Digital & Technology Solutions

Degree Apprenticeship

Data Modelling and Database Design

Level 4

20 credits

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Programme Leader Approval: Joseph Hurst

UoR Approval: TBC

Approved for: Multiple Use

Review (Multiple Use): 12 Months from creation

# Assessment Brief

This assessment brief provides details of the overall assessment for your module. Section 1 provides the details of the assessment and Section 2 provides general assessment brief guidance.

[Component](#_Exam_Overview_(Delete): Coursework (100%)

Description: 2000 words + fundamental practical task

A mark of at least 40% must be achieved to pass the module.

# Submission Details

|  |  |  |
| --- | --- | --- |
| **Component** | **Date** | **Time** |
| Coursework | Friday of Week 10 | 14:00 |

# Module Learning Outcome Assessment Matrix

|  |  |
| --- | --- |
| **Learning Outcome** | **Coursework** |
| LO1 – Recognise the difference between relational and non-relational data bases. | X |
| LO2 – Define, through the construction of, a relational database. | X |
| LO3 – Identify the key considerations of relation database queries. | X |
| LO4 – Describe relational database management processes. | X |

# Section 1 Module Specific Assessment Briefs

# Coursework Brief

Total Marks: 100%

Word Count: The overall word count is 2,000 words – The suggested number of words for each task is based on the proportion of marks for each task within the marking rubric.

**All submissions must have a completed cover sheet (see Appendix A) attached to your submission.**

You, the student, are required to understand and explain the topics covered in the module and apply them in the real world, ideally for a system or application within your organisation, to make the theories and concepts more relevant. Databases are used by about all organisations and in all areas of those organisations. Databases are found anywhere that data needs to be stored and easily retrieved by the applications and systems used to manage, support and report the operation of the organisation. The filing cabinet has all but been replaced using databases.

Your choice of scenario is dependent on your knowledge and understanding of the topics covered in the course and ideally experience of and how it can be applied to the real world and within your organisation. This may require general research or specific investigation within your organisation.

For your application scenario you must attempt the following tasks:

Task 1: Database Technologies [20%]

There are several distinct types of databases that facilitate the data requirements of the applications and systems that address real world scenarios within organisations. Write a brief report that describes the basic principles, differences, advantages and disadvantages of the key database types.

* This should include but not be limited to relational and NoSQL databases, including the various sub-types of NoSQL databases, data warehouses and data lakes.
* Recommend which type of database should be used for specific applications and systems, justifying your choice.
* Include diagrams/figures as appropriate to illustrate and help explain your answer.

**Evidence required:**

* **A short report including supporting diagrams/figures.**
* **The suggested word count is 450 words**

Task 2 Database Modelling (30%)

For your chosen organisational scenario,

* Briefly describe the scenario – It may be necessary to simplify or select a specific area of the scenario to reduce the size of the supporting Data Models.
* Use this information to identify the high-level data requirements to support the scenario and draw an initial Conceptual Data Model using “Crow’s Foot” notation that captures those data requirements – Ideally your Conceptual Data Model should have 5 or 6 entities and supporting relationships.
* Build on your Conceptual Data Model to draw a complete Logical Data Model, again using “Crow’s Foot” notation, which describes the detailed data requirements for the scenario – Ideally your Logical Data Model should have 7 or 8 entities with supporting attributes and relationships.
* Explain, using supporting diagrams and sample data as appropriate, how your Logical Data Model meets the requirements of 1st, 2nd and 3rd Normal Forms – If necessary, correct your Logical Data Model to meet the requirements.
* Document the steps to create both models and meet the Normal Form requirements, providing supporting explanation, assumptions and comments.
* Use [Draw.io](about:blank) or another suitable drawing tool to document your models.

**Evidence required:**

* **A short report including supporting diagrams/figures.**
* **A Conceptual and Logical Data Model**
* **The suggested word count is 650 words**

Task 3: Database Design [20%]

Use your Logical Data Model to create and populate a relational database, using whichever dialect of SQL is appropriate for the RDBMS you have selected.

The database should have:

* At least 7 to 8 tables, one for each entity in the Logical Data Model.
* Each table should be populated with a realistic set of sample data, at least 5 records in each table, possibly more, to enable it to be tested.
* Note that you may need to add more data to fully test the queries specified in Task 4.

Test that your SQL executes successfully and produces the expected results as this will be part of the marking criteria.

* Include evidence that the SQL queries have executed successfully, using screenshots of results/messages as appropriate, in the main report.
* Include the SQL script as text in the appendices so that your marker can copy/paste/execute/test the code in the relevant RDBMS.
* Provide supporting explanation, assumptions and comments.

**Evidence required:**

* **The SQL script (Include in Appendices as text) for each query**
* **Any supporting explanation, assumptions, or comments**
* **The suggested word count is 450 words**

Task 4: Database Queries [20%]

Identify and briefly describe five business requirements for your application. For each requirement, write a query using SQL, to obtain the relevant information/results or perform the appropriate task.

Collectively, your queries must demonstrate your ability to:

* Display data (SELECT)
* Manipulate, format and present data (Functions)
* Combine data from several tables (JOIN)
* Report basic statistics (Summarized Queries)
* Perform more complex requests (Sub-Queries)
* Apply basic database security (Views, Users, Access)

Test that your SQL executes successfully and produces the expected results as this will be part of the marking criteria.

* Additional data may need to be added to fully demonstrate/test the query.
* Include evidence that the SQL queries have executed successfully, using screenshots of results/messages as appropriate, in the main report.
* Include the SQL script as text in the appendices so that your marker can copy/paste/execute/test the code in the relevant RDBMS.
* Provide supporting explanation, assumptions and comments.

**Evidence required:**

* **A brief description of the five business requirements**
* **Screenshots of the results/messages for each query**
* **The SQL script (Include in Appendices as text) for each query**
* **Any supporting explanation, assumptions, or comments**
* **The suggested word count is 450 words**

Academic Conventions (10%)

Your application code and related artefacts should adhere to appropriate programming guidelines such as naming conventions, formatting, indentation and comments.

Screen displays and messages should be well presented, using consistent formatting, with correct spelling, punctuation and grammar where appropriate.

The supporting documentation and report should likewise be well presented, using consistent formatting, diagrams and images where appropriate, with correct spelling, punctuation and grammar. At a minimum, it should include:

* A fully completed Cover Sheet including correct word count - See Appendix A
* A Table of Contents
* A Bibliography, listing where appropriate any references that were cited in your report. Relevant references should be cited and formatted using the [Roehampton Harvard style](https://libguides.roehampton.ac.uk/c.php?g=604242&p=4247622).

# Section 2 General Assessment Brief Guidance

## Supporting Assessment documentation, rules and regulations.

To view the academic rules and guidance documents for the topics listed below please follow this link to the Degree Apprenticeship Handbook (DAH) module in Canvas: [https://canvas.qa.com/courses/1041](about:blank)

If you are unable to access this module, please contact [qaadegreeadmin@qa.com](about:blank) who will be able to resolve this for you.

Guidance found in the DAH:

* University of Roehampton Academic Regulations
* Regulations & Quality Assurance Overview
* Key contacts
* Mitigating Circumstance documentation
* Academic misconduct Procedure
* Final degree award calculation
* Appeals guidance
* Examination regulations
* Student feedback committees
* External examiner reports

## Assignment Marking Rubric

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Criteria** | **Outstanding**  **80% -100%** | **Excellent**  **70% - 79%** | **Very Good**  **60% - 69%** | **Good**  **50% - 59%** | **Pass**  **40% - 49%** | **Poor**  **0% - 39%** |
| **Task 1**  **Database Technologies**  **[20 Marks]** | **Outstanding**  **[16 to 20 Marks]**  Outstanding short report that exceeds the requirements.  Comprehensive range of database types covered with recommendations for their use and supporting diagrams/figures. | **Excellent**  **[14 - 15 Marks]**  Excellent short report that meets the requirements.  Superb range of database types covered with recommendations for their use and supporting diagrams/figures. | **Very Good**  **[12 - 13 Marks]**  Very good short report that meets most requirements.  Great range of database types covered with recommendations for their use and supporting diagrams/figures but with some oversights or errors | **Good**  **[10 - 11 Marks]**  Good report that meets key requirements.  Decent range of database types covered with recommendations for their use and supporting diagrams/figures but with several oversights or errors. | **Basic**  **[8 - 9 Marks]**  Basic short report that meets some requirements.  Limited range of database types covered with recommendations for their use and supporting diagrams/figures and with multiple oversights or errors. | **Poor**  **[0 to 7 Marks]**  Poor short report that meets few or no requirements.  Very limited range of database types covered with recommendations for their use and supporting diagrams/figures with major oversights or errors. |
| **Task 2**  **Data Modelling**  **[30 Marks]** | **Outstanding**  **[24 to 30 Marks]**  Outstanding short report and data models that exceed the requirements.  Both data models accurately represent the scenario and use the correct notation and with comprehensive supporting documentation and explanation of normalisation. | **Excellent**  **[21 to 23 Marks]**  Excellent short report and data models that meet the requirements.  Both data models accurately represent the scenario and use the correct notation and with superb supporting documentation and explanation of normalisation. | **Very Good**  **[18 to 20 Marks]**  Very good short report and data models that meet most requirements.  Most of the data models accurately represent the scenario and use the correct notation with great supporting documentation and explanation of normalisation but with some oversights or errors. | **Good**  **[15 to 17 Marks]**  Good short report and data models that meet key requirements.  The majority of the data models accurately represent the scenario and use the correct notation with decent supporting documentation and explanation of normalisation but with several oversights or errors. | **Basic**  **[12 to 14 Marks]**  Basic short report and data models that meet some requirements.  The minority of the data models accurately represent the scenario and use the correct notation with limited supporting documentation and explanation of normalisation and with multiple oversights or errors. | **Poor**  **[0 to 11 Marks]**  Poor short report and data models that meet few or no requirements.  Very little of the data models accurately represent the scenario and use the correct notation with very limited supporting documentation and explanation of normalisation and major oversights or errors. |
| **Task 3**  **Database Construction**  **[20 Marks]** | **Outstanding**  **[16- 20 Marks]**  Outstanding SQL that exceeds the requirements.  All of the SQL executes successfully, produces expected results with comprehensive supporting documentation and explanation. | **Excellent**  **[14- 15 Marks]**  Excellent SQL that meets the requirements.  All of the SQL executes successfully, produces expected results with superb supporting documentation and explanation. | **Very Good**  **[12- 13 Marks]**  Very good SQL that meets most requirements.  Most of the SQL executes successfully and produces expected results with great supporting documentation and explanation but with some oversights or errors. | **Good**  **[10-11 Marks]**  Good SQL that meets key requirements.  The majority of the SQL executes successfully and produces expected results with decent supporting documentation and explanation but with several oversights or errors. | **Pass**  **[8-9 Marks]**  Basic SQL that meets some requirements.  The minority of the SQL executes successfully and produces expected results with limited supporting documentation and explanation and with multiple oversights or errors. | **Poor**  **[0-7 Marks]**  Poor SQL that meets few or no requirements.  Very little of the SQL executes successfully and produces expected results with very limited supporting documentation and explanation and major oversights or errors**.** |
| **Task 4**  **Database Queries**  **[20 Marks]** | **Outstanding**  **[16- 20 Marks]**  Outstanding SQL that exceeds the requirements.  All of the SQL executes successfully, produces expected results with comprehensive supporting documentation and explanation. | **Excellent**  **[14- 15 Marks]**  Excellent SQL that meets the requirements.  All of the SQL executes successfully, produces expected results with superb supporting documentation and explanation. | **Very Good**  **[12- 13 Marks]**  Very good SQL that meets most requirements.  Most of the SQL executes successfully and produces expected results with great supporting documentation and explanation but with some oversights or errors. | **Good**  **[10-11 Marks]**  Good SQL that meets key requirements.  The majority of the SQL executes successfully and produces expected results with decent supporting documentation and explanation but with several oversights or errors. | **Pass**  **[8-9 Marks]**  Basic SQL that meets some requirements.  The minority of the SQL executes successfully and produces expected results with limited supporting documentation and explanation and with multiple oversights or errors. | **Poor**  **[0-7 Marks]**  Poor SQL that meets few or no requirements.  Very little of the SQL executes successfully and produces expected results with very limited supporting documentation and explanation and major oversights or errors**.** |
| **Academic Conventions**  **[10 marks]** | **Outstanding**  **[8 to 10 Marks]**  Outstanding presentation of the report with supporting data models, application code, artefacts, output, and documentation that exceeds requirements.  An extensive range of relevant literature and online resources have used to inform work.  Faultless accurate and assured use of academic conventions. | **Excellent**  **[7 Marks]**  Excellent presentation of the report with supporting data models, application code, artefacts, output, and documentation that meets all requirements.  A wide range of relevant literature and online resources used to inform work.  Consistently accurate and assured use of academic conventions. | **Very Good**  **[6 Marks]**  Very good presentation of the report with supporting data models, application code, artefacts, output, and documentation that meets most requirements.  A broad range of relevant literature and online resources used to inform work.  Mostly accurate and assured use of academic conventions but with some minor errors. | **Good**  **[5 Marks]**  Good presentation of the report with supporting data models, application code, artefacts, output, and documentation that meets key requirements.  A general range of relevant literature and online resources used to inform work.  Generally accurate and assured use of academic conventions but with some key errors. | **Basic**  **[4 Marks]**  Basic presentation of the report with supporting data models, application code, artefacts, output, and documentation that meets some requirements.  A limited range of relevant literature and online resources used to inform work.  Some accurate and assured use of academic conventions but with many errors. | **Poor**  **[0 to 3 Marks]**  Poor presentation of the report with supporting diagrams, application code, artefacts, output, and documentation that meets a few or none of the specified requirements.  Little or no use of relevant literature and online resources used to inform work.  Little or no accurate and assured use of academic conventions with significant errors. |

Appendix A

**ASSIGNMENT COVER SHEET**

|  |  |  |
| --- | --- | --- |
| **Student’s name** | (First name) | (Last name) |
| **Module name** |  | |
| **Title of assignment** |  | |
| **Complete Word Count in my assignment** |  | |
| **Date submitted** |  | |

All work must be submitted by the due date. If an extension of time to submit work is required, a Mitigating Circumstances request must be submitted.

Has an extension been approved? Yes No

If yes, please give the new submission date ….…/..…./…….

|  |
| --- |
| IMPORTANT: THIS STATEMENT MUST BE READ & SIGNED  **Academic Integrity Statement**  Academic integrity and honesty are fundamental to the academic work you produce at the University of Roehampton. You are expected to complete coursework which is your own and which is referenced appropriately. The university has in place measures to detect academic dishonesty in all its forms. If you are found to be cheating or attempting to gain an unfair advantage over other students in any way, this is considered academic misconduct and you will be penalised accordingly.   ​  **I declare that the work I am submitting is my own work, is properly referenced and has not been submitted elsewhere.** |
| **Student Signature (Full Name):**  **Date:** |