expression

To edit an expression using the tree view navigation, perform the following:

1. Open the **Report** form (see page 1-16).
2. Select the tab appropriate to the element to be edited.
3. Click on the **Show Tree Expression** button to enable the **Expression** box.
4. Traverse the tree view representation of the expression to locate the part that requires editing.
5. Double–click the required clause.
6. Use the **Expression** form to make any required changes (see page 4-13).
7. Click on the **OK** button to close the form.

Save Expression

To save an expression, perform the following:

1. Open the **Report** form (see page 1-16).
2. Select the element to be saved on the appropriate tab.
3. Click on the **Save** button.
4. Complete the **Add New Expression** form (see below).
5. The **Expressions** form opens to enable you to configure the element you have saved (see page 5-19).
6. Use this form to complete the **Valid from**, **Valid to** and **Version number** properties.
7. Close this form to save your changes.
8. This expression can now be selected via the **Expression** tab.

Add New Expression Form

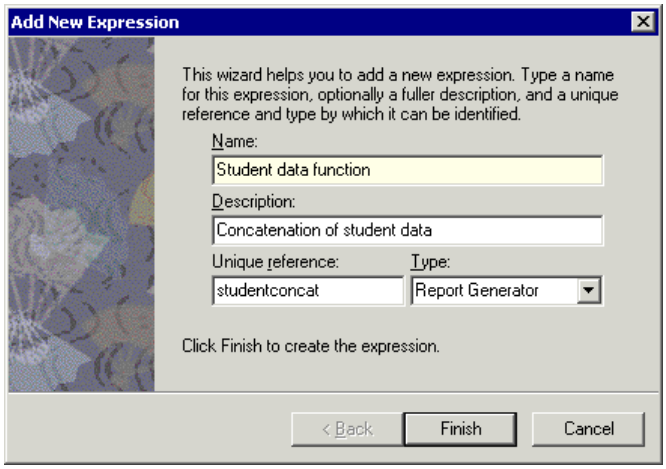


Figure 5-10 **Add New Expression** Form

Name: Enter a name for the expression.

Description: Enter a description of the selected element.

Unique reference: Enter a unique reference for the saved element.

Type: Select "Report Generator" from the pick-list. Expressions of the type "Results Calculator" are for use with UNIT-e Results Calculator only.

More information: *Refer to the "UNIT-e Results Calculator" Handbook (URC.pdf) for details.*

Expressions Form

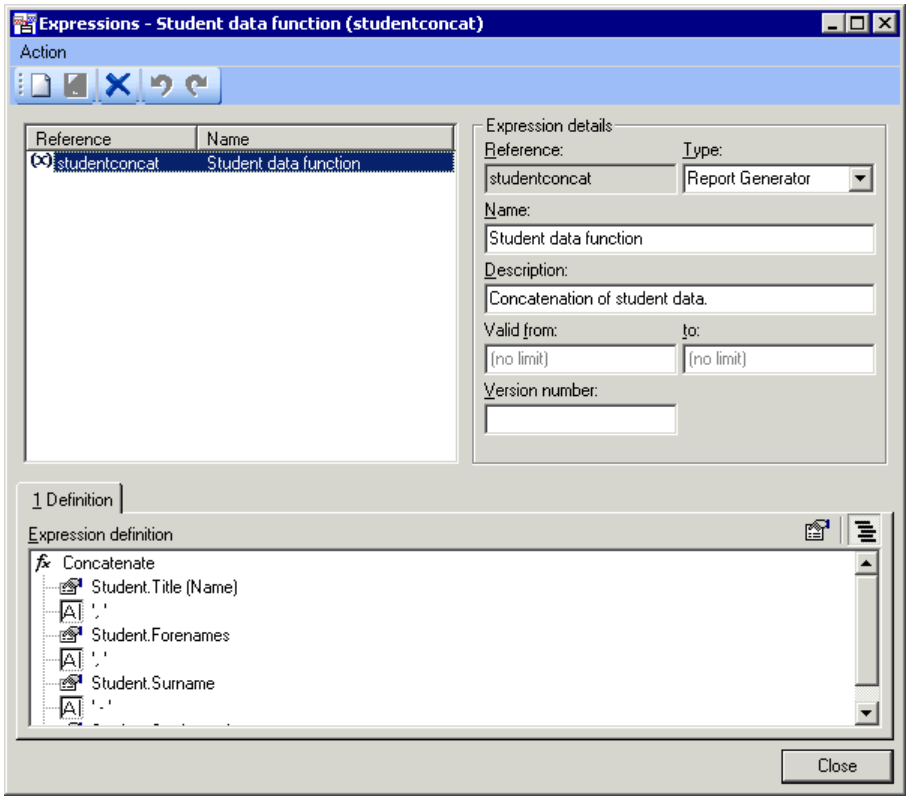


Figure 5-11 **Expressions** Form

New: Click on this button to create a new expression via the **Add New Expression** form (see page 5-18).

Save: Click on this button to save changes to the current expression.

Delete: Click on this button to delete the currently highlighted expression.

Warning: *Deleting an expression cannot be undone.*

Undo: Click this button to undo any changes made to the current expression, since the last successful save. This button is disabled until there are changes to undo. Once an expression has been saved, changes cannot be undone.

Redo: Click on this button to redo any changes that have been undone via the **Undo** button. This button is disabled until there are changes to redo.

Expressions list: This lists the existing saved expressions. Highlight an entry in this list to view details .

Reference: This is a read-only property that displays the unique reference of the currently highlighted expression.

Type: Specifies whether the currently highlighted expression is a UNIT-e Report Generator expression or one created for use with UNIT-e Results Calculator.

Name: Specifies the expression name of the currently highlighted expression.

Description: Provides a description of the currently highlighted expression.

Valid from: Specifies the date after which the currently highlighted expression is valid.

Valid to: Specifies the date that the currently highlighted expression becomes invalid.

Version number: Specifies the version of the currently highlighted expression.

 **Edit Expression Definition:** Click on this button to open the **Expression** form to edit the highlighted expression.

 **Show Expression Tree:** Click on this button to display the expression as a tree rather than a text string in the **Expression definition** frame.

Expression definition: Displays the currently highlighted expression as either text or tree-view. Click on the **Show Expression Tree** button to toggle the view.

Edit Saved Expression

Perform the following to edit a saved expression:

1. Open the **Report** form (see page 1-16).
2. Select the **Element** tab.
3. Select expression from the pick-list.
4. A list of existing elements is displayed.
5. Click on the **Configure** button to alter an existing Expression.
6. The **Expressions** form opens.

   Tip: *This is a different form to the **Expression** form.*

7. Highlight the expression you want to configure.
8. Edit the expression via the **Expression** form, by either:
   - Clicking on the **Edit Expression Definition** to edit the whole expression.
   - Clicking on the **Show Expression Tree** to enable the expression as a tree-view, then double click on an element to edit the expression at that point.

   Note: *The **Expression** form functions the same as when you are creating functions for a specific report. However, when working with saved expressions you have access to all classes in the database rather than those you have selected for a particular report.*

   More information: *Regarding the creation of functions via the **Expression** form, refer to page 5-3.*

9. Close the **Expressions** form and save the changes by clicking on the **Save** button.

Copy Saved Expression

Perform the following to edit a saved expression:

1. Open the **Report** form (see page 1-16).
2. Select the **Element** tab.
3. Select expression from the pick-list.
4. A list of existing elements is displayed.
5. Click on the **Configure** button to open the **Expressions** form.
6. Highlight the expression to be copied.
7. Click on the  **Edit Expression Definition** button to open the **Expression** form with that expression selected.
8. Click on the **Save** button and complete the **Add New Expression** form, see page 5-16.
9. The original expression is saved under the new name and reference and can be edited as required (see page 5-21).

Migrate scalar functions tool

A tool is provided to enable SQL Server users to migrate the To Text and Add month clauses in a range of reports to their SQL Server native Convert, Datename, Datepart and Date add function equivalents for better performance in SQL Server. The tool allows you to search for and select one or more report(s) and when run identifies all instances of the To Text and Add month functions that can be replaced.

Note: *Manager rights on the Report Generator Administrator process are required.*

This process should be run in batches of approximately 500 reports in order to avoid a memory crash.

Any locked reports are skipped. Any reports included in the update are backed up before any changes are made. A list of the reports updated and any errors encountered are detailed in a log, generated to the location specified in the Application\RG\Log files\MigrateScalarFunctions setting. All new versions of the reports are published (i.e. report XML definitions are updated).

Note: *A gn.totextconvert report is provided that shows examples of ToText formats and their equivalents using the Convert, datepart and datename functions. The report is locked to ensure it doesn't get updated by the ToText To Convert tool.*

Convert To Text and Add month clauses, as follows:

1. In UNIT-e Report Generator, select **Migrate scalar functions** from the **Tools** menu.
2. Search for the required reports to populate the **Migrate scalar functions in report(s)** form with the reports you wish to include in the conversion process:

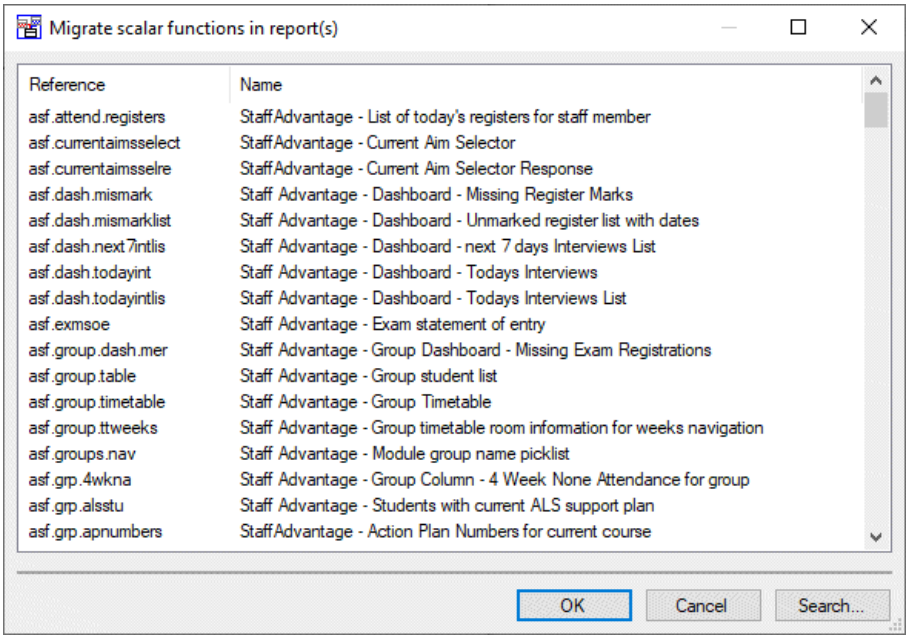


Figure 5-12 Migrate scalar functions in report(s) form

3. Highlight the required reports and click on the **OK** button to display the **Migrate scalar functions** form. The form details the number of reports and instances of To Text and Add month functions that will be converted given the currently selected reports:

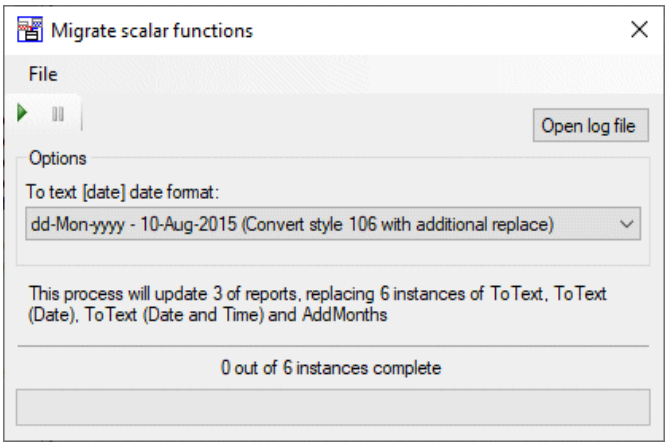


Figure 5-13 To Text to Convert form

Note: *An error message is displayed and the tool closed if the Application\RG\Log files\MigrateScalarFunctions setting isn't defined.*

4. Ensure the format you require for To text [date] conversions is selected in the **To text [date] date format** field.

5. Click on the Run button to start the conversion process. Any reports included are backed up before they are updated and the updated versions published.

6. The progress of the conversion process is displayed in the progress bar. Once complete a message is displayed indicating whether any errors were encountered:

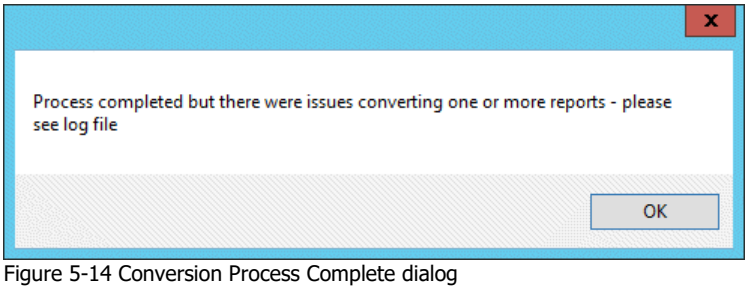


Figure 5-14 Conversion Process Complete dialog

7. Click on the **OK** button to return to the **Migrate scalar functions** form (Figure 5-13) and if required, click on the **Open log file** button to review the reports updated and any errors.

Chapter 6: Sub-queries and Joins

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Parent Report 6-3

Joins 6-4

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Sub-queries

Existing reports can be used as sub-queries within a parent report. Sub-queries are defined via the **Where** tab and, like all Where clauses, enable you to limit the records included in the parent report output. Sub-queries limit the records included using one of two functions:

- In report:
  - Limits the records included to only those records returned by the sub-report.
- Not in report:
  - Limits the records to only those *not* returned by the sub-report, i.e. all records returned by the sub-report are excluded.

When the parent report is run, the SQL statement generated by the sub-report is added to the parent report as a sub-query and preceded with either the "in" or "not in" clause.

Note: *Any report used as a sub-report must only contain one Select statement (column).*

This section covers the following:

- Adding Sub-queries (see page 6-2).
- Example Report (see page 6-3).

Adding Sub-queries

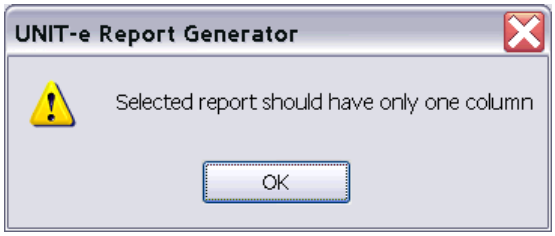
Sub-queries are added as Where statements via the **Where** tab on the **Report** form (see page 4-7). To add a sub-query, complete the following:

1. Ensure you have created the required sub-report.

   Note: *A sub-report must have one Select statement (column) only.*

2. Open the **Report** form (see page 1-16).
3. Select the **Where** tab (see page 4-3).
4. Click on the **New** button to open the **Expression** form (see page 1-17).
5. On the **Function** tab click on the **Edit Parameters** button beside the **Parameter 1** field to select the property to which you wish to add a sub-query.
6. Select "In report" or "Not in report" from the drop-down Function pick-list.
7. To select the required sub-report, click on the **Edit Parameters** button beside the **Parameter 2** field. The **Open Report** form is displayed (see page 1-14).
8. Search for and select the required report and click on the **OK** button. The report name is displayed in the **Parameter 2** field on the **Expression** form.

   Note: *If the report selected has more than one Select statement, the following dialogue is displayed:*

   *Click on the **OK** button to return to the **Expression** form and select an alternative sub-report.*

9. Click on the **OK** button to return to the **Report** form. The new column element appears in the list.

Example Report

Sub-queries can be used as follows:

Sub-report 1

List of Students with current Enrolments:

Select	Where
Student Reference	Enrolment Status is set to “Current”

Sub-report 2

List of Students who have withdrawn from a Module:

Select	Where
Student Reference	Enrolment Status is set to “Withdrawn”

Parent Report

Details of Students with current Enrolments who have not withdrawn from a Module:

Select	Where
Student Reference Student Surname Student Forenames Student Date of Birth	Student Id In Sub-report 1 Student Id Not in Sub-report 2

Joins

The following functions are provided to enable you to query data from multiple reports:

- Union and Union all (see below)
- Intersect (see below)
- Except / Minus (see below)

Union and Union All

The Union and Union All functions allow you to run a union query within Report Generator. The Union function will merge the data in multiple reports, providing distinct rows (i.e. if the same row is selected in both select statements it is merged in a single row in the output).

The Union All function appends results from each query, which may result in duplicate rows in the output.

To use these functions, set up a master report and one or more child reports, as follows:

1. Child report(s):
    i. Select a number of columns from a set of classes.
    ii. Leave the order by blank.
2. Master report:
    i. Create the master report by saving a copy of the child report. This ensures all column headers and data types match exactly.
    ii. Make the changes required to get the different data set that you want to merge with the child report.
    iii. Add the Union statement to your Select clause and specify the reference of your child report via the search form in the Parameter 1 field.
    iv. If required, add an Order by clause.



Note: *To ensure the Order by clause functions in Oracle, specify the column sequence numbers rather than the labels.*

Intersect

The Intersect function returns distinct rows by comparing the results of two queries. Only the records output from both queries of the intersect are returned (e.g. active students who are also members of staff).

The Intersect function is set up using similar syntax to the Union function (see above). Again, the column headers and data types must match in each report.

Except (SQLServer) / Minus (Oracle)

These functions also return distinct rows by comparing the results of two queries, but only the records output from the left side of the query that aren't also output by the right input query are returned (e.g. active students who are not members of staff).

The Except and Minus functions are set up using similar syntax to the Union function (see above). Again, the column headers and data types must match in each report.

Chapter 7: Report Output

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Introduction

Once you have written a report, there are a number of formats to which the results can be output. UNIT-e Report Generator provides report output primarily through the **Test Report** form. This enables you to produce output as follows:

- Test Report (see page 7-7).
- Optimise Report (see page 7-9).
- Save results (see page 7-11).
- Output results (see page 7-12).
- Print results (see page 7-14).

In addition, UNIT-e Report Generator also enables you to view, edit and run both generated and entered SQL. The follow functions are provided:

- View Generated SQL (see page 7-15).
- Retrieve Previously Executed SQL (see page 7-15).
- Execute SQL Scripts (see page 7-15).
- Execute Entered SQL (see page 7-16).

Test Report Form

The **Test Report** form is essentially a tool to run SQL against UNIT-e database and produce output via the screen, file or printer. This form provides the following tabs:

- **Query** tab (see below).
- **Results** tab (see page 7-4).
- **Options** tab (see page 7-5).
- **Parameters** tab (see page 7-6).

Query Tab

The **Query** tab provides an area to view and edit the SQL that will run to produce the report output.

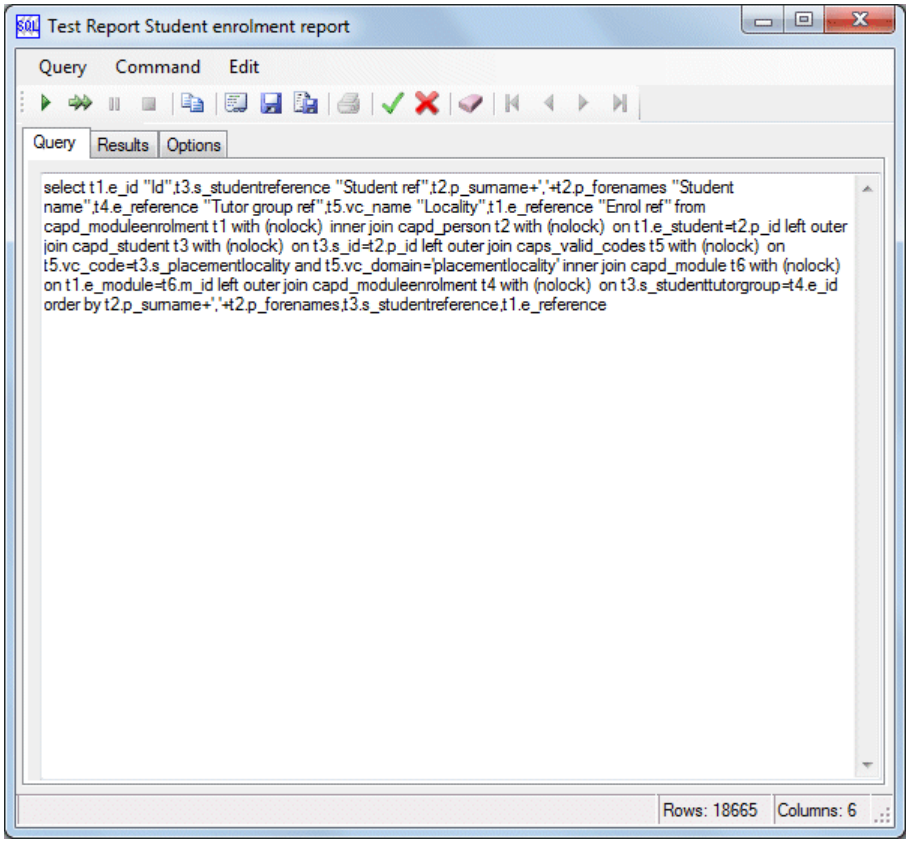


Figure 7-1 **Query** tab on the **Test Report** Form

Execute: This is only enabled when the report is not running or paused. Click on this button to run the report and generate output to the **Results** tab.

Pause: This is only enabled when the report is running. Click on this button to pause the report. Click **Execute** again to continue running the report.

Stop: This is only enabled when the report is running. Click on this button to stop the report.

Script: Click on this button to run an SQL script.

Save: Click on this button to save the data on the **Results** tab, with the format specified on the **Output file** frame on the **Options** tab.

File: Click on this button to output the report to a text file or Access database.

Print: Click on this button to print the data on the **Results** tab, with the format specified in the **Printing** frame on the **Options** tab.

Plan: Click on this button to generate a plan of the report execution in the **Results** tab. This is useful when optimising your report.

Commit: Click on this button to commit changes after running a script.

Rollback: Click on this button to rollback changes after running a script.

Clear: Click on this button to clear the current contents of the **Query** tab.

First: Click on this button to select the first query.

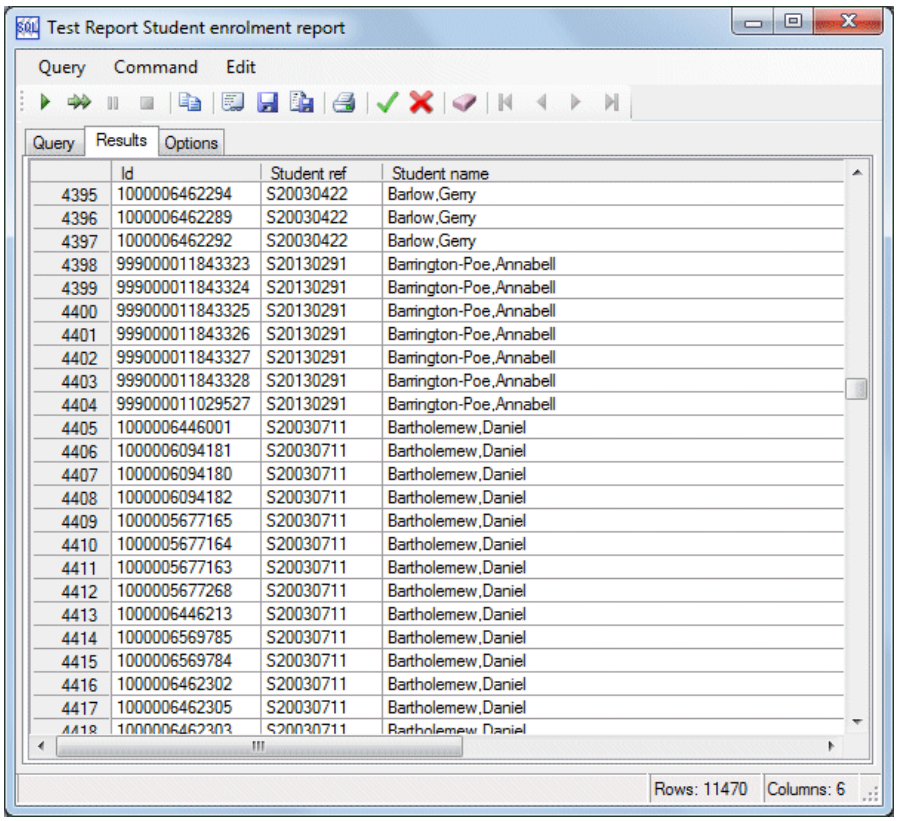
Previous: Click on this button to select the previous query.

Next: Click on this button to select the next query.

Last: Click on this button to select the last query.

Results Tab

The **Results** tab enables you to view the report output.



	Id	Student ref	Student name
4395	1000006462294	S20030422	Barlow,Gerry
4396	1000006462289	S20030422	Barlow,Gerry
4397	1000006462292	S20030422	Barlow,Gerry
4398	999000011843323	S20130291	Barrington-Poe,Annabell
4399	999000011843324	S20130291	Barrington-Poe,Annabell
4400	999000011843325	S20130291	Barrington-Poe,Annabell
4401	999000011843326	S20130291	Barrington-Poe,Annabell
4402	999000011843327	S20130291	Barrington-Poe,Annabell
4403	999000011843328	S20130291	Barrington-Poe,Annabell
4404	999000011029527	S20130291	Barrington-Poe,Annabell
4405	1000006446001	S20030711	Bartholemew,Daniel
4406	1000006094181	S20030711	Bartholemew,Daniel
4407	1000006094180	S20030711	Bartholemew,Daniel
4408	1000006094182	S20030711	Bartholemew,Daniel
4409	1000005677165	S20030711	Bartholemew,Daniel
4410	1000005677164	S20030711	Bartholemew,Daniel
4411	1000005677163	S20030711	Bartholemew,Daniel
4412	1000005677268	S20030711	Bartholemew,Daniel
4413	1000006446213	S20030711	Bartholemew,Daniel
4414	1000006569785	S20030711	Bartholemew,Daniel
4415	1000006569784	S20030711	Bartholemew,Daniel
4416	1000006462302	S20030711	Bartholemew,Daniel
4417	1000006462305	S20030711	Bartholemew,Daniel
4418	1000006462303	S20030711	Bartholemew,Daniel

Figure 7-2 **Results** Tab on the **Test Report** Form

Row numbering can be removed in the **Results** tab, by de-selecting the **Row numbering** check box on the **Options** tab.

A number of columns can be fixed in the **Results** tab, by right-clicking the **Results** grid over the column to fix and selecting **Fixed column** from the pop-up menu.

The colours of the rows on the **Results** tab can be alternated, by right-clicking the **Results** grid and selecting **Stripe 1** or **Stripe 5**.

Results: This provides a grid of results. Each column and row can be resized to view the information.

Rows: This provides a count of rows at the bottom right of the tab.

Columns: This provides a count of columns at the bottom right of the tab.

Tip: *Select the **Adjust width to headings** check box on the **Options** tab to enable the columns to automatically resize to fit the data.*

Options Tab

The **Options** tab enables you to set the options for the report output.

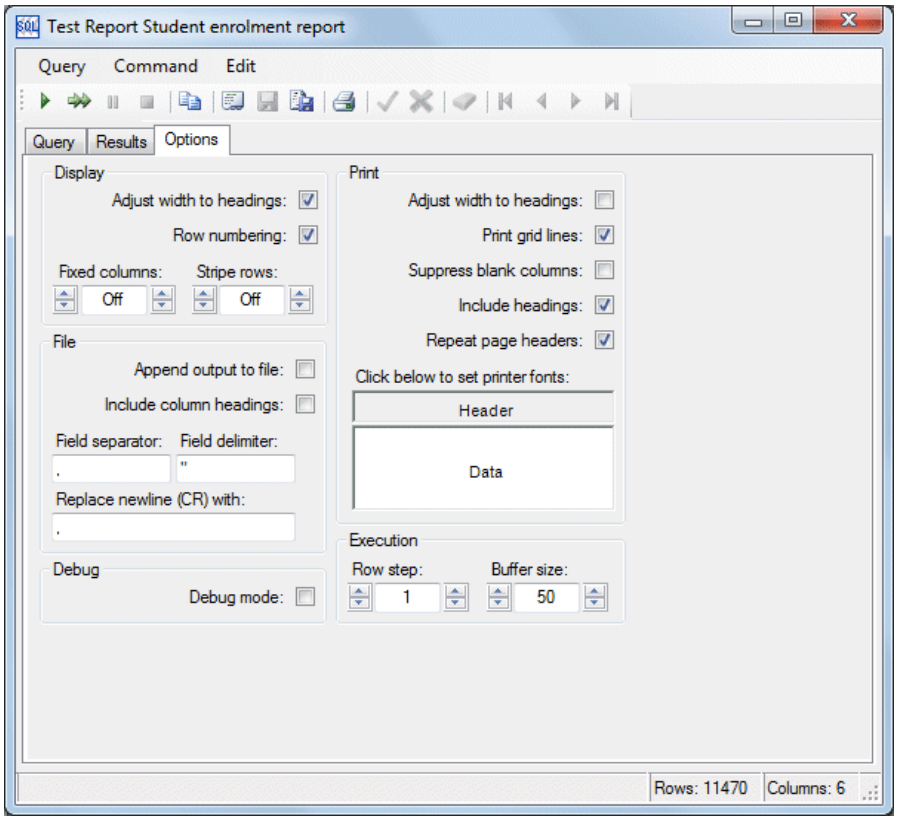


Figure 7-3 **Options** Tab on the **Test Report** Form

Display Frame

Adjust width to headings: Select this check box to alter the width of the columns on the **Results** tab to fit the width of the column headings.

Row numbering: Select this check box to include row numbering in the results.

Fixed columns: Use the spin buttons to specify how many of the results columns should be fixed when you scroll to the right to view additional data. Alternatively, you can leave the selection as 'Off'.

Stripe rows: Use the spin buttons to specify whether the rows should be displayed in alternating stripes. You can specify how many rows are included in each block of colour. Alternatively, you can leave the selection as 'Off'.

File Frame

Append output to file: Select this check box to add any new output to the end of an existing file. If this is not selected the file will be cleared before new data is output to it.

Include column headings: Select the check box to include the column headings in your output files.

Field separator: Specify a character to be used as a field separator in text files.

Field delimiter: Specify a character to be used as a field delimiter in text files.

Replace newline (CR) with: Specify a character to replace carriage returns in output files.

Debug Frame

Debug mode: Select this check box to provide an SQL log file each time the report is executed. The file is saved in the same folder as your application executable. This provides useful information when debugging a report.

Note: *Ensure you have write access to the application folder to save a debug log.*

Print Frame

Adjust width to headings: Select this check box to adjust the column widths to fit data in printed output.

Print grid lines: Select this check box to include grid lines in printed output.

Suppress blank columns: Select this check box to suppress blank columns in printed output.

Include headings: Select this check box to include columns headings in printed output.

Repeat page headers: Select this check box to repeat page headers in printed output.

Click below to set printer fonts: Click on the **Header** or **Data** field to access the standard **Fonts** form where you can specify the font to be used when the header and data are printed.

Execution Frame

Row step: Specify how many rows of data are generated before they are displayed on the **Results** tab.

Buffer size: Specify how many SQL queries the **Query** tab will store in its buffer.

Parameters Tab

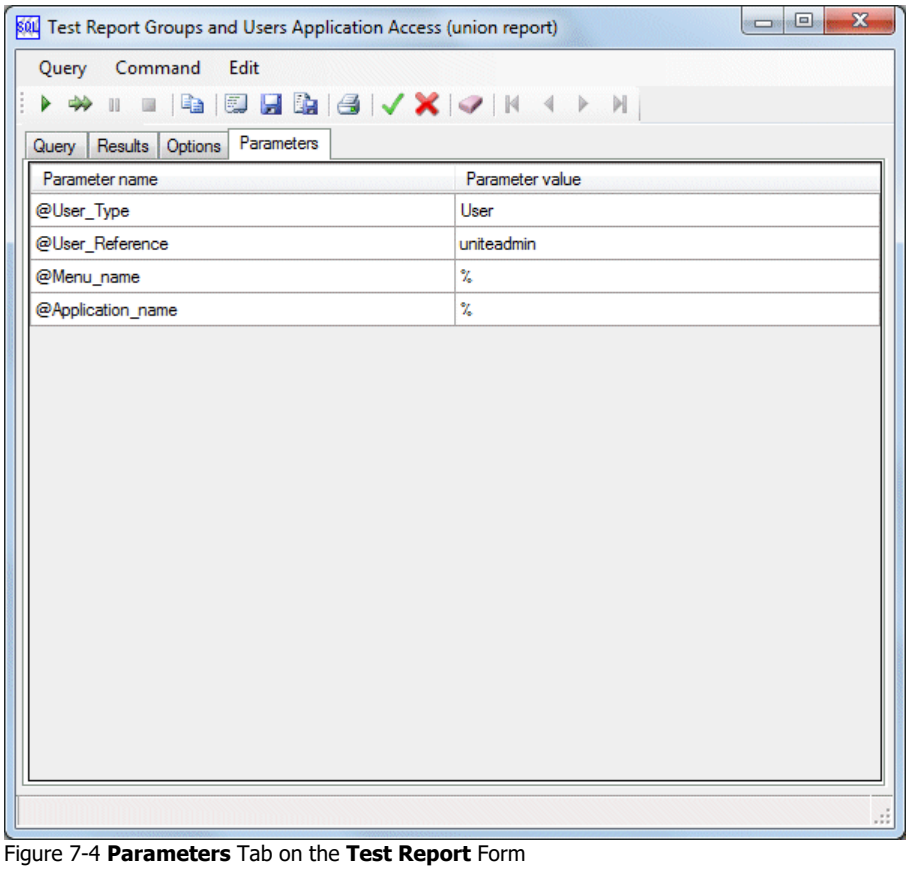


Figure 7-4 **Parameters** Tab on the **Test Report** Form

Parameter name: A row is displayed for each parameter included in the query.

Parameter value: Specify a test value for the parameter.

Test Report

Once the report has been created and developed as described in the previous two chapters, you can test the report. Reports can be tested in UNIT-e Report Generator by generating some test output via the **Test Report** form (see page 7-3).

To test a report, perform the following:

1. Generate Output to Screen (see below).
2. Check Output (see below).

Generate Output to Screen

To generate some test output, perform the following:

1. To open the **Test Report** form either:
   - Right-click the report background and select **Test** from the pop-up menu.
   - Click on the **Test** button on the **Report** form.
   - Select **Tools | Test** from the menu bar.

   Note: *The **Test Report** form is only available when a report has properties selected.*
2. Click on the **Test** button to open the **Test Report** form.
3. If required, enter test values for the query parameters via the **Parameters** tab.
4. Click on the **Execute** button to start executing the report. This will automatically select the **Results** tab and start filling the **Results** grid with output data.
5. While the report is executing you can:
   - Click on the **Pause** button to pause the report.
   - Click on the **Continue** button to continue the execution.
   - Click on the **Stop** button to cancel the report.
6. Once there is adequate output click on the **Pause** or **Cancel** buttons to stop the execution.
7. Check the integrity of the data.

Check Output

The following aspects of the Test Report should be considered when viewing test results:

- Columns (see below).
- Rows (see below).
- Order (see page 7-8).
- Speed (see page 7-8).

Columns

Check columns as follows:

- Have the correct number of columns been generated?
- Are the columns in the right order?
- Where functions have been used to create particular columns, are the functions producing the required output?

Rows

Check rows as follows:

- Have the correct number of rows been generated?
- Have the correct records been returned?
- Have duplicate rows been returned?

Order

Check order as follows:

- Are the rows returned in the correct order?

Speed

Check speed as follows:

- Does the report return data quickly enough?

Optimise Report

Where a report is taking a long time to execute, it can be optimised in the following ways:

- Curriculum Level (see below).
- Order "Where" Element (see page 4-7).
- View Report Plan (see page 7-10).

Curriculum Level

When writing a report, there are often instances when report parameters could be applied to different classes to achieve the same results. For example, a report to bring back enrolments for the current academic year could be specified by applying parameters to either Enrolments or Modules, as follows:

Module:

- Module Start <= 31-Jul-2002
- Module End >= 01-Aug-2001

Enrolment:

- Enrolment Start <= 31-Jul-2002
- Enrolment End >= 01-Aug-2001

In these cases, applying parameters at a higher level in the module structure (in this case, Module rather than Enrolment) normally produces faster results. In general report parameters should be applied as high up the following list as possible, i.e. Institution before Department:

- Institution
- Department
- Programme Module
- Year Module
- Subject Module
- Application
- Enquiry
- Enrolment
- Enrolment Event

Order "Where" Element

"Where" type elements are usually the determining factor for the speed of a report. Re-ordering "where" elements affects the way that the report is built before it is run.

Note: *This order may be overridden by rules applied by Oracle in its execution plan.*

Ensuring the "where" elements are in the order shown in Table 7-1 can improve a report's performance.

Position in “where” Element List	Description	Advice
1st (top)	Elements applied to bottom of curriculum structure.	Use like rather than equals.
2nd	Elements that define report links.	-
3rd	Elements applied to top of curriculum structure.	-
4th (bottom)	Very selective elements.	Use equals rather than like.

Table 7-1 Order "Where" Element



More information: *Refer to the Order Elements section on page 4-15.*

View Report Plan

Clicking on the **Plan** button provides a structured report about how the report will be executed. This information can be used to identify why a report is running slowly.



System Managers: *Reports that have a “table access full” entry towards the left of their plan will run slowly.*

Save Results

The contents of the **Results** tab can be saved to a text file. This enables you to save the data that has been generated by running a report. The format of the file is determined on the **Options** tab (Figure 7-3). To save your current results to a text file perform the following:

1. Generate Output to Screen (see page 7-7).
2. Format Text File (see below).
3. Produce Printout (see below).

Format Text File

To format the text file, perform the following:

1. Open the **Report** form.
2. Click on the **Test** button to open the **Test Report** form.
3. Select the **Options** tab (see page 7-5).
4. The **File** frame controls the format of the save file (see page 7-5).

Save Results to Text File

To save generated results to a file, perform the following:

1. Generate some output in the **Results** tab (see page 7-4).
2. Specify the save file format (see above).
3. Select the **Results** tab.
4. Click on the **Save** button. The Save Results dialogue opens.
5. Specify a filename and location.
6. Click on the **OK** button.
7. The contents of the **Result** tab are saved to the specified file, with the specified format.



Note: *Only the contents of the **Results** tab are saved to the file. To produce a full output, use the **Output File** option.*

Output Results

A report can be directly output to a text file or Access database. The format of the text file is specified via the **Options** tab.

To output results to a text file, perform the following:

1. Format Text File (see below).
2. Output to Text File (see below).

To output results to an Access Database file, perform the following:

1. Output to Access Database (see below).

Format Text File

To format the text file, perform the following:

1. Open the **Report** form.
2. Click on the **Test** button to open the **Test Report** form.
3. Select the **Options** tab (see page 7-5).
4. The **File** frame controls the format of the save file (see page 7-5).

Output to Text File

To output a report to a text file, perform the following:

1. Open the **Report** form
2. Click on the **Test** button to open the **Test Report** form.
3. Select the **Options** tab (see page 7-5).
4. Click on the **File** button. The **Output File** dialogue opens.
5. Specify a **Filename** and **Location**.
6. Specify ".txt" as file type.
7. Click on the **OK** button.
8. The report is run and output to the specified text file, with the specified format.

Output to Access Database

To output a report to an Access Database, perform the following:

Warning: *You must ensure that all column headings are unique in order to output to an Access.mdb.*

1. Open the **Report** form.
2. Click on the **Test** button to open the **Test Report** form.
3. Select the **Options** tab (see page 7-5).
4. Click on the **File** button. The **Output File** dialogue opens.
5. Specify a **Filename** and **Location**.
6. Specify ".mdb" as the file type.
7. Click on the **OK** button.
8. The report is run and output to the specified Access database file, with the specified format.

Note: *By default this produces files compatible with Microsoft Access 97. However, you are able to control the version of generated Access mdb files via the* ***Map Crystal Report*** *form in UNIT-e Database Manager (Settings) [UDMSE.exe].*

More information: *Refer to the "UNIT-e Database Manager (Settings)" Handbook (UDMSE.pdf).*

Print Results

Report results can be printed. The format of the printout is determined on the **Options** tab. To create a printout of your current results, perform the following:

1. Generate Output to Screen (see page 7-7).
2. Format Text File (see below).
3. Produce Printout (see below).

Format Text File

To format the text file, perform the following:

1. Open the **Report** form.
2. Click on the **Test** button to open the **Test Report** form.
3. Select the **Options** tab (see page 7-5).
4. The **Printing** frame controls the format of the save file (see page 7-6).
5. Complete the appropriate options.

Produce Printout

To print the results of a report, perform the following:

1. Open the **Report** form.
2. Click on the **Test** button to open the **Test Report** form.
3. Select the **Options** tab and specify the printing options (see page 7-5).
4. Click on the **Execute** button to run the report.
5. The results are displayed in the **Results** tab (see page 7-4).
6. Click on the **Print** button. The **Print** dialogue opens.
7. Complete the dialogue.
8. Click on the **OK** button.
9. The report results are printed with the specified format.

Run SQL

In addition to enabling you to run SQL generated by the reports you have defined, UNIT-e Report Generator also enables you to perform the following:

- View Generated SQL (see below).
- Retrieve Previously Executed SQL (see below).
- Execute SQL Scripts (see below).
- Execute Entered SQL (see page 7-16).

View Generated SQL

When the **Test Report** form first opens the **Query** frame is populated with the SQL generated from your report definition.

Retrieve Previously Executed SQL

The **Query** frame stores a copy of each set of SQL that has been executed while it is open. Click on the **First**, **Previous**, **Next** or **Last** buttons to access the stored SQL. To retrieve some previously run SQL perform the following:

1. Open the **Report** form.
2. Click on the **Test** button to open the **Test Report** form.
3. Select the **Query** tab (see page 7-3).
4. Run the current SQL, which will produce results in the **Results** tab (see page 7-4).
5. Return to the **Query** tab (see page 7-3).
6. Make any required changes.
7. Run the changed SQL, which will produce results in the **Results** tab (see page 7-4).
8. Return again to the **Query** tab (see page 7-3).
9. Click on the **Previous** button to retrieve the SQL first executed.
10. You can return to the changed SQL by clicking on the **Next** button.



Note: *Click on the **First** and **Last** buttons to move quickly to the first and last set of SQL that have been executed.*

Execute SQL Scripts

This tab also enables you to execute SQL files that have been previously written. To execute a file, perform the following:

1. Open the **Report** form.
2. Click on the **Test** button to open the **Test Report** form.
3. Click on the **Script** button, the **Load Script** dialogue opens.



Warning: *Opening a script will automatically run it. Ensure that you want the script to run before opening it in this way.*

4. Select a SQL or TXT file.
5. The script is opened and executed, its results appear in the **Results** tab (see page 7-4).



Tip: *SQL script files can now be dragged and dropped into the **Query** tab.*

Execute Entered SQL

This tab also enables you to enter or edit the SQL directly. To execute some entered SQL perform the following:

1. Open the **Report** form.
2. Click on the **Test** button to open the **Test Report** form.
3. The **Query** tab is populated with generated SQL (see page 7-5).
4. Click on the **Clear** button to blank the **Query** frame.
5. Enter the SQL to be executed.

Click on the **Execute** button to view the results in the **Results** tab (see page 7-4).

Chapter 8: Import and Update Reports

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Introduction

Another powerful aspect of UNIT-e Report Generator [URG.exe] is the ability to import/export large volumes of data into the database. This is useful for the following:

- Manipulating large volumes of data in your UNIT-e database.
- Importing data from third party products.
- Correcting data entry errors

The importing tools provided in UNIT-e Report Generator provide the following functionality:

- Import Records (see page 8-12).
- Block Import (see page 8-17).



Warning: *Before attempting an import it is necessary to understand the theory behind the process (see page 8-3).*

The following functionality is also available:

- Global Update (see page 8-19).
- Global Delete (see page 8-21).
- Block Publish Definition (see page 8-23)

Import Theory

Importing is a quick way to add or delete a large volume of data into your UNIT-e database. This section introduces the main theory of importing data.

Imports can perform the following operations:

- Insert new records, e.g. importing a set of new students.
- Update existing records, e.g. importing a set of students with updated references.
- Insert new records and update existing records, e.g. importing a set of new addresses and linking them to existing students.
- Delete existing records, e.g. deleting some incorrectly imported data.

It is possible to combine a series of these operations to import more complex data structures. For example:

- Importing a student and their current address can be achieved in one import.
- Importing modules, offerings and options has to be done in multiple imports as follows:
  - **Import 1:** Import all the module records
  - **Import 2:** Import the offering records, linking them to appropriate modules from Import 1.
  - **Import 3:** Import the options, linking them to appropriate modules and offerings from Import 1 and 2.

An import is defined by the following components:

- Import Data File (see below).
- Import Report (see page 8-6).

More information: *Refer to page 8-6 for a comprehensive set of import examples.*

Import Data File

The import data file provides the information to be imported into the database in a comma separated text file. This data may have been previously exported from your UNIT-e database or from a third party application.

The data file consists of rows and columns, as follows:

- Definition Row (see page 8-4).
- Data Rows (see page 8-4).
- Data Column (see page 8-5).
- Search Column (see page 8-5).

For example:

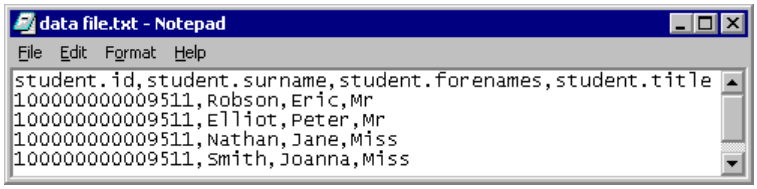


Figure 8-1 Example Data File in Notepad

This data file consists of the following rows and columns:

Search Column	Data Column	Data Column	Data Column	
student.id	student.surname	student.forenames	student.title	Definition Row
100000000009511	Robson	Eric	Mr	Data Row
100000000009512	Elliot	Peter	Mr	Data Row
100000000009513	Nathan	Jane	Miss	Data Row
100000000009514	Smith	Joanna	Miss	Data Row

Table 8-1 Example Data File

Definition Row

The definition row is the first row of the data file, it must specify a class and property into which each column's data is to be imported. This is specified as a set of lowercase, comma separated, quote delimited values as follows:

"class.property","class.property","class.property"

For example:

student.id	student.surname	student.forenames	student.title

Table 8-2 Definition Row Example



Note: *Ensure the definition row of your data file adheres to the following:*

- *No spaces between the column definitions.*
- *Class and property reference only separated by a "." character.*
- *Class and property reference all in lowercase.*
- *The full class references must be used. Use the **Class Browser** form available via UNIT-e Report Generator [URG.] to look these up if necessary.*

Data Row

Data rows are the subsequent rows of the data file, which define the data to be imported into the location specified in the definition row. For example:

100000000009511	Robson	Eric	Mr
100000000009512	Elliot	Peter	Mr
100000000009513	Nathan	Jane	Miss
100000000009514	Smith	Joanna	Miss

Table 8-3 Data Rows Example

Data Column

Your data file must include a column of data for each property into which you are importing data. For example:

student.surname
Robson
Eliot
Nathan
Smith

Table 8-4 Data Column Example

When you import new records, all the data columns in the import file should contain 'new' data (e.g. data not already in the database). For example, if you are importing student data for the first time there is no need to include a data column for Student ID, as this is usually generated by the system as part of the import.

The report used to import the data should contain the same number of data columns as the data file, as this indicates to the system that you are importing data into them.

Search Column

When you update records your data file should contain all the data that you wish to update, plus one or more columns that are used to identify existing records in the database. These are search columns. For example:

student.id (search)
100000000009511
100000000009512
100000000009513
100000000009514

Table 8-5 Search Column Example

You may use more than one search column in your data file if this is necessary to identify a record, but you must ensure that only one record is retrieved per search, as the update fails if multiple records are returned. In this situation, details are placed in an error file.

The report used to import the data only contains columns that match your data columns and does not contain the equivalent of a search column. This makes it clear to the system that the data in the search column is only to be used for searching.



Tip: *It is advisable to use the record ID as a search field wherever possible, but it is also possible to use the record's reference property as long as you can guarantee that it is unique.*



Notes:

- *You may use more than one search column in your data file if this is necessary to identify a record, but you must ensure that only one record is retrieved per search as the update will fail if multiple records are returned. In this situation, details are placed in an error file.*
- *The report used to import the data*

If you are performing an insert, the search column is used to identify which records to link the inserted records to. For example:

Search Column

student.id	student.surname	student.forenames	student.title
100000000009511	Robson	Eric	Mr
100000000009512	Elliot	Peter	Mr
100000000009513	Nathan	Jane	Miss
100000000009514	Smith	Joanna	Miss

Figure 8-2 Search Column with Data Columns

The data in a search column is not imported.

Import Report

The import report defines where the imported data is to be stored in your UNIT-e database. The import report should include/exclude the following:

- Include Data Properties (see below).
- Exclude Search Properties (see below).
- Include Search Classes (see below).

Include Data Properties

Data properties define where the data is to be imported. The import report must include one data property for each data column in the import data file.

Exclude Search Properties

Search properties, in the data file, identify existing records that link to the inserted records. The import report must include a class for each search property but *not* select the property itself for the report.

Include Search Classes

Search classes are added to the report to define how existing records are to be linked to those inserted by the import. These classes should have no properties selected. They should be linked to the other classes in the report to define how the imported records are linked.

Import Examples

Importing data can be used to achieve the following:

- Insert New Records (see below).
- Insert New Records Linked to Existing Records (see page 8-7).
- Insert New Records Linked to Each Other (see page 8-8).
- Update Existing Records (see page 8-8).
- Update Existing Record Links (see page 8-9).
- Update Existing Records and Link to Inserted New Records (see page 8-10).
- Delete Incorrectly Imported Data (see page 8-10).

Insert New Records

An insert import creates new records for the imported data. The selected class properties must match the columns in the data file.

For example, import the following students as new records:

student.studentreference	student.surname	student.forenames	student.title
STUD99001432	Robson	Eric	Mr
STUD99004982	Elliot	Peter	Mr
STUD99009201	Nathan	Jane	Miss
STUD99001202	Smith	Joanna	Miss

Table 8-6 Insert Import report Data File

student.studentreference	student.surname	student.forenames	student.title

Table 8-7 Insert Import Report Columns



Table 8-8 Insert Import Report Object

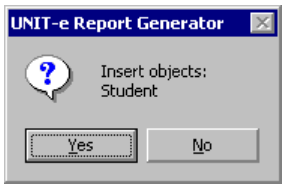


Figure 8-3 Insert Import Summary Dialogue

Insert New Records Linked to Existing Records

This type of import creates new records and links them to existing records in the database. The selected class properties must match the columns in the data file. However, data file columns that are used to search on should not be selected in the report.

For example, import the following students and link them to a tutor:

student.studentreference	student.surname	student.forenames	student.title	appointment.id
STUD99001432	Robson	Eric	Mr	100000000009511
STUD99004982	Elliot	Peter	Mr	100000000009511
STUD99009201	Nathan	Jane	Miss	100000000009511
STUD99001202	Smith	Joanna	Miss	100000000009511

Table 8-9 Insert and Link Import report Data File

student.studentreference	student.surname	student.forenames	student.title	(search)

Table 8-10 Insert and Link Import Report Columns

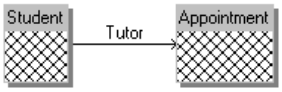


Figure 8-4 Insert and Link Import Report Objects

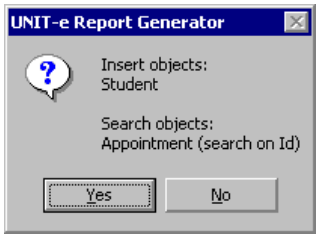


Figure 8-5 Insert and Link Summary Dialogue

Insert New Records Linked to Each Other

This type of import creates a set of new linked records in the database. The selected class properties must match the columns in the data file.

For example insert and link the following students and address records:

student.studentreference	student.surname	student.forenames	student.title	personaddress.name
STUD99001432	Robson	Eric	Mr	5 Barn Road
STUD99004982	Elliot	Peter	Mr	26 Acre Lane
STUD99009201	Nathan	Jane	Miss	42 Hanger Lane
STUD99001202	Smith	Joanna	Miss	22 West Street

Table 8-11 Insert Linked Import report Data File

student.studentreference	student.surname	student.forenames	student.title	personaddress.name

Table 8-12 Insert Linked Import Report Columns

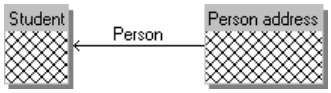


Figure 8-6 Insert Linked Import Report Objects

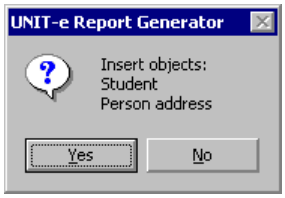


Figure 8-7 Insert Linked Summary Dialogue

Update Existing Records

An update import updates the properties for existing records with the values specified in the Data File. Columns in the data file that are not in the report are used as search properties to identify which records to update.

For example, in this update import, the column in the data file that does not exist in the report is used to identify the records to update (student.id).

student.id (search)	student.surname	student.forenames
100000000195276	Roberts	Ericson
100000000195277	Ellisa	Peter
100000000195278	Nathanial	Wayne

student.id (search)	student.surname	student.forenames
100000000195279	Smith	Joanne

Table 8-13 Update Import report Data File

student.id (search)	student.surname	student.forenames
(search)	student.surname	student.forenames

Table 8-14 Update Import Report Columns



Figure 8-8 Update Import Report Object

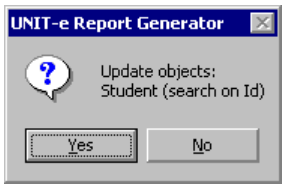


Figure 8-9 Update Import Summary Dialogue

Update Existing Record Links

This type of update enables you to add links that may have not been created on data entry. The data file has a class id column added for each record to link to. The report has the class added and linked as required. It is not possible to only update links as there is no actual data to update. Therefore a dummy update field is specified and populated with the current values for each record.

For example, linking students to their previous school:

student.id	student.studentreference	School.id
100000000195276	STUD99001432	100000000050590
100000000195277	STUD99004982	100000000050590
100000000195278	STUD99009201	100000000050590
100000000195279	STUD99001202	100000000050590

Figure 8-10 Update Links Import report Data File

(search)	student.studentreference	(search)

Table 8-15 Update Links Import Report Columns

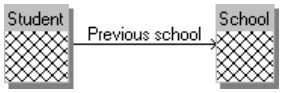


Figure 8-11 Update Links Import Report Objects

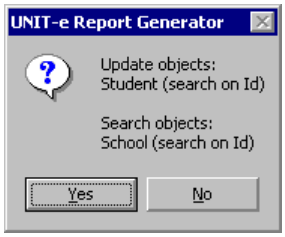


Figure 8-12 Update Links Import Dialogue

Update Existing Records and Link to Inserted New Records

It is useful to insert and update records in a particular import.

For example update and link the following students and address records:

student.id	student.surname	student.forenames	student.title	personaddress.name
100000000195272	Eric	Robson	Mr	5 Barn Road
100000000195273	Peter	Elliot	Mr	26 Acre Lane
100000000195274	Jane	Nathan	Miss	42 Hanger Lane
100000000195275	Joanna	Smith	Miss	22 West Street

Table 8-16 Insert Linked Import report Data File

Search	student.surname	student.forenames	student.title	personaddress.name

Table 8-17 Insert and Update Import Report Columns

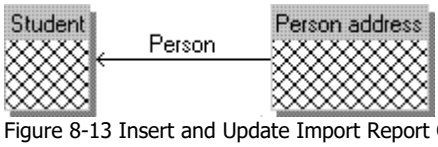


Figure 8-13 Insert and Update Import Report Objects

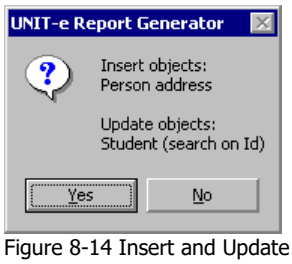


Figure 8-14 Insert and Update Summary Dialogue

Delete Incorrectly Imported Data

Warning: *Performing an Import Delete is a potentially dangerous operation. Ensure that you understand what is involved before proceeding. Contact the helpdesk for further advice.*

Note: *Import Delete does not work for Audit Trail, Hotlink and Alert records.*

Unlike other delete tools in UNIT-e this enables you to delete multiple records in one pass, therefore it is essential that great care be taken when using this functionality.

The primary use of import delete is to delete records that have been imported in error. If the records have not been altered since the import, the import file used to create the records can be used to delete them.

For example to delete an incorrectly imported student:

student.surname	Student.forenames	student.title	personaddress.name
Eric	Robson	Mr	5 Barn Road
Peter	Elliot	Mr	26 Acre Lane
Jane	Nathan	Miss	42 Hanger Lane
Joanna	Smith	Miss	22 West Street

Table 8-18 Delete Incorrect Import, Data File

student.surname	Student.forenames	student.title	personaddress.name

Table 8-19 Delete Incorrect Import, Import Report Columns

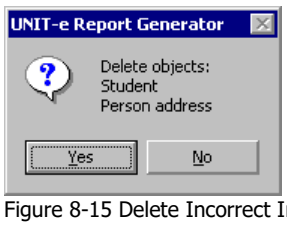


Figure 8-15 Delete Incorrect Import, Summary Dialogue

Import Records

The process for setting-up an import is the same regardless of its type. The main steps are as follows:

1. Prepare Data (see below).
2. Create Import Report (see page 8-13).
3. Test Import (see page 8-13).
4. Perform Import (see page 8-14).

Prepare Data

Before performing an insert, update or delete the data file must be created. To prepare your data perform the following:

1. Create Export Data File (see below).
2. Format Data File (see below).



More information: *Regarding data files refer to page 8-3.*

Create Export Data File

If you are updating existing data, a UNIT-e Core Report can be used as normal to export data to create a data file. Ensure you have any required id fields when updating or linking data.



Note:

- *Although it's the data generated that will be used in the import, it is useful to save the report for future reference.*
- *If you are performing an Update Import, ensure that you have included the class id properties in the data file. These are required to identify which existing records to update.*
- ***ORACLE customers** –The header is truncated if you use a system heading that exceeds 30 characters. Use an Alias heading instead.*

Format Data File

To format your data file:

1. Use Microsoft Excel to open your data file.
2. Format the file as described above.
3. Check the data is correct and perform any required alterations.
4. Use the UNIT-e Save as text add-in from the UNIT-e menu.
5. This can be setup as follows:
   - Select **Tools | Add in** from the menu in Microsoft Excel.
   - Click on the **Browse** button to locate the Save Text add in. This is located on the UNIT-e Main CD: Bin\Tools\SaveText.xla.
   - Ensure the Add in is in the list and checked.
   - Click on the **OK** button.
   - Save Text is added to the menu.
6. Select **Save Text | Save to file** to save the current worksheet to a file. You are prompted to select the Separator and Delimiter. You need to ensure these match the settings on the **Import** form in UNIT-e Report Generator, available via the **Tools | Import** menu.

More information: *This Save as text add-in is available as part of UNIT-e SpreadSheet Builder.*

Note: *For smaller or less complex import files it may be simpler to use Microsoft Notepad to edit the file.*

Create Import Report

The UNIT-e Core Report defines the classes and properties into which the data file columns are imported. To create an import report, perform the following:

1. Create a report in the normal way, as described in Chapters 2 to 5.
2. Consult the data file to establish which import, search and link properties it requires.
3. Establish the type of import required, insert or update.
4. Add the require properties, classes and links:
   - Include all the classes required for importing and searching.
   - Include all properties that are being imported. Their order does not have to match the import file.
   - It must not include any properties that are used as search fields.
   - Where an Update import is specified the report must exclude class id search properties.
   - Where an Insert import is specified the report must include classes that need to be linked to. No properties should be selected for these classes.
5. Save the report as described in Chapter 2.

More information: *Regarding import reports refer to page 8-6.*

Test Import

It is recommended that you import the first row from the data file to ensure that it is importing correctly.

To test your import, perform the following:

1. Open the copied file in Microsoft Notepad and delete all the rows leaving only two rows.
2. Save the file as a different filename.
3. Run the import as described in section Perform Import below, using the copied import Data File.
4. Check the data has been imported correctly.
5. If the import is an Insert open the original file in Microsoft Notepad and remove the first row of data, leaving the column headings, to avoid duplication when the full import is run.

Perform Import

Having tested the import process successfully, the full import can be performed.

To perform the full import:

1. Select the import report in UNIT-e Report Generator.
2. Select **Tools | Import** from the menu bar in UNIT-e Report Generator [URG.exe] to open the **Import** form (Figure 8-16).
3. Complete the import details.
4. Click on the **Play** button to start the import.
5. If the import has not been defined correctly an error dialogue appears detailing any errors. Some common problems are as follows:
   - Row headings do not specify the correct class name.
   - Row headings not in lowercase.
   - Incorrect or missing delimiters and separators.
6. The **Reverse Link** form opens if there are reverse links in any of the selected classes.
7. This form enables you to specify which reverse links to create. This form will display a check box for each reverse link available for your current import. Check the reverse link that you wish to establish.

   Note: *Take care when enabling reverse links as this may update classes that are included for searching.*
8. Check that the message dialogue confirms what you expect:
   - If Update has been specified a dialogue will open stating the Update class and Search properties.
   - If Insert has been specified a dialogue will open stating Insert and Search classes.
   - Warning: This is the final chance to abort the import process.
9. If the message is correct click on the **Yes** button to start the import process.

   Note: *Each row should take between ½ - 3 seconds to import.*
10. If you are unsure, click on the **No** button and talk the process through with the UNIT-e helpdesk staff.
11. Once the import is completed an error report dialogue opens. Click on the **OK** button.
12. This displays the following information about the import:
    - The date and time the import was completed.
    - How many rows were successfully imported.
    - Percentage error rate.
13. If there were any errors an error report and output file is created in the specified location.

Import Form

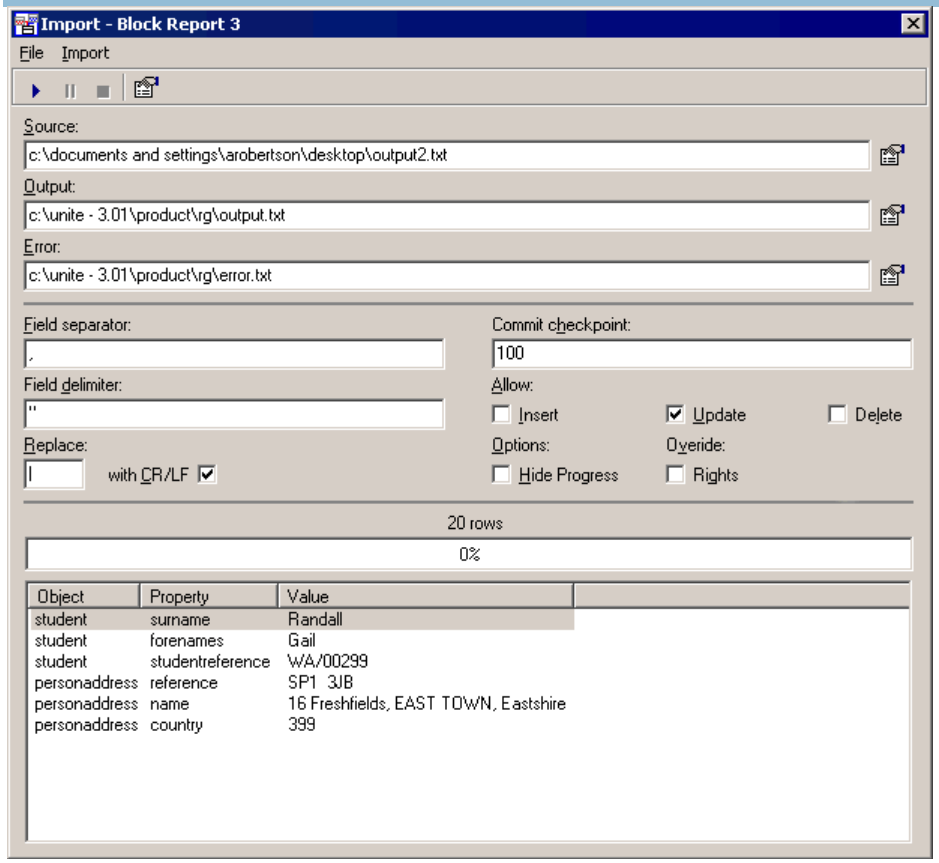


Figure 8-16 **Import** Form

Execute: Click on this button to start the import process.

Pause: Click on this button to pause an import in progress.

Stop: Click on this button to stop an import in progress.

Source: Enter the filename of the import text file created by 'save as text' in Microsoft Excel. Click on the related **Drill** button to open the file dialogue.

Output: Enter a filename where the data file rows with import errors will be saved. Click on the related **Drill** button to open the file dialogue.

Tip: *The output file can be used to re-import the rows that failed.*

Error: Enter a filename where the import error messages will be saved. Click on the related **Drill** button to open the file dialogue.

Format: Specify the Format with the Separator, Delimiter and check the with CR/LF box to replace carriage returns and line feeds with the characters specified in the **Replace** field. This should match the format of your data file.

Checkpoint: This specifies how many records will be imported before logging off/on to the database and committing changes. A small number is safer but slower. A large number is quicker but not as safe. A good compromise between these two factors is about 10.

Allow: Select the Import types you want to allow in this import.

More information: *Refer to the Import Theory section on page 8-3.*

Options: Select the options for this import. Select **Hide Progress** to suppress the display of progress below. Select **Rights** to switch of checking for class rights for the import.



Note: *The Audit and Rights options are only available if you have Manage rights on the Report Audit and Report Rights processes via UNIT-e Database Manager (Users).*

Data: A progress bar displays how far the import has got, together with the estimated time of completion and an indication of the number of rows that have errors.

Display data: Select this check box to view the current import record in the list box to the left.

Block Import

The **Block Import** form enables you to set-up a number of Import processes in advance, which will then run consecutively. This avoids the need to start each one individually and enables them to be run overnight.

Each Import to be included needs to be written and tested in advance, as described in the previous section.

To set-up a block import, perform the following:

1. Select **Tools | Block Import** from the menu.
2. The **Block Import** form opens (see below).
3. Click on the **New** button to add an import to the list.
4. The **Import** form opens (see page Figure 8-18).
5. Complete the **Import** form to define the required import.
6. Add as many imports as required.
7. Click on the **Save** button to save the list to a text file.
8. Click on the **Execute** button to start the imports.

Block Import Form

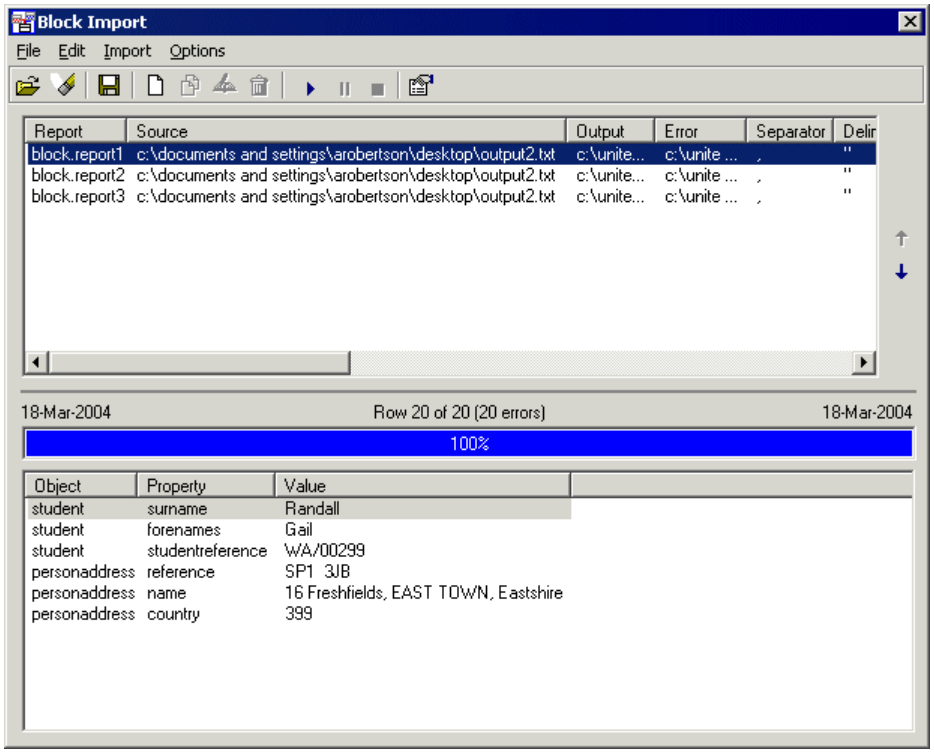


Figure 8-17 **Block Import** Form

Warning: *Specifying normal and delete imports in a single import list must be done with great care as unintended delete imports could be considerably more damaging than normal imports.*

Note: *In order to accommodate the delete option, the file format for saving Block Import lists now includes an additional column. Files saved as the old format are still readable by the new application, but will be saved in the new format.*

Open: Click on this button to open block import list.

Clear: Click on this button to clear the current block import list

Save: Click on this button to save the current block import list to a text file, for later use.

New: Click on this button to add a new import to the list. The **Import** form opens.

Copy: Click on this button to copy the currently highlighted Import. The **Import** form opens to enable you to edit the copied import entry.

Edit: Click on this button to edit the currently highlighted Import. The **Import** form opens.

Delete: Click on this button to delete the currently highlighted import. A dialogue opens to confirm the deletion.

Execute: Click on this button to start the block import process.

Pause: Click on this button to pause an import in progress.

Stop: Click on this button to stop an import in progress.

Option | Audit: Select this menu item to switch of the audit trail for all the selected imports.

Option | Check Rights: Select this menu item to switch of the class right check for all the selected imports.

Note: *These two menu options are only available if you have Manage rights on the Report Audit and Report Rights processes via UNIT-e Database Manager (Users).*

Import Form

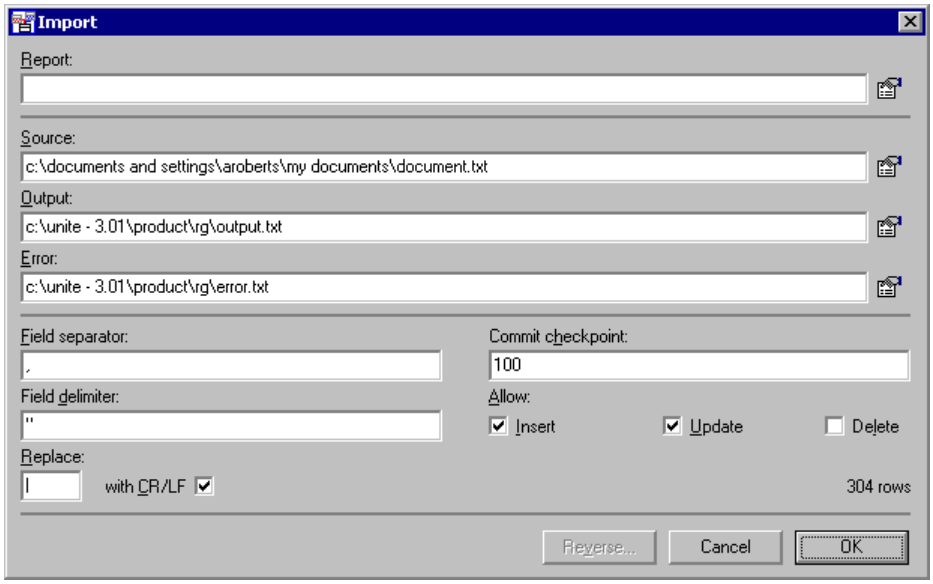


Figure 8-18 **Import** Form

Report: Specify a report for the import. Click on the related **Drill** button to open the **Open Report** form.

Source: Enter the filename of the import text file created by 'save as text' in Microsoft Excel. Click on the related **Drill** button to open the file dialogue.

Output: Enter a filename where a list of rows with import errors will be saved. Click on the related Drill button to open the file dialogue.

Error: Enter a filename where the import error messages will be saved. Click on the related **Drill** button to open the file dialogue.

Format: Specify the Format with the Separator, Delimiter and check the with CR/LF box to replace carriage returns and line feeds with the characters specified in the **Replace** field.

Reverse: This button is only enabled when a report has been selected. Click this button to open the **Reverse links** form. This form enables you to set reverse links related to the selected import classes in the report. A check box is provided for each available reverse link.

Global Update

UNIT-e Report Generator also enables you to update sets of properties in the database, with other database values or calculations. This is provided through global updates.

An update report consists of the following columns:

- Id property - identifies the records to be updated with the new value. The records updated are restricted by the Where element.
- Property to be updated - specified in the Select element.
- Value to update property - specified in the Select element, this can be a function, value, property or combination.

To perform a global update, complete the following:

Warning: *Performing a Global Update is a potentially dangerous operation. Ensure that you understand what is involved before proceeding. Contact the helpdesk for further advice.*

1. Create a UNIT-e Core Report that includes:
   - Id property
   - Property to be updated
   - Value to update property
2. Select Tools | Update from the menu.
3. The **Update** form opens, use it to perform the update. (see page Figure 6☐33).

Update Form

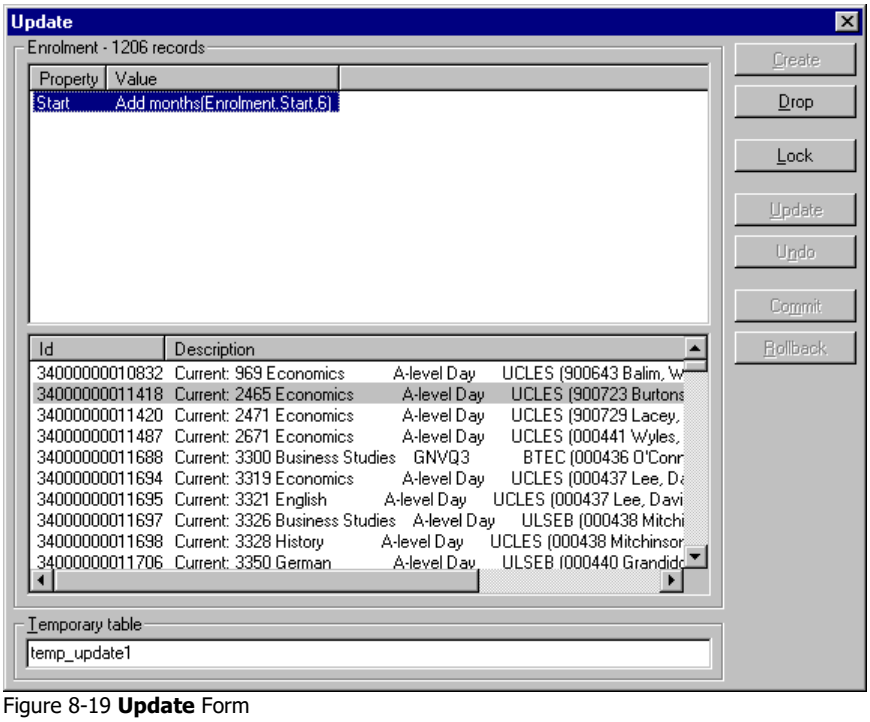


Figure 8-19 **Update** Form

The records to be updated are listed in the bottom list-box, when the temporary table has been created. The number of records to be updated is displayed in the frame title rather than a dialogue. The property and value list can be sorted by clicking on the column headings.

To perform a Global update, perform the following:

1. Rename the Temporary table. This is the name of the table created to perform the update. It holds the values of the specified properties before and after updating.

   Note: *Temporary tables exist until they are dropped. It is useful to keep a temporary table, as it can be used to undo an update in the future.*

2. Click on the **Create** button to create the temporary update table.
3. Click on the **Drop** button to drop if you have specified an existing temporary table.
4. Click on the **Lock** button to lock the selected records. This ensures that none of the selected records are currently being edited. A dialogue warns you if other users are editing any of the records.
5. At this point you can either:
   - Click on the **Update** button to perform the update.
   - Click on the **Undo** button to undo the update.
6. Once the update has been completed you can either:

   Warning: *This is the final chance to abort the update process.*

   - Click on the **Commit** button to commit the update.
   - Or click on the **Rollback** button to roll back the update.
7. If you do not need to keep the temporary table for future reference, click on the **Drop** button to drop it.

More information: *Update can also be performed via configurations. Refer to the "UNIT-e Database Manager (Settings)" Handbook (UDMSE.pdf).*

Global Delete

Warning: *Performing a Global Delete is a potentially dangerous operation. Ensure that you understand what is involved before proceeding. Contact the helpdesk for further advice.*

UNIT-e Report Generator now provides a Global Delete facility, in addition to the existing Global Update facility.

This tool enables you to delete a group of records that meet a given set of criteria, defined in a UNIT-e Core Report. It functions similarly to the Global Update tool. Only records from one class can be deleted together.

Global Delete is only available under the following criteria:

- The user has the Global Delete Report rights, specified in UNIT-e Database Manager (Users) [UDMUS.exe].
- The user has Delete and Grid rights for the classes to be deleted, specified in UNIT-e Database Manager (Users) [UDMUS.exe].
- The Report contains only one column, which must be the id of the class to be deleted.
- The Report returns records only once.

To perform a global delete, complete the following:

Create a UNIT-e Core Report global delete report.

Note: *This report must include the class and id property for the records being deleted. It may also include other classes used by the Where criteria.*

Test the report to check how many records it will delete. One matching record will be deleted for each row returned.

Open the **Delete** form by either:

- Select **Tools | Delete** from the menu.
- Right-click the report background and selecting Delete from the pop-up menu.
- The **Delete** form opens, use it to perform the global delete. (Figure 8-20)

Warning: *Due to the complexity of performing a global delete, it is possible that the wrong buttons are enabled if an error occurs. For example, if an error occurs while creating a temporary table the **Create** button will still be disabled. To enable a disabled button, you can click on the button that would normally reverse its action. For example, click on the **Drop** button to enable the **Create** button if an error occurred while creating a temporary table.*

Delete Form

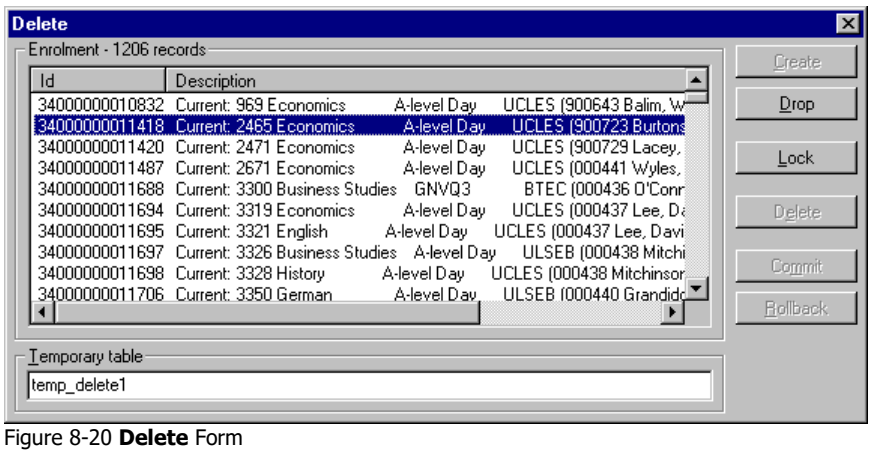


Figure 8-20 **Delete** Form

The **Delete** form provides a list of the records to be deleted when the temporary table has been created.

To perform a Global delete, perform the following:

1. Rename the Temporary table. This is the name of the table created to perform the delete. It holds the values of the specified properties before and after updating.

   
   Note: *Temporary tables exist until they are dropped. It is useful to keep a temporary table, as it can be used to undo a delete in the future.*

2. Click on the **Create** button to create the temporary delete table. If a dialogue appears stating that the temporary table already exists, either:
   - Change temporary table name.
   - Click on the **Drop** button to drop.
   - Click on the **Lock** button to lock the selected records. This ensures that none of the selected records are currently being edited.

If other users are editing any of the records, you are warned by a dialogue and must wait until they are free before continuing.

At this point you can click on the **Delete** button to perform the delete.

If any of the selected records have dependencies, they cannot be deleted until these related records have been deleted. A dialogue opens listing all the dependencies for the selected records.

If a dialogue appears warning that the database has run out of rollback space, you must either:

- Reduce the size of the global update by adding where criteria to the report.
- Increase the rollback space size.

Once the delete has been completed you can either:


Warning: *This is the final chance to abort the delete process.*

- Click on the **Commit** button to commit the delete.
- Click on the **Rollback** button to roll back the delete.

If you do not need to keep the temporary table for future reference, click on the **Drop** button to drop it.

Block Publish Definition

This tool enables you to carry out automated saves of report XML definitions in the database. The process calls the new UDMBP application to publish the views in batches of up to 1000, enabling you to publish high volumes of reports.

A log file, UNITeOutput.log, is produced alongside Report Generator if invalid reports are encountered during the Block publish process. An error is written to the log file and the report is skipped, allowing the Block publish process to continue through the remaining reports.

Notes: *When you save a report, the xml definition is automatically published at that point. This tool provides you with a method of publishing in bulk.*

This process may take some time if you are block publishing a large number of reports.

Perform the following to carry out block publishing:

1. Complete the **XML Module** and/or **XML Process** fields on the **Report** tab of the **Report** form (Figure 2-1) if you wish to ensure that only users with the specified module and/or process rights can run the report.
2. Select **Tools | Block Publish Definition** from the menu.
3. If you have not already selected a report the system displays the **Search for report** form (Figure 1-9). Enter your selection criteria and click on the **OK** button to open the **Block Publish Definition** form (see page 8-24). This form shows the reports that match your selection criteria.
4. Highlight the reports that you wish to publish and click on the **OK** button. The system then displays the **Publish XML definitions** dialogue (Figure 8-21).

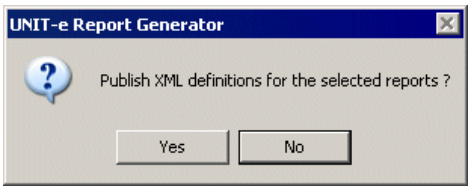


Figure 8-21 **Publish XML definitions** Dialogue

5. Click on the **Yes** button to continue.
6. When the reports are published a confirmation dialogue is displayed (Figure 8-22).

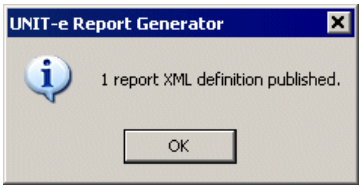


Figure 8-22 **Block Publishing Confirmation** Dialogue

7. If any invalid reports were encountered, check the UNITeoutput.log file for details.

Block Publish Definition Form

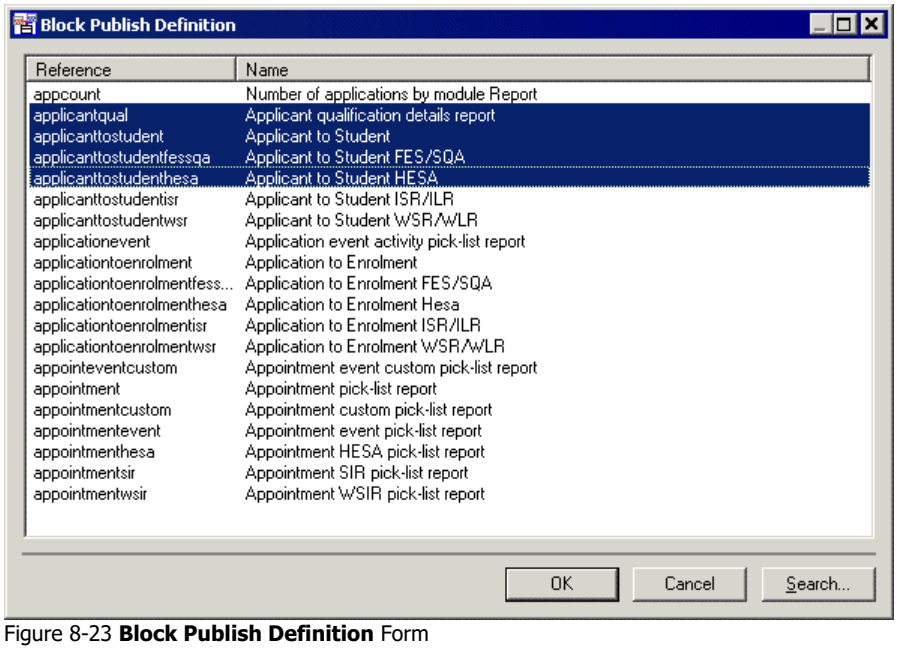


Figure 8-23 **Block Publish Definition** Form

Reference: The report reference.

Name: The report name.

OK: Click on this button to start the block publish process.

Cancel: Click on this button to cancel the block publish process.

Search: Click on this button to access the **Search for report** form (Figure 1-9) where you can search for other reports.

Chapter 9: Appendices

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Appendix A: Previous Enhancements

The following enhancements were made for previous releases:

- 4.43 Enhancements (see below)
- 4.32 Enhancements (see page 9-4)
- 4.31 Enhancements (see page 9-5)
- 4.29 Enhancements (see page 9-5)
- 4.24 Enhancements (see page 9-6)

4.43 Enhancements

In order to improve the performance of some functions against SQL Service databases, the following new and amended functions and tools are provided in this release:

New functions:

- Date add (dateadd):

  The existing RG Add Months function uses the Scalar function dbo.AddMonths in SQL Server. This is inefficient and caused significant performance issues with big data sets. The new Date add function adds a time/date interval to a date. It is intended to replace the Add month function, but can also be used to add other intervals, such as year, day, week, hour, etc.

  The parameters (all mandatory) are as follows:

  - Parameter 1: Interval - The time/date interval to add.

  Note: *Refer to https://docs.microsoft.com/en-us/sql/t-sql/functions/dateadd-transact-sql?view=sql-server-2017 for a full list of the available date/time intervals.*

  - Parameter 2: Number - The number of the specified intervals to add. If required, this can be a negative value to get dates in the past.
  - Parameter 3: Date - The date to be modified.

  For example, Date add(month, 2, 'Student.Date of birth') would add two months to a student's DOB.

  Note: *The second Oracle pre-upgrade script (u443_ALL_ORA_preupgrade2.xml) creates the Oracle equivalent of this new function.*

  The new Migrate scalar functions tool automatically replaces the Add month function with the Date add function for all reports selected (see below).

  A new report, cgn.dm.0029, is provided that includes a remarked out Where clause that can be used to identify reports that contain the Add months function.

- To age on date (toageondatev2):

  This is a new, faster (on SQL Server) version of the existing To age on date function (now renamed To age on date scalar). The original To age on date function uses the dbo.monthsbetween function, which on SQL Server databases results in poor performance with high data volumes, e.g. when aggregating results over a range of departments. The new To age on date function doesn't use monthsbetween, resulting in better performance on SQL Server databases.

  As with the old To age on date function, it converts a date to an age in years on a specified date. The parameters (both mandatory) are as follows:

  - Parameter 1: Date - The date to be converted.
  - Parameter 2: Date - The date for which you wish to know the students' age.

    For example, To age on date(Student.Date of birth,To date [date]('01-Aug-2018')) "Date of birth" would calculate a student's age on the 1st August 2018.

Note: *The SQL Server post-upgrade script in this release (u443_ALL_MSS_postupgrade.sql) updates all reports to use this new version of the function. However, all updated reports must be republished for that to take effect. A new report, cgn.dm.0029, is provided that finds reports containing the To age and To age on date functions, to enable you to identify all the reports that need republishing.*

Due to this improved version of the function, it is no longer necessary to use the Student age on date (SQL Server) expression provided for use in Management Advantage reports where the previous version of the function caused the software to time out.

More information: *Refer to the Functions Data sheet available in the **Datasheets** folder* for more details on these functions.

Updated functions:

- To age (toage):

  As with the To age on date function, previously the To age function was also implemented in SQL Server using the dbo.monthsbetween function. The function has now been amended to improve performance on SQL Server databases and no longer uses monthsbetween.

  Note: *All reports that include the To age function must be republished for the updated version of the function to be used. A new report, cgn.dm.0029, is provided that finds reports containing the To age and To age on date functions, to enable you to identify all the reports that need republishing.*

- To age on date scalar (toageondate):

  The original To age on date function has been renamed 'To age on date scalar', due to the addition of the new SQL Server version of the function (see above).

Migrate scalar functions tool (see page 5-23):

A new option - **Migrate scalar functions** - is now available to SQL Server customers in the **Tools** menu of Report Generator. This tool replaces the previous **To Text to Convert** tool and in addition to the functionality that provided to migrate To Text clauses to their SQL Server native Convert, Datename and Datepart function equivalents, the new tool now also processes reports that include the Add months function, to migrate them to the new Date add function.

This option should be used to improve the performance of reports that process a large number of records, where the native SQLServer Date add function makes a significant difference if used instead of the Add month scalar function. The tool automatically replaces the Add month function for all reports selected.

Note: *Manager rights on the Report Generator Administrator process are required.*

This process should be run in batches of approximately 500 reports in order to avoid a memory crash.

A key/setting, Application\RG\Log Files\MigrateScalarFunctions, is provided to enable you to specify the location of the log file produced by the tool.

The following supplied reports have already been updated:

- hesa2awardbdyrolhist
- hesa2awardingbodyrol
- hesa2qualifcatnsubjt
- hesa2qualifcatnsubjthist
- hesa2sessionstatus
- hesa2sessionstatushist

- hesa2stdntcrssesmode
- hesa2stdntcrssesmodehist
- kiscourse

u443baseHEupgrade:

- h19t.studentxml.ldfm
- he2.18.coursesessioninterim
- he2.18.moduleinstanceinterim
- he2.18.moduleoutcomeinterim
- he2.18.offvenuactinterim
- he2.18.sessionstatusinterim
- he2.18.studcoursesessinterim
- he2.18.studentinterim
- he2.18.studsessionmodeinterim

u443baseFSupgrade:

- fes.2018return
- fes.2019return
- mcmc.19enrolment
- mcmc.19student

4.32 Enhancements

The following enhancements have been included in this release of the UNIT-e software:

- Block Publish (see page 8-24):

  The **Block Publish Definition** form now includes a column for the report Reference, in addition to one for the name.

- To Text To Convert tool (see page 5-23):

  A new tool is provided to enable SQL Server users to migrate the Totext clauses in a range of reports to their SQL Server native Convert, Datename, and Datepart function equivalents for better performance in SQL Server. The tool allows you to search for and select one or more report(s) and when run identifies all instances of the To Text function that can be replaced.

  Note: *Manager rights on the Report Generator Administrator process are required.*

  This process should be run in batches of approximately 500 reports in order to avoid a memory crash.

  The gn.totextconvert report that shows examples of ToText formats and their equivalents using the Convert, datepart and datename functions has been locked to ensure that it doesn't get updated by the ToText To Convert tool.

  More information: *Refer to the Functions datasheet for details on the Convert functions.*

- Split function:

  The Split function has been re-written to improve performance. The function now generates more efficient SQL using a CLR function behind the scenes.

  Although the change is seamless and no update is required to the reports themselves, the published version of the report (i.e. Report XML Definition and Report View Definition) must be updated. The

report cgn.rg.0001 provides a list of reports that use the Split function. Run the Block Publish Definition process for these reports following the upgrade.



More information: *Refer to the Functions datasheet for details on the Split function.*

- Component Protection (see page 2-26):

  The Component protection facility has now been expanded to include some generic (non-Advantage) components, including the following reports:

  – All reports prefixed am., cgn., cm., gn and rm2 (including those amended in this release, am.student, cm.block.enrolment, rm2.class.module and rm2.materialregister).

  – The picklist reports amended in this release: appointment and modulechoice

  The Query Executor script, u432_ALL_MSS_preupgrade.sql, adds the protect-able generic components included in the release to the database and Component Protect class.



Note: *The script doesn't protect the components, but adds them to the Component Protect class to enable you to protect them via Report Generator before running the System Transfer scripts if required (i.e. if you have previously amended them and don't want them overwritten).*

For details on component protection, refer to the Importing System Components chapter in the 'UNIT-e Database Manager (System Transfer)' handbook (UDMST.pdf).

A report, cgn.dm.0017, is provided that lists any protected components skipped by System Transfer when upgrading to a specific release version. The version element of each System Transfer script (e.g. '432') can be entered as the search parameter.

4.31 Enhancements

- Component Protection (see page 2-26):

  As part of the new Component Protection functionality provided, a new **Component Protection** form has been added in UNIT-e Report Generator. The form allows you to view the component protection data relating to each RG report for which a Component protect record exists (i.e. each Component protect record of Type 'Report Generator', as created by the QX post upgrade script).



Note: *The Component Protection functionality was developed specifically for Advantage components, but may be extended to RG reports used in UNIT-e software in the future.*

For each report you are able to select the Protect flag, thereby protecting it from being overwritten during future DMST imports and preserving your customisations. You can also view any Component protect events associated with the report, which detail any imports where the report was skipped to avoid overwriting it, any changes made to the report while it was protected and any times the report was protected/unprotected.

4.32 The **Component Protection** form can be accessed any time via the **Protection** menu item in the **File** menu in RG. In this mode you are able to search for any Report Generator Component protect record. However, it can also be displayed automatically when attempting to save changes made to a report for which a Component protection record exists. If the report is already flagged as protected the **Component Protection** form is displayed. If it isn't already protected, a dialog is displayed asking if you wish to protect it. If you select 'Yes' the **Component Protection** form is displayed.

4.29 Enhancements

- Functions:

  The following new functions are provided (see page 6-4):

  – UNION and UNION ALL

  – INTERSECT

  – EXCEPT (SQLServer) / MINUS (Oracle)

- Define Query Parameters tab (see page 7-6):
  - A **Parameters** tab has been added to the **Test Report** form that enables you to easily enter values when testing reports.

More information: *For details on the new functions provided in this release, refer to the Functions data sheet.*

4.24 Enhancements

- Block Publish tool (see page 8-23):

  The Block Publish Definition process has been amended to reduce the amount of memory used when processing a high number of reports. The process now calls the new UDMBP application to publish the views in batches of up to 1000, significantly improving performance and enabling you to publish higher volumes of reports.

  A log file, UNITeOutput.log, is also now produced alongside Report Generator if invalid reports are encountered during the Block publish process. An error is written to the log file and the report is skipped, allowing the Block publish process to continue through the remaining reports.

- Default expressions (see page 5-13):

  New default expressions are provided and can be accessed by selecting 'Expression' in the drop-down list on the **Element** tab of the **Expression** form.
  - Staff reference and Student reference expressions are provided to speed up the process of writing student and staff reports.
  - The following new expressions include examples of the new convert, datename and datepart functions where they would commonly provide significant performance gains for SQL and SSRS reports:
    - Academic Year End date (SQLServer)
    - Academic Year Start date (SQLServer)
    - Activity Day of week
    - Activity Day number
    - Activity start and end time

Appendix B: Hotkeys

The following hotkeys are provided in UNIT-e Report Generator. These are in addition to the UNIT-e and standard Windows hotkeys.

More information: *Regarding UNIT-e hotkeys refer to the "Working with UNIT-e" Handbook (WWU.pdf).*

Location	Hot key	Action
Report Diagram Form	Ctrl – A	Save current report under a different reference.
Report Diagram Form – Object	Ctrl – C	Copy the currently highlighted object.
Report Diagram Form	Ctrl – N	Create a new report. This opens a new **Report Diagram** form.
Report Diagram Form	Ctrl – O	Open an existing report. This opens the **Open Report** or **Search for Report** form
Report Diagram Form	Ctrl – P	Print details of the current report. A dialogue opens to confirm the print.
Report Diagram Form	Ctrl – R	Reverse the currently selected link. A dialogue is displayed if the link cannot be reversed.
Report Diagram Form	Ctrl - S	Save changes to the current report.
Report Diagram Form	Ctrl – T	Open **Test Report** form for current report.
Report Diagram Form	Ctrl – V	Paste the copied object onto the diagram.
Report Diagram Form	Ctrl	When creating links, holding the **Ctrl** key down will create all available links in the specified direction, between two objects.
Report Diagram Form – Diagram pane	Cursor Up / Down / Left / Right	Use these keys to highlight different objects and links.
Report Diagram Form – Class list	Cursor Up / Down	Highlight different classes in the list. Typing a class name with the list selected also selects the specified class.
Report Diagram Form – Class List	Enter	Add the currently highlighted class to the diagram
Report Diagram Form – Object	Enter	Open the **Object** form for the currently highlighted link.
Report Diagram Form – Link	Enter	Open the **Link** form for the currently highlighted link.
Report Diagram Form	Tab	Swap the focus between the **Class list** and **Report diagram** panes.
Report Diagram Form	Delete	Delete the currently selected object or link
Report Form	Ctrl – A	Select all items in a multi-select list.
Report form – Element	Ctrl - C	Copy the currently highlighted element.
Report form – Element	Ctrl – V	Paste the copied element.
Report form – Element	Delete	Delete the currently highlighted element.
Report form – Element	Enter	Open the currently highlighted element in the **Expression** form.

Appendix C: Default Expressions

Default expressions are provided for use in your own reports (see page 5-13).

The following are available:

- Staff reference and Student reference:
  - Provided to speed up the process of writing student and staff reports.
- The following expressions include examples of the convert, datename and datepart functions, where they would commonly provide significant performance gains for SQL and SSRS reports:
  - Academic Year End/Start date (SQLServer)
  - Activity Day of week
  - Activity Day number
  - Activity start and end time

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