COM204-QP-23C

BAZE UNIVERSITY, Abuja
Faculty of Computing and Applied Sciences

Level **200** Semester **Second** Examinations

December 2023

Course Code: **COM204**

Course Title: **Databases 1**

Duration: Two (2) Hours

INSTRUCTIONS

Section A
Total Marks 25
Answer ALL Questions in Section A

Section B
Total Marks 45
Answer ANY (THREE) Question from Section B

No electronic devices including mobile phones, wrist watch may be used
DO NOT turn the examination paper until instructed to do so

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SECTION A

[Total Marks 25]

Answer All Questions from Section A

Question 1

a	Explain the following with suitable examples • Entity Integrity and referential integrity • Derived attributes and Bridge Entity [3 Marks]
b	Define the following with suitable examples • Column Aliasing and Aggregate function • DDL and DML [3 Marks]
c	List and explain three cardinalities in data modeling and give examples each of how they are used in data design. Explain how to resolve the issue raised by on of them [4 Marks]
d	What is the essence of forward engineering a data model? Explain the steps to forward engineer a data model from Workbench. What needs to be removed for the forward engineering process to execute successfully?? [4 Marks]
e	Give 3 importance of data models in database design [3 Marks]
f	What are business rules and how are they sourced [4 Marks]
g	What are the limitations of traditional file system? What are the drawbacks of database system?? [4 Marks]

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SECTION B

[Total Marks 45]

Answer any **THREE** Questions (Each question carries **FIFTEEN** marks).

Question 2.

a	Create a complete ERD in Crow's Foot notation that can be implemented in the relational model using the descriptions in the case study provided below: **Business Rules** Roger Moore needs help in keeping track of her DVD collection because he has a large DVD movie collection and his friends keep borrowing them and hardly ever return them. He needs a way to keep track of who has what. In his diary, he maintains a list of friends, identified by some attributes. He also maintains a list of DVD's, identified by important DVD attributes. Whenever a friend borrows a DVD, Roger will enter that fact into his diary along with the date borrowed and other details about the borrowing. Whenever the DVD gets returned, Roger Moore updates his diary to indicate that the book has been returned and the status of the book (i.e., damaged or intact). He wants to keep a complete history of his friends' borrowing habits so that he can know who to borrow books next time or perhaps who to refuse. [10 Marks]
b	Write the DDL for the model created in (a) above. [5 Marks]

Question 3

a	Create a complete ERD in Crow's Foot notation that can be implemented in the relational model using the descriptions in the case study provided below: **Business Rules** In the online e-commerce platform, a customer can place multiple orders, and each order can contain various products. However, a product may belong to multiple categories, and each category can have multiple attributes. Additionally, to optimize inventory management, each product may be stored in multiple warehouses. Furthermore, the platform offers a loyalty program where customers earn points for each purchase, and these points can be redeemed for discounts. However, the redemption of points is subject to certain promotional rules that may vary based on product categories.

	[10 Marks]
b	Explain the concept of a multi-valued attribute in an ERD. Provide an example [2 Marks]
c	What is the significance of the TIMESTAMP data type in SQL, and how does it differ from DATE and TIME data types? [3 Marks]

Question 4

a.	 Resolve the anomalies (if any) [5 marks]
b.	Using the resolved model in (a) above, write SQL statements to • fetch the concatenation of FirstName and LastName separated with an underscore from student table using an appropriate alias where the FirstName contains 'alan' • Print the total number of students with proper column aliasing • Display the first 10 records from the "Student" whose names start with the letter 'A'. • Update 2 attributes of any of the students you added in (d) above • Delete the 3 students added in (d) above with one SQL statement [10 marks]

Question 5

a.	Using Library DB as your working DB, write SQL statements to • Display authors alongside their respective books • Display the total number of authors • Change the title, colour of any instance of a book to any new value of a choice • Update the student table and add student_image column • Update the student table and modify the PK datatype to varchar(10) • Select the most expensive book • Display the students with date of birth between two date values [15 marks]

END OF EXAMINATION PAPER