

EMIT 3.2.0 user guide

Scientia Ltd
CPC1, Capital Park
Fulbourn
Cambridge
CB21 5XE

Tel: +44 (0)1223 884949
Fax: +44 (0)1223 884973
<http://www.scientia.com>
Email: support@scientia.com

Ref: 3365



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1. Introduction

EMIT is a middleware tool that sits between a “Transfer Table” database containing exam related data extracted from numerous different third party sources (e.g. Student Record Systems, Estates database, Personnel database) and the Exam Scheduler application, and transfers data between the two.

The transfer tables database can be hosted on almost any platform be it server-based like Oracle or Microsoft SQL Server or desktop-based like Microsoft Access.

There is a configuration file to map tables, views or SQL queries (or a mixture of all three) and their columns in the transfer table database to entities (i.e. staff, locations, students, exam, etc) and their attributes (i.e. name, host key, description, etc) in Exam Scheduler.

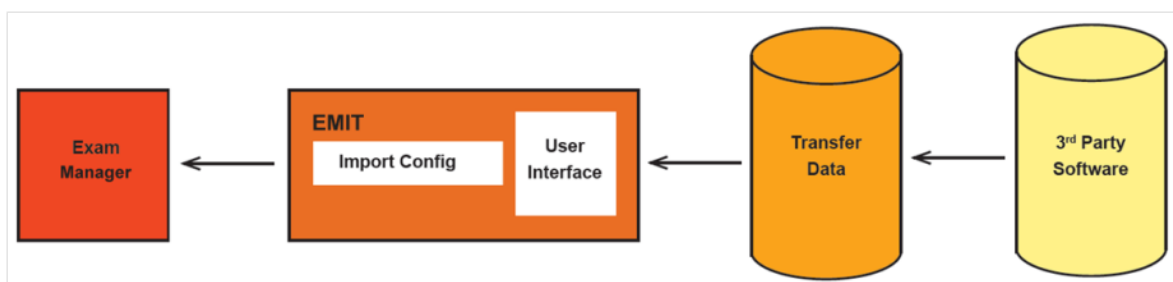
For example, you could have a table called “tblStudent” that contains details of all the students in the student record system. You could either import the entire contents of the table, or write an SQL query to only extract rows that meet a certain condition, such as only import students who are attached to at least one examined module.

If the primary key in tblStudent is called “StudentID” then within the configuration file you map the Student attribute “HostKey” to the column name “StudentID”.

The SQL query can concatenate multiple fields. For example “tblStudent” may have student first and last names as two separate columns and you may want the student names to be a concatenation of those fields. Therefore, the SQL query could be something like “SELECT Surname + ‘, ’ + FirstName ...”, and the resulting column would be mapped to the student name property in Exam Scheduler.

This approach means we do not have to be completely rigid with the database platform or the structure of the transfer tables. If the transfer tables do not match exactly what Exam Scheduler expects, users can write SQL queries to get the data in a form that does.

The diagram below describes how data is transferred from 3rd Party Software into Exam Scheduler via Transfer Tables and EMIT.



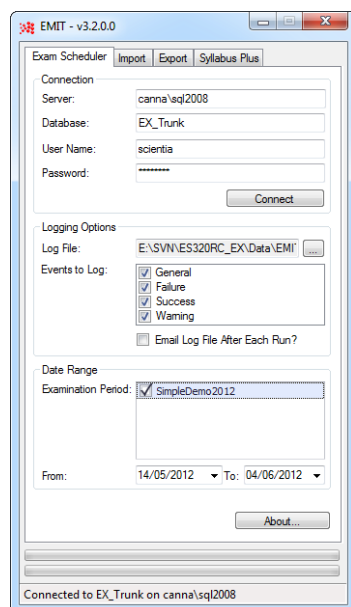
2. User Interface

Each time EMIT is used and closed the values set through the user interface are saved in a file called “emit.settings”. This file is saved to the same folder where EMIT was installed which the user can control at install time. Upon launching the application, the values from the settings file are used to initialise EMIT. If EMIT is being run with a visible UI, the settings will be seen. If it is being run without UI the settings will, nevertheless, be used to control the way that EMIT operates.

At version 3.1, the same settings were stored in a file called “emit.ini”. In the special case where you are running EMIT 3.2 for the first time and you wish to use the settings that were last used when EMIT 3.1 was run you can save the ini file from the previous installation to the folder where EMIT 3.2 is installed (this may require you to make a copy of the file before installation) and the first time it is run, EMIT 3.2 will read settings from the file and, on closing, save them to a new emit.settings file.

2.1. Exam Scheduler Tab

This tab is where users will specify connection details to the Exam Scheduler server.



2.1.1. Connection

Whilst EMIT connects directly to the database containing the transfer tables when reading data, this is not the case when writing to the database used by Exam Scheduler, so a connection string is not required.

You need to provide the name of the *Server* hosting the database and the name of the *Database* itself. You are also prompted for a *Username* and *Password*, but this is **not** a database username and password, as would be used in the database connection string. These will actually be the credentials of a valid user stored in a “Users” table of the Exam Scheduler database.

These details are passed to a .DLL file that handles the inserts, updates and deletions of data in the Exam Scheduler database.

2.1.2. Logging Options

A log file is created each time an EMIT routine is run (Import, Export or synchronisation with Syllabus Plus), logging successful and failed transactions as well as warnings (e.g. missing mandatory fields, invalid values in the data) and general notes (e.g. started commit of data).

The name and location of the log file can be specified by pressing the “...” button, which launches the File Save dialog. By default the filename will have the extension “*.log”.

```
28/01/2010 11:55:40: SUCCESS Update Academic Periods | HostKey = 'SPRING2010' | Name = 'SPRING 2010'
28/01/2010 11:55:40: WARNING Invalid Date specified for field StartDate for entity Academic Periods | HostKey = 'AUTUHN2010' | Name = 'AUTUHN 2010'
28/01/2010 11:55:40: FAILURE Update Academic Periods | HostKey = 'AUTUHN2010' | Name = 'AUTUHN 2010'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'AA' | Name = 'AA'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'AE' | Name = 'AE'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'AM' | Name = 'AM'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'AY' | Name = 'AY'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'BC' | Name = 'BC'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'BM' | Name = 'BM'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'BS' | Name = 'BS'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'BY' | Name = 'BY'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'CA' | Name = 'CA'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'CE' | Name = 'CE'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'CC' | Name = 'CC'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'CH' | Name = 'CH'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'CM' | Name = 'CM'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'CN' | Name = 'CN'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'CO' | Name = 'CO'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'CR' | Name = 'CR'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'DI' | Name = 'DI'
28/01/2010 11:55:40: SUCCESS Update Organisational Units | HostKey = 'DU' | Name = 'DU'
28/01/2010 11:55:41: SUCCESS Update Organisational Units | HostKey = 'EC' | Name = 'EC'
28/01/2010 11:55:41: SUCCESS Update Organisational Units | HostKey = 'ED' | Name = 'ED'
28/01/2010 11:55:41: SUCCESS Update Organisational Units | HostKey = 'EE' | Name = 'EE'
28/01/2010 11:55:41: SUCCESS Update Organisational Units | HostKey = 'EF' | Name = 'EF'
28/01/2010 11:55:41: SUCCESS Update Organisational Units | HostKey = 'EL' | Name = 'EL'
28/01/2010 11:55:41: SUCCESS Update Organisational Units | HostKey = 'EM' | Name = 'EM'
28/01/2010 11:55:41: SUCCESS Update Organisational Units | HostKey = 'EN' | Name = 'EN'
28/01/2010 11:55:41: SUCCESS Update Organisational Units | HostKey = 'ES' | Name = 'ES'
28/01/2010 11:55:41: SUCCESS Update Organisational Units | HostKey = 'ET' | Name = 'ET'
```

The log file is overwritten each time a routine is run, but the existing log file from the last run is backed up. A copy of the file is made in the same directory, which is renamed in the format {filename}.log.bak.{date}_{time} – e.g. “emit.log.bak.20100126_012327”.

The log file can be automatically emailed after each routine has completed. The configuration file contains keys where you can specify the mail server, recipient and sender addresses, subject and body of the email, etc. Check the <! – Email Configuration --> section of the .config file.

2.1.3. Date Range

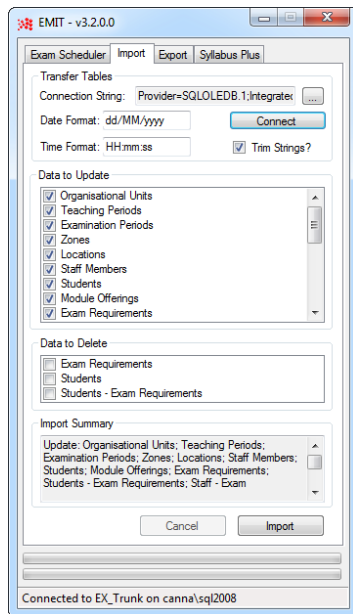
Users should select one or more Academic Periods or a start and end date. If Academic Periods are selected the start and end date combo boxes automatically update to match those of the selected periods.

The date range is used primarily when exporting data, either from Exam Scheduler into a reporting database or when transferring scheduled allocations between Exam Scheduler and Syllabus Plus.

However it is also used when importing data. For example when updating or deleting existing data, EMIT will check for entities in Exam Scheduler that exist within the specified date range. If an entity is not valid until after the end date of the import or has been made obsolete before the start date of the import, then that entity will not be updated or deleted.

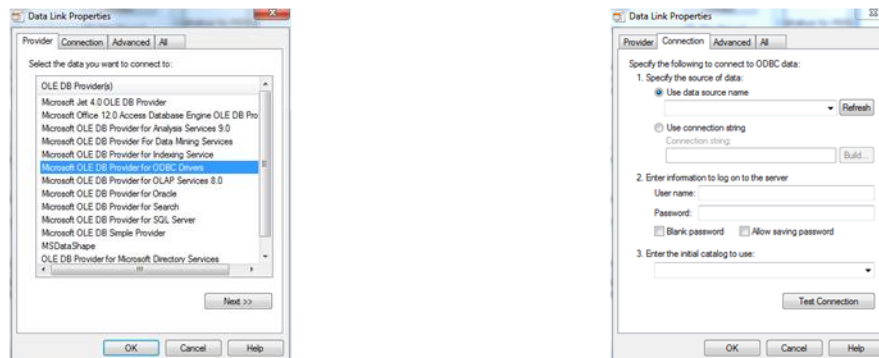
2.2. Import Tab

This tab is where users will specify connection details to the Transfer Tables database, and what data entities or relationships they wish to update and / or delete.



2.2.1. Transfer Tables

In order to make a connection to the Transfer Table database, a *Connection String* needs to be specified. Pressing the “...” button launches the Data Link dialog, where you specify the data provider, server name, database name, username and password (where applicable). The dialog automatically builds the connection string in the correct format and allows you to test whether a connection can be made.



If you prefer not to use a connection string (which contains the password as plain text) alternatively you can create an ODBC entry to the database and reference that in the Data Link dialog.

Date Format tells EMIT the format in which to expect dates in the Transfer Tables. If the database stores dates in US format (MM/DD/YYYY) you would not want EMIT to read them in the UK format (DD/MM/YYYY), e.g. 4th May 2010 would be stored as 05/04/2010 in the database but would be read in as 5th April 2010 if EMIT defaulted to UK format.

Time Format tells EMIT the format in which to expect time in the Transfer Tables. If 'HH:mm:ss' is specified then 24 hour time will be used, if 'hh:mm:ss' is specified then 12 hour time will be used, and the data must also provide AM or PM at the end of each time string.

Automatically Trim Strings is an option to remove any excess spaces from strings read from the Transfer Tables. In SQL Server, and possibly other databases, when strings are read from database tables they are returned with trailing spaces padding out the remaining space allocated for that field.

For example, if a "Surname" field on the database table was specified as being varchar(25), and an entry in that field was "Maxwell", that would be returned as "Maxwell" (7 characters) followed by 18 spaces to pad it to 25 characters. Ticking the "Automatically Trim Strings" check box would remove the trailing spaces.

2.2.2. Data to Update

This is a check box list of the types of entity that can be updated via EMIT. "Update" is a generic term for inserting / creating new entities or updating / modifying existing ones. During the import process EMIT detects whether an entity already exists, based upon its primary key (host key) in the transfer table. If so then the existing entity is updated, otherwise a new one is created.

Tick the check box against one or more of the type(s) of entity you want to update. This means that you can import all data in one go, or import one or more entity types at a time - for example, you may choose to initially import base resource data such as locations, staff, organisational units (departments), etc, followed by an import of students, then exam requirements, then the links between the two.

2.2.3. Data to Delete

This is a check box list of the types of entity that can be deleted via EMIT.

Like Update, "Delete" can have multiple meanings too. The most obvious is deleting an entity from the Exam Scheduler database, for example a student who has departed, or an examination requirement for a module that is no longer running.

It can also mean removing a link between a student and examination, if a student is no longer registered on a module. This would have a cascade effect of removing the student from the allocated exam activity.

2.2.4. Import Summary

This text box gives an overview of the selected options in the Data to Update / Delete lists.

2.2.5. Progress Bars

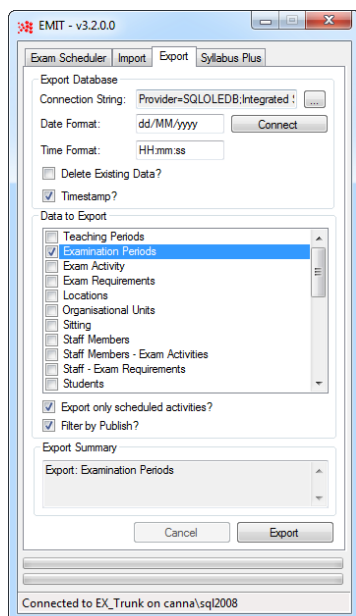
Two progress bars are situated at the bottom of the dialog.

The *bottom* progress bar indicates progress through all the checked entities - e.g. if you ticked four entities to update in the list then the progress bar would move forward 25% each time it completes the update routine for a selected entity.

The *top* progress bar indicates progress through the current entity being updated or deleted.

2.3. Export Tab

This tab is where users will specify connection details to the Export database, and what data entities or relationships they wish to export.



2.3.1. Export Database

Like when connecting to the Transfer Tables database on the Import tab, users must specify a database connection string. Refer to section 2.2.1 for information on how to create this string.

Date and *Time Format* allow the users to specify the format of dates and times exported to the database.

Delete Existing Data, if selected, will automatically delete all rows from the database table prior to populating it.

Timestamp will insert the date / time a row was inserted for audit purposes.

2.3.2. Data to Export

This is a check box list of the entities and relationships that can be exported via EMIT.

Tick the check box against one or more of the entity(s) you want to export. This means that you can export all data in one go, or export one or more entity types at a time – for example, you may choose to initially export base resource data such as locations, staff, organisational units (departments), etc, followed by an export of students, then exam requirements, then the links between the two, then the scheduling and allocation information.

Most of the entities are self-explanatory, but a *Sitting* is the relationship between the Exam Requirement, Student and Exam Activity. For example, student “Smith” takes exam requirement “ABC101” and is allocated to exam activity “ABC101/01”. Once exported to the reporting database, the “Sittings” table can be joined with the Exam Activity export table to obtain the scheduled date, start time, end time, location, staff, etc.

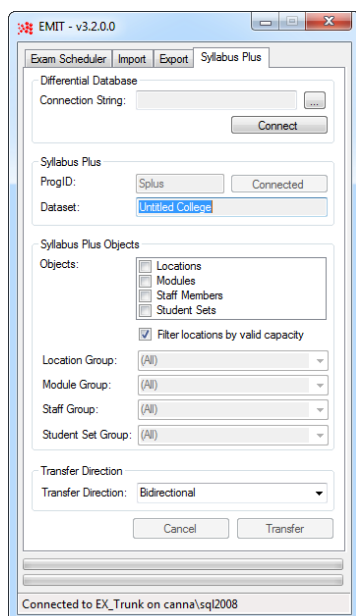
Below the 'Data to Export' list, you may specify which activities should be exported with two check boxes - 'Export only scheduled activities?' and 'Filter by Publish?'. By default, if neither check box is checked, then all activities will be exported. If 'Export only scheduled activities?' is checked then only exam activities which have been scheduled, will be exported. If 'Filter by Publish?' is checked then only those activities whose Exam Requirements have the 'Publish?' check box in Exam Scheduler checked, will be exported.

2.3.3. *Export Summary*

This text box gives an overview of the selected options in the Data to Export list.

2.4. Syllabus Plus Tab

This tab is where users will specify connection details to a Syllabus Plus image, in order to transfer scheduling and allocation data for resources that are common to both Syllabus Plus and Exam Scheduler. At version 3.2.0 transfer is restricted to the Syllabus Plus to Exam Scheduler direction.



2.4.1. *Differential Database*

Rather than transfer all activities each time EMIT runs, the allocations and scheduled data from both systems is inserted into a "differential database". The database contains views that compares the resource allocations and scheduled information at the current time with the last time EMIT ran, and works out only the changes.

So if an activity has been unscheduled in Syllabus Plus since the last time EMIT ran, then the allocated location(s) and staff member(s) will be made available in Exam Scheduler. Conversely, if a new activity has been scheduled in Syllabus Plus since the last time EMIT ran, the allocated resources will be made unavailable in Exam Scheduler.

To create a database connection string for the Differential Database, refer to section 2.2.1.

2.4.2. Syllabus Plus

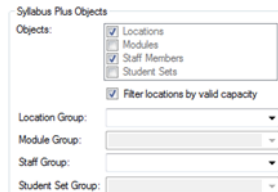
Users will need to specify the ProgID of the Syllabus Plus image file that EMIT will be interacting with. The image needs to be registered as a COM server and connected to the Scientia Database.

Upon entering the ProgID, pressing “Test Connection” will activate the Syllabus Plus Objects section (see next section) and display the Institution Name and Dataset fields, to confirm that EMIT has connected to the correct Syllabus Plus image.

2.4.3. Syllabus Plus Objects

Once EMIT has connected to the Syllabus Plus image, the Syllabus Plus Objects section is activated. This is where users specify which objects in Syllabus Plus need to have their allocations synchronised for the date range specified on the Exam Scheduler tab.

Four Syllabus Plus object classes can be transferred – Staff, Locations, Student Sets and Modules. Staff and Locations in Syllabus Plus have equivalent objects in Exam Scheduler. Student Sets map to Students and Modules map to Exam Requirements. Tick the objects to be synchronised. This will activate the Group options below.



Because not all resources in Syllabus Plus will exist in Exam Scheduler, users can specify the name of a Group object that exists in Syllabus Plus. EMIT will transfer only the allocations of the members of those groups.

If no group is specified then allocations will be transferred for all objects in Syllabus Plus. If no corresponding entity exists in Exam Scheduler (i.e. the host key of the object in Syllabus Plus is not found in Exam Scheduler) then the object and all its allocations are ignored - transferring allocation information will not create new objects.

2.4.4. Transfer Direction

At version 3.2 the user may only transfer data in one direction; from Syllabus Plus to Exam Scheduler.

2.5. Running without the user interface

In the config file (EMIT.exe.config) are two keys - "RunAuto" and "RunAutoCode". If "RunAuto" is set to "True" then EMIT will run in non UI mode, using the settings specified in the user interface (this setting is saved in emit.settings file) the last time it was used interactively.

The "RunAutoCode" is a value between 1 - 7. This value is arrived at by performing a simple sum: 1 represents import, 2 represents export, and 4 represents the Syllabus Plus transfer. Whatever tasks you want to perform, add the relevant numbers together to get the code. For example, to do an import only the code would be "1"; to do an import and export the code would be 1 + 2 = "3"; to do an import followed by a transfer from Syllabus Plus = 1 + 4 = "5", etc.

To use EMIT in this mode, run EMIT.exe via windows command line specifying which emit.settings file you want to use. Emit will expect to find the .settings file in the same directory as the EMIT.exe file. If no .settings file is specified in the command line then emit will run using the file called emit.settings.

e.g

1. " C:\Users\\AppData\Local\Scientia\EMIT\EMIT.exe" example.settings (Emit runs using example.settings file found in same EMIT directory as EMIT.exe)
2. . " C:\Users\\AppData\Local\Scientia\EMIT\EMIT.exe" (Emit runs using emit.settings file found in same EMIT directory as EMIT.exe)

3. Configuration File

The configuration file that controls the mapping between the transfer table data and the entities in Exam Scheduler is called “emit.exe.config” and is in the same directory as the “emit.exe” application.

The configuration file is in XML format, and can be edited in any text or XML editor. The latter option is preferable as it will detect any invalid characters or unclosed tags that would make the config file unreadable.

There are a series of keys representing all the entities and properties in Exam Scheduler that can be updated or deleted. These keys appear within the <appSettings> section.

```
<appSettings>
  <!-- will application automatically run without a UI -->
  <add key="RunAuto" value="False" />

  <!-- Update Entity -->
  <add key="UpdateLocation_SQL" value="SELECT HostKey, Name, Capacity FROM tblLocation" />
  <add key="UpdateLocation_HostKey" value="{0}" />
  <add key="UpdateLocation_Name" value="{1}" />
  <add key="UpdateLocation_Description" value="{1}" />
  <add key="UpdateLocation_Capacity" value="{2}" />
  <add key="UpdateLocation_Zone" value="" />
  <add key="UpdateLocation_OrganisationalUnit" value="" />
  <add key="UpdateLocation_ValidFrom" value="" />
  <add key="UpdateLocation_ObsoleteDate" value="" />

  <add key="UpdateStudent_SQL" value="SELECT HostKey, Name, RIGHT(Name,1) + ' ' + LEFT(Name,INSTR(Name,'')-1) + ' - ' + IdentityNumber, RIGHT(Name,1) + ' ' + LEFT(Na" />
  <add key="UpdateStudent_HostKey" value="{0}" />
  <add key="UpdateStudent_Name" value="{1}" />
  <add key="UpdateStudent_Description" value="{2}" />
  <add key="UpdateStudent_Birthday" value="" />
  <add key="UpdateStudent_Email" value="{3}" />
  <add key="UpdateStudent_Address" value="" />
  <add key="UpdateStudent_Gender" value="{4}" />
  <add key="UpdateStudent_OrganisationalUnit" value="{5}" />
  <add key="UpdateStudent_ValidFrom" value="" />
  <add key="UpdateStudent_ObsoleteDate" value="" />

  <add key="UpdateExamRequirement_SQL" value="" />
  <add key="UpdateExamRequirement_HostKey" value="" />
  <add key="UpdateExamRequirement_Name" value="" />
  <add key="UpdateExamRequirement_Description" value="" />
  <add key="UpdateExamRequirement_Duration" value="" />
  <add key="UpdateExamRequirement_EarliestStart" value="" />
  <add key="UpdateExamRequirement_LatestStart" value="" />
  <add key="UpdateExamRequirement_MinimumSplitSize" value="" />
  <add key="UpdateExamRequirement_OrganisationalUnit" value="" />
  <add key="UpdateExamRequirement_AcademicPeriod" value="" />

  <add key="UpdateStaffMember_SQL" value="SELECT HostKey, Name, Description, Name + '@scientia.ac.uk', IIF(MID(Name,4,1) &lt;='S','M','F') FROM tblStaff" />
  <add key="UpdateStaffMember_HostKey" value="{0}" />
  <add key="UpdateStaffMember_Name" value="{1}" />
  <add key="UpdateStaffMember_Description" value="{2}" />
  <add key="UpdateStaffMember_Email" value="{3}" />
  <add key="UpdateStaffMember_Gender" value="{4}" />
  <add key="UpdateStaffMember_Phone1" value="" />
  <add key="UpdateStaffMember_Phone2" value="" />
  <add key="UpdateStaffMember_OrganisationalUnit" value="" />
  <add key="UpdateStaffMember_ValidFrom" value="" />
  <add key="UpdateStaffMember_ObsoleteDate" value="" />

  <add key="UpdateProductRequirement_SQL" value="SELECT StudentID, RequirementID FROM tblProductRequirements" />
  <add key="UpdateProductRequirement_HostKey" value="{0}" />
  <add key="UpdateProductRequirement_StudentID" value="{1}" />
  <add key="UpdateProductRequirement_RequirementID" value="{2}" />
  <add key="UpdateProductRequirement_ValidFrom" value="" />
  <add key="UpdateProductRequirement_ObsoleteDate" value="" />
</appSettings>
```

3.1. SQL Key

All entities that can be updated or deleted via EMIT have an “SQL” key associated with them. The value of this key can be either the name of a table or view in the Transfer Table database, or an SQL query to be executed that results in a recordset containing data to be updated or deleted.

The name of this key takes the form {Update|Delete}{Entity}_SQL - e.g. “UpdateLocation_SQL”, or “DeleteStudent_SQL”.

3.2. Escaping Characters

As the configuration file is in XML format, certain characters will need to be “escaped” to make them “safe” in the XML file.

The most common characters that may need replacing are the less than < and greater than > signs that are used in XML files for specifying tags, but are often used in WHERE clauses of SQL queries. The “safe” equivalent of is “<” and “>” and these must be used instead of < and > respectively.

For example, an SQL query that only selects where a date is in a particular date range would possibly look something like this:

```
SELECT * FROM MyTable WHERE MyDate >= 2010-01-25 AND MyDate <= 2010-01-29
```

But for the SQL key in the EMIT configuration file, this would need to be changed to:

```
SELECT * FROM MyTable WHERE MyDate &lt;= 2010-01-25 AND MyDate &gt;= 2010-01-29
```

3.3. Data Mapping Keys

The remaining keys are used for mapping the properties of the entity in Exam Scheduler with the columns in the table, view or query specified in the SQL key.

The names of these keys take the form {Update|Delete|Export}{Entity}_{Property} - e.g. the key "UpdateLocation_Name" contains the mapping between the Name property of the Location in Exam Scheduler and the column that contains that data in the Transfer Table record set. A full list of valid keys for all entities can be found in chapter 5, including the expected data type and whether they are mandatory or not.

To map data, the following convention applies:

- If the value of the key is in {braces} then EMIT will read from the specified column in the record set.
- Subsequently, if the braced value is *text* then EMIT will map to the column in the record set of that name - e.g. {ID}, {Email}, {DateOfBirth}.
- If the braced value is *numeric* then it will map to the column corresponding to that number (starting from 0) based on the order the columns appear in the table / view or the order in which they were selected in the query.
- If the value of the key is not braced then the value is treated as literal text. For example, the key `<add key="UpdateLocation_Description" value="Imported via EMIT" />` would import the literal text "Imported via EMIT" into the description property of all Locations.
- If the key is empty then it is ignored. Some keys are mandatory and cannot be empty - see chapter 5 for more information.

So an example set of keys to update a location may look like this, if you chose to use column names:

```
<add key="UpdateLocation_SQL" value="SELECT ID, Name, Capacity, BuildingID FROM tblLocation" />
<add key="UpdateLocation_HostKey" value="{ID}" />
<add key="UpdateLocation_Name" value="{Name}" />
<add key="UpdateLocation_Capacity" value="{Capacity}" />
<add key="UpdateLocation_Zone" value="{BuildingID}" />
```

Alternatively the keys may look like this, if you chose to use column numbers:

```
<add key="UpdateLocation_SQL" value="SELECT ID, Name, Capacity, BuildingID FROM tblLocation" />  
<add key="UpdateLocation_HostKey" value="{0}" />  
<add key="UpdateLocation_Name" value="{1}" />  
<add key="UpdateLocation_Capacity" value="{2}" />  
<add key="UpdateLocation_Zone" value="{3}" />
```

Since ID is selected first in the query, that equates to column {0}, then comes name as column {1}, etc. The order the columns are selected does not necessarily need to match the order of the keys, although doing this does make it easier to read.

4. Configuration File Keys

4.1. Update Keys

Entity	Key Name	Data Type	Mandatory?	Comments
Examination Period	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	StartDate	DateTime		
	FinishDate	DateTime		
	StartTimeOfDay	DateTime		
	EndTimeOfDay	DateTime		
Teaching Period	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	StartDate	DateTime		
	FinishDate	DateTime		
Exam Requirement	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	Writing time	Integer	✓	Duration in minutes
	Reading time	Integer	✓	Duration in minutes
	OrganisationalUnitHostKey	Text		Host Key of owning Org Unit
	ExaminationPeriodHostKey	Text	✓	Host Key of Exam Period
	MinimumSplitSize	Integer		
	FixedStart	DateTime		
	EarliestStart	DateTime		
	LatestStart	DateTime		
	Delivery	Integer		0 = Parallel, 1 = Serial (defaults to 0)
	BatchSize	Integer		Must be an integer > 0
	AdhocText1	Text		
	AdhocText2	Text		
	AdhocText3	Text		
	AdhocText4	Text		
	AdhocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
AdhocText10	Text			
AddHocNumeric1	Integer			
AddHocNumeric2	Integer			

Entity	Key Name	Data Type	Mandatory?	Comments
	Planned Size	Integer		Must be an integer > 0
	ModuleOffering	Text		
	LocationsRequired	Boolean		
	Publish	Boolean		
	PermittedMaterials	Text		
	SchedulingNotes	Text		
	PaperStatus	Integer		Unknown = 0, PaperReceived = 1, PaperReviewed = 2, PaperPrinter = 4, ScriptsDistributed = 8, ScriptsReturned = 16 (defaults to 0)
	PresetLocationConfigurationHostKey	Text		
	PresetZoneHostKey	Text		
Preceding Exam Requirement	SQL	Text	✓	
	ExamRequirementHostKey	Text	✓	Host Key of the Exam Req
	PrecedingExamRequirementHostKey	Text	✓	Host Key of the Exam Req that must precede the above Exam Req
Invigilator	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	Email	Text		
	Gender	Char		M(ale), F(emale), U(nspecified)
	Phone1	Text		
	Phone2	Text		
	OrganisationalUnitHostKey	Text		Host Key of owning Org Unit
	MinimumConsecutiveTimePerDay	Integer		Must be an integer >= 0
	MaximumConsecutiveTimePerDay	Integer		Must be an integer >= 0
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		
ValidFrom	DateTime			
ObsoleteFrom	DateTime			
Location	SQL	Text	✓	
	HostKey	Text	✓	

Entity	Key Name	Data Type	Mandatory?	Comments
	Name	Text	✓	
	Description	Text		
	DefaultCapacity	Integer	✓	Must be an integer > 0
	ZoneHostKey	Text		Host Key of owning Zone
	OrganisationalUnitHostKey	Text		Host Key of owning Org Unit
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		
	UsagePreference	Integer		Must be an integer > 1 & <=10
	ValidFrom	DateTime		
ObsoleteFrom	DateTime			
Organisational Unit	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
AddHocNumeric2	Integer			
Staff Member	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	Email	Text		
	Gender	Char		M(ale), F(emale), U(nspecified)
	Phone1	Text		
	Phone2	Text		

Entity	Key Name	Data Type	Mandatory?	Comments
	OrganisationalUnitHostKey	Text		Host Key of owning Org Unit
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		
	ValidFrom	DateTime		
	ObsoleteFrom	DateTime		
Student	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	Birthday	DateTime		
	Email	Text		
	Address	Text		
	Gender	Char		M(ale), F(emale), U(nspecified)
	OrganisationalUnitHostKey	Text		Host Key of owning Org Unit
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		
	ValidFrom	Text		
	ObsoleteFrom	Text		
	ExtraMinutes	Integer		Must be an integer => 0 The extra minutes of <u>writing</u> time
	IsFixedExtraTime	Boolean		Determines how ExtraMinutes is applied to Exams of the Student Fixed = 1, Pro rata on Exam writing time = 0
NeedsSpecialProvision	Boolean			

Student Exam Requirement	SQL	Text	✓	
	StudentHostKey	Text	✓	
	ExamRequirementHostKey	Text	✓	
	CandidateNumber	Text		
	NeedsSpecialProvision	Boolean		
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
AddHocNumeric2	Integer			
Staff Member Exam Requirement	SQL	Text	✓	
	ExaminationPeriodHostKey	Text	✓	
	StaffMamberHostKey	Text	✓	
Examination Period Teaching Period	SQL	Text	✓	
	ExaminationPeriodHostKey	Text	✓	
	TeachingPeriod	Text	✓	
Zone	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	ParentZone	Text		
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
AddHocNumeric2	Integer			
Module Offering	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	OrganisationalUnitHostKey	Text		
	TeachingPeriod	Text		
	AdHocText1	Text		

	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		
POS Offering	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	OrganisationalUnitHostKey	Text		
	TeachingPeriod	Text		
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
AddHocNumeric2	Integer			
Module Offering - POS Offering	SQL	Text	✓	
	ModuleOffering	Text	✓	
	POSOffering	Text	✓	
	IsMandatory	Boolean		
	IasActingMandatury	Boolean		
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		

Exam Requirement - Same Time Exams	SQL	Text	✓	
	ExamRequirementHostKey	Text	✓	
	SameTimeExamRequirementHostKey	Text	✓	
Exam Requirement - Same Location Exams	SQL	Text	✓	
	ExamRequirementHostKey	Text	✓	
	SameLocationExamRequirementHostKey	Text	✓	
Suitabilities	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description			
Suitabilities - Students	SQL	Text	✓	
	SuitabilityHostKey	Text	✓	
	StudentHostKey	Text	✓	
Suitabilities - Locations	SQL	Text	✓	
	SuitabilityHostKey	Text	✓	
	LocationHostKey	Text	✓	
Suitabilities - Invigilators	SQL	Text	✓	
	SuitabilityHostKey	Text	✓	
	InvigilatorHostKey	Text	✓	
Suitabilities - Exam Requirements	SQL	Text	✓	
	SuitabilityHostKey	Text	✓	
	ExamRequirementHostKey	Text	✓	

4.2. Delete Keys

Entity	Key Name	Data Type	Mandatory?	Comments
Exam Requirement	SQL	Text	✓	
	ExamRequirementHostKey	Text	✓	
Student	SQL	Text	✓	
	StudentHostKey	Text	✓	
Student Exam Requirement	SQL	Text	✓	
	StudentHostKey	Text	✓	
	ExamRequirementHostKey	Text	✓	

4.3. Export Keys

Entity	Key Name	Data Type	Mandatory?	Comments
Examination Period	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	StartDate	Text		
	FinishDate	Text		
	StartTimeOfDay	Text		
	EndTimeOfDay	Text		

Entity	Key Name	Data Type	Mandatory?	Comments
	Timestamp	Text		
Teaching Period	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	StartDate	Text		
	FinishDate	Text		
	StartTimeOfDay	Text		
	EndTimeOfDay	Text		
	Timestamp	Text		
Exam Session	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	StartDate	Text		
	Duration	Text		
	NumberOfStudents	Text		
	Size	Text		
	ExaminationPeriodHostkey	Text		
	Location	Text		
	Timestamp	Text		
Exam Requirement	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	OrganisationalUnit	Text		Id of owning Org Unit
	ExaminationPeriod	Text		Id of Exam Period
	Delivery	Integer		0 = Parallel, 1 = Serial (defaults to 0)
	BatchSize	Integer		
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
AddHocNumeric1	Integer			
AddHocNumeric2	Integer			

Entity	Key Name	Data Type	Mandatory?	Comments
	ModuleOffering	Text		
	MinimumSplitSize	Integer		
	EarliestStart	DateTime		
	LatestEnd	DateTime		
	FixedStart	DateTime		
	LocationsRequired	Boolean		
	PermittedMaterials	Text		
	SchedulingNotes	Text		
	PaperStatus	Integer		Unknown = 0, PaperReceived = 1, PaperReviewed = 2, PaperPrinter = 4, ScriptsDistributed = 8, ScriptsReturned = 16 (defaults to 0)
	PresetLocationConfigurationHostKey	Text		
	PresetZoneHostKey	Text		
	WritingTime	Integer		Duration in minutes
	ReadingTime	Integer		Duration in minutes
	Timestamp	DateTime		
Sitting Requirement	SQL	Text		
	Id	Text		
	Student	Text		Id of Student
	ExamRequirement	Text		Id of Exam Requirement
	ExamActivity	Text		Id of Exam Activity
	ExamLocation	Text		Id of Location
	CandidateNumber	Text		
	NeedsSpecialProvision	Boolean		
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
AddHocNumeric2	Integer			
Location	SQL	Text	✓	
	Id	Text		
	HostKey	Text		
	Name	Text		
	Description	Text		
	DefaultCapacity	Integer		
	Zone	Text		Id of owning Zone
	OrganisationalUnit	Text		Id of owning Org Unit

Entity	Key Name	Data Type	Mandatory?	Comments
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		
	ValidFrom	DateTime		
	ObsoleteFrom	DateTime		
Timestamp	DateTime			
Organisational Unit	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text		
	Name	Text		
	Description	Text		
	ValidFrom	DateTime		
	ObsoleteFrom	DateTime		
	Timestamp	DateTime		
Staff Member	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text		
	Name	Text		
	Description	Text		
	Gender	Char		M(ale), F(emale), U(nspecified)
	Phone1	Text		
	Phone2	Text		
	Email	Text		
	OrganisationalUnit	Text		Id of owning Org Unit
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
AdhocText10	Text			
AddHocNumeric1	Integer			

Entity	Key Name	Data Type	Mandatory?	Comments
	AddHocNumeric2	Integer		
	ObsoleteFrom	DateTime		
	Timestamp	DateTime		
Invigilator	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text		
	Name	Text		
	Description	Text		
	Gender	Char		M(ale), F(emale), U(nspecified)
	Phone1	Text		
	Phone2	Text		
	Email	Text		
	OrganisationalUnit	Text		Id of owning Org Unit
	MinimumConsecutiveTimePerDay	Integer		Must be an integer >= 0
	MaximumConsecutiveTimePerDay	Integer		Must be an integer >= 0
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
AddHocNumeric1	Integer			
AddHocNumeric2	Integer			
ObsoleteFrom	DateTime			
Timestamp	DateTime			
Student	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text		
	Name	Text		
	Description	Text		
	Birthday	DateTime		
	Email	Text		
	Address	Text		
	Gender	Char		M(ale), F(emale), U(nspecified)
	OrganisationalUnit	Text		Id of owning Org Unit
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		

Entity	Key Name	Data Type	Mandatory?	Comments
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		
	NeedsSpecialProvision	Boolean		
	ExtraMinutes	Integer		Must be an integer => 0 The extra minutes of <u>writing</u> time
	IsFixedExtraTime	Boolean		Determines how ExtraMinutes is applied to Exams of the Student Fixed = 1, Pro rata on Exam writing time = 0
	ValidFrom	Text		
	ObsoleteFrom	Text		
	Timestamp	DateTime		
Exam Activity	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description	Text		
	Duration	Integer		Duration in minutes
	StartDate	DateTime		
	FinishDate	DateTime		
	Location	Text		Id of allocated Location
	ExamRequirement	Text		Id of associated Exam Requirement
	OrganisationalUnit	Text		Host Key of owning Org Unit
	WhoScheduled	Text		
	WhenScheduled	Text		
	AdhocText1	Text		
	AdhocText2	Text		
	AdhocText3	Text		
	AdhocText4	Text		
	AdhocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
AddHocNumeric1	Integer			
AddHocNumeric2	Integer			
Timestamp	DateTime			
Zone	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text	✓	

Entity	Key Name	Data Type	Mandatory?	Comments
	Name	Text	✓	
	Description	Text		
	ParentZone	Text		
	AdhocText1	Text		
	AdhocText2	Text		
	AdhocText3	Text		
	AdhocText4	Text		
	AdhocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		
Timestamp	DateTime			
Student Exam Requirement	SQL	Text	✓	
	Id	Text	✓	
	Student	Text	✓	Id of Student
	ExamRequirement	Text	✓	Id of Exam Requirement
	ExamActivity	Text	✓	Id of Exam Activity
	CandidateNumber	Text		
	NeedsSpecialProvision	Boolean		
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
AddHocNumeric2	Integer			
Timestamp	DateTime			
Staff Member Exam Requirement	SQL	Text	✓	
	StaffMember	Text	✓	Id of Staff Member
	ExamRequirement	Text	✓	Id of Exam Requirement
	Timestamp	DateTime		
Staff Member Exam Activity	SQL	Text	✓	
	StaffMember	Text	✓	Id of Staff Member
	ExamActivity	Text	✓	Id of Exam Activity
	Timestamp	DateTime		
Invigilator Session	SQL	Text	✓	
	Invigilator	Text	✓	Id of Invigilator

Entity	Key Name	Data Type	Mandatory?	Comments
	Session	Text	✓	Is of Session
	IsExclusive	Boolean		
	Timestamp	DateTime		
Exam Activity Session	SQL	Text	✓	
	ExamActivity	Text	✓	Id of Exam Activity
	Session	Text	✓	Id of Session
	Timestamp	DateTime		
Module POS	SQL	Text	✓	
	ModuleOffering	Text	✓	Id of Module Offering
	POSOffering	Text	✓	Id of POS Offering
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		
	IsMandatory	Boolean		
	IsActingMandatory	Boolean		
Timestamp	DateTime			
Module Offering	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text	✓	
	Name	Text		
	Description	Text		
	OrganisationalUnit	Text		Id of Organisational Unit
	TeachingPeriod	Text		Id of Teaching Period
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		
Timestamp	DateTime			

POS Offering	SQL	Text	✓	
	Id	Text	✓	
	HostKey	Text	✓	
	Name	Text		
	Description	Text		
	OrganisationalUnit	Text		Id of Organisational Unit
	TeachingPeriod	Text		Id of Teaching Period
	AdHocText1	Text		
	AdHocText2	Text		
	AdHocText3	Text		
	AdHocText4	Text		
	AdHocText5	Text		
	AdhocText6	Text		
	AdhocText7	Text		
	AdhocText8	Text		
	AdhocText9	Text		
	AdhocText10	Text		
	AddHocNumeric1	Integer		
	AddHocNumeric2	Integer		
	Timestamp	DateTime		
Suitabilities - Students	SQL	Text	✓	
	SuitabilityHostKey	Text	✓	
	StudentHostKey	Text	✓	
Suitability - Exam Sessions	SQL	Text	✓	
	Session	Text	✓	
	Suitability	Text	✓	
	RequiredNumber	Integer		Required number of Invigilators who have this Suitability
	Timestamp	DateTime		
Suitabilities	SQL	Text	✓	
	HostKey	Text	✓	
	Name	Text	✓	
	Description			
Suitabilities - Locations	SQL	Text	✓	
	SuitabilityHostKey	Text	✓	
	LocationHostKey	Text	✓	
Suitabilities - Invigilators	SQL	Text	✓	
	SuitabilityHostKey	Text	✓	
	InvigilatorHostKey	Text	✓	
Suitabilities - Exam Requirements	SQL	Text	✓	
	SuitabilityHostKey	Text	✓	
	ExamRequirementHostKey	Text	✓	
Suitabilities - Examinations	SQL	Text	✓	
	SuitabilityHostKey	Text	✓	
	ExamRequirementHostKey	Text	✓	

End of Document