Unit Learning Outcomes Assessed

1. Apply relational database concepts to the modelling and implementation of a realistic business scenario
2. Understand the function and role of a typical computer architecture

Assignment Task Overview

Database Design & Development

The primary aims of this project are to give you the opportunity to:

- Demonstrate your understanding of entity relationship modelling by applying the technique to the design of a database information system
- Develop your understanding of the issues that can arise when moving from design to implementation in information systems development.
- Demonstrate your understanding of database development as used to implement a system.
- Demonstrate your ability to communicate using written, technical documentation and solve technical problems.
- **DEADLINE FOR THIS ASSIGNMENT IS 2ND SEPTEMBER AT 10PM. SUBMISSIONS SHOULD BE EMAILED TO N.ADEL@MMU.AC.UK**

Scenario

Luxury properties are offered for sale by various UK based estate agents. The estate agents facilitate the sales of the properties between the properties' owners and the estate agent's clients. Various clients may place offers on properties until an offer is accepted.

J.Neuwmann and I.Noriss (N&N) Property Viewings are a small company which specialises in organising and hosting viewings of luxury properties for sale in the UK. Contracted by estate agents, the company offers a specialised, deluxe viewing service using its own highly trained staff. The staff are very experienced and conduct a significant amount of research on both the properties and surrounding areas prior to the viewings. This sets N&N's viewings service apart from the standard viewings offered by estate agents. N&N's main selling point is that their service gives a high viewing to sale conversion rate.

N&N work with the estate agents to organise viewings of the properties for the client. The viewing is handled by a member of N&N staff. A viewing has a set date and time and is for a single property. A client may view many properties and may then decide to put in an offer which is then

handled by the estate agent. The owner of the property will then decide if they wish to accept or decline the offer. The sale itself is then also handled by the estate agent.

The managing director of N&N feels that there is now a need for a database to store and organise the details of viewings and to keep track of offers made by clients for properties in order to assess the effectiveness of the viewing service. He has hired you to develop the prototype for this database.

The database system must be able to:

- Store the details of viewings (including the date and time of the viewing, the property being viewed, the client who requested the viewing and the staff member handling the viewing).
- Store the details of any offers made by the clients on properties and if they were accepted.
- Store the details of the properties (including the owner of the property and the estate agent handling the sale of the property)
- Allow reports (queries) to be generated for the managing director.

Assignment Details and Instructions

Section A – Systems Analysis & Database Design (30 marks)

Using the scenario and project specifications above, draw an entity relationship diagram (ERD) to be used as a system design. You should use the diagram style described in classes. You must include entities, relationships and cardinality/optionality). You should resolve any many to many relationships. You should specify the attributes for your system design along with datatypes and sizes and identify the primary and foreign keys.

Note: Refer to the class notes for guidance on drawing this diagram, Visual Paradigm is recommended as this has been covered in the course material.

Section B – Database Implementation (40 marks)

1. Implementation: Using your ERD as a design , create your database using the MySQL DBMS. You may use the University server (Mudfoot) or a localhost setup on your own PC or laptop. You should include appropriate tables, attributes and properly set up the primary and foreign keys. Extra credit will be given for the use of additional functions such as constraints, auto-population of fields etc. (**35 marks)**
2. Data Population: Populate your database with appropriate test data (approximately 4 records per table). You may use a test data generator (such as mockaroo.com). Ensure that the test data is sufficient to fully test each of the queries specified below. (**5 marks)**

Section C – Database Queries (30 marks)

SQL Queries: Write SQL queries to satisfy the following requirements:

- List all properties located in the city of Manchester with a list price of over £200,000. **(5 marks)**
- List all viewings that took place in August or September 2020 and the clients who requested the viewings. (**5 marks)**
- For each owner, list their total portfolio value (i.e. the total of all their properties' prices) but only for properties which are houses. (**10 marks)**
- For each property, list the smallest offer made by clients and which client made the offer, but only for properties which have not been sold (**10 marks)**

Deliverables

Your final submission should comprise a single report containing:

- Your ERD diagram *(section A)* including entities, relationships, attributes with datatypes and sizes and appropriate primary and foreign keys.
- A brief commentary (approx. 400 words) for your ERD design (section A) explaining any assumptions that you have made about the business and justifying any design decisions.
- Screenshots of the SQL code used to create and populate your database (CREATE and INSERT statements and outputs) *(section B).*
- Screenshots of the SQL query code and screenshots of the results *(section C).*
- All SQL code attached as an appendix

The report should be submitted via the VLE submission area by the date shown on the unit's VLE page.

For any questions regarding this assignment please contact N.Adel@mmu.ac.uk

Resources

A modelling tool such as Visual Paradigm is required for designing the ERD.

SQL Lite is required for this assignment.

DO NOT FORGET TO SAVE ALL DIAGRAMS AND CODE GENERATED AS THE ONLINE TOOLS DO NOT AUTO SAVE THEM FOR YOU.

Assessment Marking Criteria

Grading Criteria					
Component	**Fail (To 39%)**	**3rd Class (40 to 49%)**	**2nd Class: 2 (50 – 59%)**	**2nd Class: 1 (60 – 69%)**	**1st Class (70+)**
Section 1 A – Systems Analysis 30 Marks	*No or very poor ERD diagram produced with no supporting commentary*	*Basic ERD diagrams produced with little or no supporting commentary.*	*ERD provided with some commentary. Appropriate use of ERD diagram features and syntax. Attributes for ERD are mostly correct.*	*Complete ERD with matching attributes which would be a good basis for an efficient database. Some commentary and evaluation of issues surrounding development.*	*High quality ERD produced with matching and well thought-out attributes which would be suitable for implementation in RDBMS and would result in an efficient database. Clear, comprehensive justification and evaluation of design and alternatives and consideration of business scenario needs.*
Section 1 B – Database Implementation 40 Marks	*Tables and attributes not properly created or with major errors. Implementation shows little or no relation to ERD. Insufficient test data inserted.*	*Database tables created successfully. Implementation shows some relation to the ERD and attribute definition in terms of relationships and primary/foreign keys. Some test data has been created.*	*Database implementation has been performed correctly and shows a clear relationship to ERD in terms of relationships and primary/foreign keys. Appropriate data population.*	*Properly implemented database which clearly reflects the ERD and attribute list. Primary/Foreign keys created properly and matching ERD. Appropriate test data inserted that demonstrates relationship types and queries.*	*Well implemented database which clearly reflects the ERD and attribute list. Primary/Foreign keys created properly and matching ERD. Additional and appropriate functionality implemented (e.g. check constraints, auto-population etc.). Good test data inserted that demonstrates relationship types and queries. Implementation shows consideration of business scenario requirements.*
Section 1 C – Database Queries 30 Marks	*SQL queries not attempted or created in such a way that they are not functional.*	*SQL queries attempted with some basic functionality achieved.*	*All SQL queries attempted and working.*	*All queries attempted and working with appropriate SQL syntax and functions.*	*All queries attempted and working with proper SQL syntax and some advanced SQL functions.*