DEGREE: MSc Data Analytics

Module: Enterprise Data Warehouses and Database Management Systems
_____

Assignment Title: Real Estate Property Management Database

Assignment Type: Set exercise testing practical skills.

Word Limit: 3000 words (+/- 300)

Weighting: 100%

Issue Date: 25/07/2024

Submission Date: 11/10/2024

Feedback Date: 01/11/2024
_____

Plagiarism:

When submitting work for assessment, students should be aware of the InterActive/Canvas guidance and regulations in concerning plagiarism. All submissions should be your own, original work. Please note that you must not submit the same assignment for two different modules within your course.

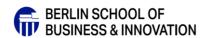**You must submit an electronic copy of your work. Your submission will be electronically checked.**

Harvard Referencing:

The Harvard Referencing System must be used. The Wikipedia, UKEssays.com or similar websites must **not** be used or referenced in your work.

Learning Outcomes:

LO1. Learn the concepts of database and database management systems along with the concepts and approaches of database design, administration and management.

LO2. Learn the principals and science behind querying the data from a database management system to use for business analytics and implement the queries to retrieve the data from MySQL.

LO3. Write advanced SQL queries to manipulate, wrangle and derive insights from large database systems.

Assessment Criteria: Weighting 100%

3000 words

Project Description:

In Berlin, a prominent real estate agency, Berealty, manages an extensive portfolio of properties, ranging from residential apartments to commercial spaces. Berealty offers property listings, client management, and transaction processing. To streamline operations and enhance efficiency, Berealty decide to develop a comprehensive Real Estate Property Management Database. This robust system is designed to centralize and organize all essential data, including property details, client information, agent records, and transaction history. The Real Estate Property Management Database transforms how Berealty operates, providing a scalable solution that grows with the business and continues to meet the evolving needs of the dynamic Berlin real estate market.
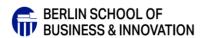
Tasks :

This assignment aligns with the unit's objectives of equipping learners with the skills to design a database management system using MySQL, implement basic and complex SQL queries, and apply theoretical concepts like the CAP theorem in the context of a practical database project.

In this project, you will work on designing and implementing a database system for a fictional real estate agency called Berealty. The project will involve creating an Entity-Relationship (ER) diagram, implementing it in MySQL, and demonstrating your skills through SQL queries and theoretical discussions.

Project Phases:

1. Database Design for a Real Estate Agency:
   - Define the scope and objectives of the database for the Real Estate Agency, considering aspects like real estate properties, clients and/or tenants, agents, transactions for a real estate agency, and more.

- Create a comprehensive Entity-Relationship (ER) diagram that represents the database structure. Use appropriate entities, attributes, relationships, participation, and cardinalities.
- The ER diagram must align perfectly with the physical data structure (MySQL tables) to avoid any discrepencies.
- The database should be properly normalized to avoid data redundancy.
- Provide a written explanation of your design choices, ER diagram, and the rationale behind them, considering the specific needs of a real estate agency.
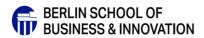
2. Database Implementation:
   - Implement the database design for the real estate agency in a MySQL database management system.
   - Create tables, define relationships, and constraints (e.g., primary keys, foreign keys, unique, data types, lengths).
   - Populate the database with sample data that reflects typical real estate scenarios.
   - SQL Query Writing (Applying - Level 3):

   - Develop a series of SQL queries that demonstrate your understanding of database manipulation within a real estate context.
   - Include queries for properties information retrieval, transactions handled by agents, transactions for clients, the management of properties, agents, and clients, , transaction history, monthly, quarterly and yearly reports, and more.
   - Extract data involving multiple tables using JOIN operations (e.g. INNER JOIN, LEFT JOIN, RIGHT JOIN, CROSS JOIN) to provide comprehensive reports.
   - Write complex queries that involve JOIN operations and subqueries for advanced real estate operations.
   - Define and implement SQL triggers to automate certain actions, such as, updating the property status when a transaction is completed.
   -

3. CAP Theorem Discussion:
   - Discuss the CAP theorem in the context of a real estate database system.
   - Explain the three components of the CAP theorem (Consistency, Availability, Partition Tolerance) and their relevance to the real estate data management.
   - Relate the CAP theorem to the design and implementation of the real estate database system, considering factors like data consistency and system availability.

Submission Instructions:
- Compile a comprehensive project report or presentation that covers each phase of the project, focusing on a real estate agency as the chosen example.
- Include SQL code for your queries and explain the purpose of each query within a real estate context.
- Provide instructions on how to run the queries and generate the reports.
- Ensure that your report is clear, well-organized, and visually appealing.
- Prepare a document using the BSBI assignment template available in Canvas.
- Use Harvard referencing style for your bibliography.

- Refer to the Essay-Guide available in Canvas for further instructions.
- Submit your assignment electronically by the specified deadline.

EXPERIMENTATION & INNOVATION

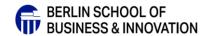| Threshold Criteria	FAIL			PASS				
	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Deals with complex issues both systematically and creatively demonstrating self-direction and originality in tackling and solving problems	Little to no ability to use techniques to deal with complex issues systematically (including those of ethics and sustainability) and creatively to solve problems and/or make decisions.	Low utilisation of established techniques to deal with complex issues systematically (including those of ethics and sustainability) and creatively to solve problems and/or make decisions, but with limitations in techniques or approach.	Limited research or advanced scholarship to their area of study by using a range of information and established and advanced techniques	Competent understanding of solving problems, through own research or advanced scholarship displaying a comprehensive understanding of established and advanced techniques	Good understanding of solving problems through own research and advanced scholarship critically selecting and displaying a comprehensive understanding of established and advanced techniques.	Very Good problem-solving skills displaying a comprehensive understanding of techniques applicable to their own research or advanced scholarship	Excellent range of extremely well-developed problem-solving displaying an understanding of techniques applicable to their own research or advanced scholarship beyond which is taught.	Exceptional problem-solving skills with sophisticated evaluation and application of a wide range of advanced information and techniques to undertake projects.
Comprehensive understanding of techniques applicable to their own research or advanced scholarship	Little to no understanding of techniques applicable to their own research or advanced scholarship or their limitations and ambiguities.	Low understanding of techniques applicable to their own research or advanced scholarship including their limitations and ambiguities.	Limited understanding of key techniques applicable to their own research or advanced scholarship including their limitations and ambiguities.	Competent understanding of techniques applicable to their own research or advanced scholarship including their limitations and ambiguities	Good understanding of techniques applicable to their own research or advanced scholarship and a some understanding of more specialised techniques.	Very good understanding of techniques applicable to their own research or advanced scholarship and a some understanding of more specialised techniques.	Excellent understanding of techniques applicable to their own research or advanced scholarship and mastery of some more specialised areas.	Exceptional understanding of techniques applicable to their own research or advanced scholarship and mastery of some more specialised areas.

GRADING DESCRIPTORS: LEVEL 7

University for the Creative Arts

RESEARCH & ANALYSIS

Threshold Criteria	FAIL			PASS				
	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study or area of professional practice	Little to no knowledge of the subject with limited breadth or depth or deficiencies in major areas or currency.	Low knowledge of the subject lacking coherence, breadth, or detail with only some reference to ideas or arguments at the forefront of any part of the subject.	Limited knowledge to deal with terminology, facts and concepts some of which is informed by the forefront of defined areas of the subject.	Competent knowledge of ideas or arguments at the forefront of any part of the subject sufficient to deal with current issues in the discipline, generally more descriptive than critical or analytical.	Good knowledge of ideas or arguments at the forefront of any part of the subject showing a clear, critical insight into the discipline as whole and current issues/problems.	Very good knowledge of ideas or arguments at the forefront of the subject some of which are significantly beyond what has been taught and show a critical insight into the discipline and current issues/problems.	Excellent knowledge of ideas or arguments at the forefront of the subject many of which are significantly beyond what has been taught and show a critical insight into the discipline and current issues/problems.	Exceptional knowledge of ideas or arguments at the forefront of the subject most of which are significantly beyond what has been taught and show a critical insight into the discipline and current issues/problems.
Conceptual understanding that enables the student to display originality in the application of knowledge	Little to no conceptual understanding or argument and a focus on descriptive explanations which do not comment on arguments of others or alternative views.	Low conceptual understanding and arguments are weak or poorly constructed, and the work does not critically evaluate the arguments of others or consider alternative views.	Limited conceptual understanding and argument construction with critical evaluation of alternative views or comment on advanced scholarship.	Competent conceptual understanding and argument construction with critical evaluation of a range of views and consistent engagement with advanced scholarship.	Good conceptual understanding which critically evaluate and synthesise other views and information with a thoughtful interpretation of advanced scholarship.	Very good conceptual understanding which systematically synthesises a wide range of views with a critical insight into advanced scholarship.	Excellent conceptual understanding which critically apply a wide range of views through a perceptive use of advanced scholarship.	Exceptional conceptual understanding of publishable quality with systematic engagement and usage of advanced scholarship.

GRADING DESCRIPTORS: LEVEL 7

BERLIN SCHOOL OF BUSINESS & INNOVATION

University for the Creative Arts

ENGAGING WITH PRACTICE								
	FAIL			**PASS**				
Threshold Criteria	**0-29%**	**30-39%**	**40-49%**	**50-59%**	**60-69%**	**70-79%**	**80-89%**	**90-100%**
Practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline	Little to no evidence of background investigation, analysis, research, enquiry, ethical awareness, and/or study.	Low evidence of background investigation, analysis, research, enquiry, ethical awareness, and/or study.	Limited background investigation, analysis, research, enquiry , ethical awareness, and/or study using established techniques, with the ability to extract relevant points.	Competent investigation, analysis, research, enquiry, ethical awareness, and/or study using established techniques accurately, and can critically appraise and use academic sources.	Good background investigation, analysis, research, enquiry, ethical awareness, and/or study using established techniques accurately, and possesses a well-developed ability to critically appraise a wide range of sources.	Very good, independent, extensive and appropriate investigation, analysis, research, enquiry, ethical awareness, and/or study beyond the usual range, and critically evaluates this to advance the work and/or direct arguments.	Excellent independent, extensive and appropriate investigation, analysis, research, enquiry, ethical awareness, and/or study well beyond the usual range, and critically evaluates this to advance the work and/or direct arguments.	Exceptional investigation, analysis, research, enquiry, ethical awareness, and/or study which demonstrates carefully considered depth and breadth and critically synthesises this to advance the work and/or direct arguments.
Originality in the application of knowledge	Little to no technical, creative or artistic skills related to their area of study.	Low technical, creative or artistic skills related to their area of study.	Limited technical, creative or artistic skills required for area of study.	Competent technical, creative or artistic skills required for area of study.	Good technical, creative or artistic skills required for area of study.	Very good range of technical, creative or artistic skills.	Excellent range of technical, creative or artistic skills	Exceptional range of technical, creative or artistic skills
Independently advance your own knowledge and understanding, and to develop new skills to a high level.	Little to no contribution to group activity and/or undertaking further training at a high/advanced level.	Low contribution to group activity and/or undertaking further training at a high/advanced level.	Limited contribution to group activity and/or undertaking further training at a high/advanced level.	Competent contribution to group activity and/or independently undertakes further training at a high/advanced level.	Good contribution to group activity and/or independently undertakes further training at a high/advanced level with an understanding of team roles	Very good contribution to group activity and/or independently undertakes further training at a high/advanced level with an understanding of team roles	Excellent contribution to group activity and/or independently undertakes further training at a high/advanced level with teamwork and leadership	Exceptional contribution to group activity and/or independently undertakes further training at a high/advanced level with teamwork and strong leadership.

GRADING DESCRIPTORS: LEVEL 7

REALISATION & COMMUNICATION								
	FAIL			**PASS**				
Threshold Criteria	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.	Little to no clarity in the communication of ideas, problems and solutions to audiences.	Low clarity in the communication of ideas, problems and solutions to audiences.	Limited clarity in the communication of ideas, problems and solutions to audiences.	Competent communication of ideas, problems and solutions to audiences.	Good, confident and clear communication of ideas, problems and solutions to audiences in a range of means / media.	Very good, confident and clear communication of ideas, problems and solutions to audiences in a range of means / media.	Excellent communication of ideas, problems and solutions to audiences in a range of means / media.	Exceptional communication of ideas, problems and solutions to audiences in a range of means / media.