



## Advanced Databases

### MSc Information Systems with Computing

#### Assessment Brief

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|---------------------------------------|--|
| Module Title:                         | Advanced Databases   |
| Module Code:                          | B9IS100  |
| Module Leader:                        | Dr Shazia A Afzal  |
| Stage (if relevant):                  | Award  |
| Assessment Title:                     | Design and implementation of a hybrid (Relational/XML) database system of your choice. |
| Assessment Number (if relevant):      | 1  |
| Assessment Type:                      | Advanced Databases   |
| Restrictions on Time/Length : +/- 10% | N/A  |
| Individual/Group:                     | Group (3 members)  |
| Assessment Weighting:                 | 50%  |
| Issue Date:                           | Week 3   |
| Hand In Date:                         | Week 12  |
| Planned Feedback Date:                | TBC  |
| Mode of Submission:                   | Online via Moodle  |

**Every student must submit their assignment on Moodle on or before the due date.**

**Assignments will not be accepted via Email.**

## Details of assignment brief

**Total: 100 Marks (Weighting: 50%)**

You are required to design and implement a hybrid database system for a company/business of your choice (real or virtual). As part of your assessment, you are required to submit the following:

### **Technical Report: (35 Marks)**

The report must include the following:

- Details of the chosen business case. Scope of the database. Seven business requirements gathered/assumed during the analysis stage. Screen shots must be included to demonstrate the execution of each business requirement (through stored procedures).

**(12 marks)**

- A list of business rules for the system (at least 4 must be implemented using SQL code instead of showing at design stage). The implementation must be shown by the screenshots in the report.

**(6 marks)**

- Relational Schema for the hybrid database system (must be developed in Visio or some similar system using crow's foot notation or UML notations). Relational schema must fulfil the requirements of 3 NF, you must provide the justification in report. Data type of each field must be shown in the diagram. It must include five substantial tables using XML data type in at least one table (or more) as appropriate. Justify the use of XML data type that makes it a hybrid database.

**(12 marks)**

- Report must be well-structured with Conclusions and Bibliography. Screenshots and explanation must be provided for all requirements (at a later stage) and business rules.

**(5 marks)**

***Note: All code must be included in the appendix.***

***In addition to above all, your report must include data diagram (as well as visio diagram), comment on the referential integrity constraints and write a paragraph on innovation.***

## Completed Database System (45 Marks)

Develop a SQL Server database system based on the schema developed as part of the assessment. Your database must include the following:

- Tables with relationships using some referential integrity constraints. There should be a minimum of five substantial tables and any number of smaller tables that you require to implement your database. Tables should be linked using an appropriate method in SQL Server. Each table must have a minimum of 5 test records per table. In your report explain which referential integrity constraints are used and why? Include Data Diagram that must match relational schema. Code must be included in appendix.

**(10 marks)**

- All queries must be written using stored procedures (with parameters) to meet the business requirements. The queries that meet business requirements must include the following features:
  - i. Use of JOIN between two or more tables as required
  - ii. Use of GROUP BY with HAVING
  - iii. Use of custom SQL functions
  - iv. Developing XML with appropriate elements using relational fields.
  - v. Retrieving data logically from a field with XML data type as well as data from fields from other data types.
  - vi. Modifying data in a field of XML data type.
  - vii. Searching data in a field of XML data type.

**(21 marks)**

- Two triggers to demonstrate the implementation of business rules.

**(8 marks)**

- Two Views to demonstrate the development of virtual tables. How Views would be helpful to generate customised View of your data? What type of clients would need that data?

**(6 marks)**

## Innovation (10 marks)

Use of any other features to enhance the usability of your database system. Write a paragraph on innovation and how it is useful.

## Individual Contribution (10 marks) – 500 words

Each group member must write individually about their contribution and reflection of learning.

**Formatting instructions:**

Font: Cailbri – Font Size: 12 – Line Spacing: 1.15

**Assessment criteria**

| <b>Criteria/<br/>Mark</b> | <b>&lt; 40</b>  | <b>40 - 49</b>  | <b>50 - 59</b>   | <b>60 – 69</b>   | <b>70 +</b>   |
|---------------------------|---|---|--|--|---|
| <b>Report</b>             | Insufficient or incomplete report with poor or incomplete data model, no/poor normalisation, poor explanation, poor formulation of requirements, etc.                                   | Some but insufficient and poorly written report with poorly developed data model, some normalisation and explanation not enough to meet the requirements  | Sufficient explanation with data model with normalised schema that solves problem but lack of attention to formulating business requirements and good report writing skills                                  | Well-structured and well-written report with good specifications and data model with normalised schema. Appropriate requirements for the business.   | Excellent solution to problem proving originality, creativity and evidence of research – very well written with excellent data model and normalised schema to 3NF |
| <b>Database System</b>    | Less than five tables not properly structured, queries without the required features that do not meet business requirements, no/poor implementation of stored procedures/Views/Triggers | Five substantial tables demonstrating some structure of data, queries with some required features that meet some business requirements, some implementation of stored procedures/Views/Triggers | Five substantial tables with some structure, queries with most required features that meet most business requirements, implementation of stored procedures/Views/Triggers but not as appropriate as required | Five substantial and structured tables with appropriate records queries with all required features that meet the business requirements, good implementation of stored procedures /Views/Triggers ,etc. | Excellent database system that meets all the business requirements, required features, etc.   |

### **General Assessment Submission Requirements for Students:**

1. Online assignments must be submitted no later than the stated deadline.
2. All relevant provisions of the Assessment Regulations must be complied with.
3. Extensions to assignment submission deadlines will be not be granted, other than in exceptional circumstances. To apply for an extension please go to <http://www.dbs-students.com/Registrar/> and download the Assignment Extension Request Form.
4. Students are required to retain a copy of each assignment submitted, and the submission receipt.
5. There is a penalty of 2 marks per day for late submissions.
6. Assignments that exceed the word count will be penalised.
7. Students are required to refer to the assessment regulations in their Student Guides and on the Student Website.
8. Dublin Business School penalises students who engage in academic impropriety (i.e. plagiarism, collusion and/or copying). Please refer to the attached referencing guidelines for information on correct referencing.

### **What is referencing and why is it necessary?**

Please follow this link to the Harvard Style Referencing Guide - all referencing is required in this format.

<https://libguides.dbs.ie/skills/referencing/harvard>