Databases Coursework

The coursework meets the following module learning outcomes:

- Evaluate a set of query processing strategies and select the optimal strategy.
- Use SQL to create tables and retrieve (SELECT) information from a database.
- Create a relational database schema in SQL that incorporates key, entity integrity, and referential integrity constraints.

In this coursework you are tasked with creating a database system for the smooth and efficient operation of a business of your choosing. Hence, you are required to specify what type of business you will be building your databases system for, along with the different collections of data that may be required to be stored in your database in order to achieve its purpose. The completion of your coursework will be graded by submission of a written report as well as a script of SQL statements.

The coursework is worth 60% of the module total. This coursework is split into three parts, each worth 20% of the module total.

Part One (20%)

In part one of the coursework, you will submit an overview of your idea of the DBMS you want to design and develop, what are the business questions based on what you will cover in your system, and the purpose of having a DBMS you have proposed. You will need a good logical relational database management system representation (ERD) based on your proposed idea. This includes Formal Data Modelling with detailed features of your system.

Part One Submission Requirements:

All of the following must be submitted within the due date in order to be considered for a complete submission for this part.

Your submission must be a single report (.PDF) and should contain,

1. Business system summary based on the chosen topic (A Relational Database Management System that will serve your business idea to store and manage manage data).
2. An overview of the business environment and your work objectives.
3. Justification how your developed database meets the objectives, and how it will support the business as a working DBMS.

4. An ERD (logical schema) of your proposed idea using an appropriate tool (It is required that you ERD contains at least 7-8 Entities in it).
5. A diagram (physical data model) clearly showing every table, attributes, data types and constraints.

The report should use 12-point font in Times New Roman, 1-inch margins, and double line spaced. The report should be properly paged, paragraphed, and sectioned, and include the following sections in order.

Part Two (20%)

Successful implementation of the system from Part One using SQL by following the formal data model.

SQL Requirements:

1. Creating and/or altering database tables, database constraints, dropping existing tables, renaming and/or, truncating tables.
2. Inserting appropriate values into tables.
3. Perform SELECT operations using:
    - Special operators.
    - Comparison/mathematical operators.
    - Logical operators.
    - Aggregation functions.
    - Ordering operations.
    - Grouping operations.
    - Joining tables (inner, outer, self, and/or left/right).
    - Nested queries.
    - Defining database views and performing selection, updates, deletion, and insertion operations on them.

Part Two Submission Requirements:

All of the following must be submitted within the due date in order to be considered for a complete submission for this part.

Your submission must be a single report (.PDF) and should contain,

1. Appropriate screenshots of sample data:
    - One screenshot for each table - both structurally and another with populated with proper and meaningful data in them.

    - You should enter enough data to demonstrate the use of the database (at least eight records for each table).
2. Demonstration of the scenario you have developed.
    - Design at least 15 questions/tasks in your application domain that are needed to query the database.
    - Write SQL SELECT statements for all queries.
    - There must be at least five complex queries. A complex query is one involving joining, subqueries, database VIEWS, and some appropriate aggregation functions.

The report should use font size 12 in Times New Roman, 1-inch margins, and double line spaced. The report should be properly paged, paragraphed, and sectioned, and include the following sections in order and screenshots with appropriate naming/description.

Part Three (20%)

This is going to be a complete and logically structured and well-presented business report for a full-fledged project. This will comprise of Business system summary based on your topic, the overview of the business environment, work objective, ERD, Physical Data Model etc. from **Part One** and appropriate screenshots of both structurally and data populated tables and demonstration of your implemented queries from **Part Two** along with appropriate explanation and discussion where critical understanding is demonstrated. The latter includes summarising the learning experience from the database coursework, detailing some of the problems faced, lessons learned, achievements, outcomes, future-plan, and an overall conclusion to draw from this experience.

This formal business report will have the above-mentioned contents compiled into a single document (PDF). The report should use font size 12 in Times New Roman, 1-inch margins, and double line spaced. The report should be properly paged, paragraphed, and sectioned, and include the following sections in order.

Part Three Submission Requirements:

All of the following must be submitted within the due date in order to be considered for a complete submission for this part.

- The single report (.PDF) and that should contain,

    1. Cover page.
    2. Table of contents.
    3. Business system summary based on the chosen topic.
    4. An overview of the business environment and work objectives.
    5. Justification how your developed database meets the objectives, and how it will support the business.
    6. An ERD (logical representation) of your idea using an appropriate tool.
    7. A database relationship diagram (physical data model) clearly showing every table, attributes, and data type.
    8. Appropriate screenshots of sample data:
        - One screenshot for each table - both structurally and populated with proper and meaningful data.
        - You should enter enough data to demonstrate the use of the database (at least eight records for each table).
    9. Demonstration of the scenario you have developed.
        - Design at minimum at least 15 questions/tasks in your application domain the answers/solutions to which can be obtained by making a query to your database.
        - Write SQL SELECT statements for all DQL queries.
        - There must be at least five complex queries. A complex query is one involving joining and subqueries and some appropriate aggregation functions.
    10. Reflection of your learning experience, including problems faced, lessons learned, achievements, future development and conclusion.

- A single ZIP file containing supporting evidence, e.g., scripts of performed queries.
- If you have used ideas from anywhere other than the lecture notes and tutorial examples (e.g., from a book, the Internet, or a fellow student) then include a reference showing where the code or ideas came from and label your code carefully to show which parts are your and which parts are borrowed.
- You must be available to demonstrate your work and time for your demonstration will be approximately 10 minutes.

Deadlines

Part One of the coursework must be uploaded to Moodle by end of Week-6.
Date: TBD

Part Two of the coursework must be uploaded to Moodle by end of Week 11.
Date: TBD

Part Three of the coursework must be uploaded to Moodle after week-12.
Date: TBD

Marking Scheme

For Coursework Part One

Criteria	Excellent	Satisfactory	Not Satisfactory	Not attempted
Idea the suitability of the idea for a DBMS.	The idea requires a DBMS and has been well specified.	The idea would require a DBMS to manage although the idea is not fully specified.	Idea is simple and could be managed without a DBMS.	No idea provided or idea unsuitable.
Purpose of DBMS how well defined the purpose of the DBMS is.	The DBMS purpose is clearly defined and represents a good use of a DBMS.	The DBMS purpose is clearly defined although does not clearly represent a good use for a DBMS.	The DBMS purpose is not clearly defined.	Purpose of the DBMS not given, or purpose ill defined.
Justification of how the database meets the project objectives and that also focus on the suitability of the	Appropriately justified that are clearly suitable for	The justification provided are suitable for the DBMS defined	The justification provided are not clearly suitable for	No justification provided or is unsuitable for the

Criteria	Excellent	Satisfactory	Not Satisfactory	Not attempted
database for the business	the DBMS defined.	although could be more precise.	the DBMS defined.	proposed system.
Entity Relationship Diagram the quality of the ERD provided.	ERD provided is correct and fully complete for the problem at hand.	ERD provided is correct although is not fully complete.	ERD provided has some omissions and incorrect features.	No ERD provided or ERD is grossly misleading.
Physical Data Model the quality of the physical data model provided.	Data model is correct and fully complete for the problem at hand.	Data model provided is correct although not fully complete.	Data model has some omissions and incorrect features.	No data model provided, or data model is grossly misleading.
Submission ability to provide a submission that meets the requirements given.	Correct files submitted only with no issues.	Correct files submitted only but some issues with files provided.	Correct files submitted but with unwanted files provided and possibly issues in files provided.	Incorrect files submitted.

For Coursework Part Two

Criteria	Excellent	Satisfactory	Not Satisfactory	Not attempted
SQL comments code is commented correctly.	SQL is sufficiently commented with comments on every query, code	SQL is commented in most cases.	SQL is commented but not sufficiently.	Code is not commented at all or has very few comments.

Criteria	Excellent	Satisfactory	Not Satisfactory	Not attempted
	segment, and special case.			
SQL correctness how correct is the output of the SQL.	All queries work correctly.	Almost all of the queries work correctly, or output is correct almost all the time.	Some queries do not work correctly, or output is incorrect.	No output provided from SQL, or output is incorrect.
SQL execution how smoothly does the SQL execute – are there any bugs?	Queries executed correctly.	Queries executed correctly although there are some syntax	Some queries have syntax errors that mean they do not execute.	No SQL queries provided, or most have syntax errors causing problems.
SQL code Quality structures of code, use of enough complex queries with understanding.	Code quality follows guidelines.	Code quality needs work.	SQL codes used are simple queries only.	No SQL code provided, or SQL code provided is very poorly formatted.
SQL naming conventions how closely is the naming convention for tables, columns, etc. followed.	All names are easy to understand, consistent and follow guidelines.	Names follow the conventions although some could be better.	Names need work and are sometimes unsuitable.	Names are too short or too cryptic, inconsistent, or do not follow any convention.
Submission ability to provide a submission that meets the requirements given.	Correct files submitted only with no issues.	Correct files submitted only but some issues with files provided.	Correct files submitted but with unwanted files provided and possibly issues in files provided.	Incorrect files submitted.

For Coursework Part Three

Criteria	Excellent	Satisfactory	Not Satisfactory	Not attempted
Presentation how well organised is the report.	Good organisation, points are logically ordered, report order flows together.	Organised, although some points are somewhat jumpy. General flow of report works.	Some organisation points jump around. Flow is unclear.	Poorly organised. No logical progression. Overall flow is vague.
Discussion overall level of discussion in the report.	Excellent overall level of discussion provided.	Good discussion level provided although unclear or inconsistent in a couple of places.	Discussion is good but lacks clarity and consistency in places.	Discussion is poor and does not provide clarity to the report.
Reflection ability to reflect on the overall process and assessment deliverable.	Reflection clearly addresses the strengths and weaknesses of the deliverable.	Reflection addresses most of the strengths and weaknesses of the deliverable.	Reflection discusses some of the issues around the deliverable but lacks a critical awareness.	No reflection provided or reflection is unsuitable.
Quality of information ability to provide details or, supporting documents to support the report.	Supporting document contains all the detailed scripts used to define and manipulate the database	Some of the details are non-supporting	Details are somewhat unclear and do not support the topic.	Specific details undefined or difficult to find or, not submitted.
Format ability to meet the	Report is in the correct format.	Report is mostly in the	Report has a few	Report has many formatting issues or

Criteria	Excellent	Satisfactory	Not Satisfactory	Not attempted
formatting standard defined.		correct format	formatting issues.	does not meet the guidelines specified.
Submission ability to provide a submission that meets the requirements given.	Correct files submitted only with no issues.	Correct files submitted only but some issues with files provided.	Correct files submitted but with unwanted files provided and possibly issues in files provided.	Incorrect files submitted.

Academic Misconduct

All submissions will be processed through a code plagiarism tool. If signs of misconduct are found, all students involved will be contacted to discuss further steps. Please see here for information on academic integrity at the university https://portal.roehampton.ac.uk/information/Pages/Academic-Integrity.aspx. Our guiding principle is:

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.