Mid-Term Exam

Class Room Online

Assignment Points: 15 points

Wednesday 7/1/2020

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Exam rules:

- You must submit this mid-term by today, **7/1/2020, 11:59 pm**.
- Submit your assignment in PDF format in Canvas. You can use word, excel or similar tools and convert into pdf.
- This is open book exam and any kind of resource materials are allowed.
- Collaboration and consultation is NOT allowed. Do your own work.

Section 1: Multiple choice questions (use X mark or highlight your answer)

Total Points: 4 (All questions are equally weighted)

1. What is the syntax to load data into the table? (Consider D as a table and a, b, c as data)

   A. enter into D (a, b, c);
   B. insert into D values (a, b, c);
   C. insert into D (a, b, c);
   D. insert (a, b, c) values into D;

2. When columns are join from the same table, the type of join is called ……..?

   A. Union
   B. Right Outer Join
   C. Left Outer Join
   D. Self-Join

3. The *address* field of a person table should not be part of the primary key since it is likely

   A. Dependent
   B. Changed
   C. Not Changed
   D. Too long

4. The term *attribute* refers to a _____ of a table.

   A. Record
   B. Column
   C. Tuple
   D. Key

5. The term _____ is used to refer to a row.

   A. Attribute
   B. Tuple
   C. Field
   D. Instance

6. A relational database consists of a collection of

   A. Tables
   B. Fields
   C. Records
   D. Keys

7. CREATE TABLE employee is part of

   A. DML
   B. DDL
   C. VIEW
   D. Integrity constraint

8. The maximum value for data type Decimal (3, 2) is

   A. 9.99
   B. 99.99
   C. 999.99
   D. All of the above

9. Duplicate records will be eliminated, when a query uses

    A. Select Only Clause
    B. Where Distinct Clause
    C. Select Distinct Clause
    D. From Distinct Clause

10. Which clause is similar to "*HAVING*" clause in SQL statement?

    A. SELECT
    B. WHERE
    C. FROM
    D. None of the mentioned

11. INSERT INTO *Instructor* VALUES (10211, 'Smith', 'Biology', 66000);
    What type of statement is this?

    A. Query
    B. DML
    C. Relational
    D. DDL

12. What is the meaning of *"GROUP BY"* clause in SQL statement?

    A. Group data by column values
    B. Group data by row values
    C. Group data by column and row values
    D. None of the mentioned

13. Which among the following belongs to an *aggregate function*?

    A. COUNT
    B. TOTAL
    C. LOWER
    D. All of the above

14. *Character* data can be stored as

    A. Fixed length string
    B. Variable length string
    C. Either Fixed or Variable length string
    D. None of the mentioned

15. SELECT a.branch_name, COUNT (d.customer_name) AS count
    FROM account a, depositor d
    WHERE a.account_number = d.account_number
    GROUP BY a.branch_id;

    A. The query is syntactically correct but gives the wrong answer
    B. The query is syntactically wrong
    C. The query is syntactically correct and gives the correct answer
    D. The query contains incorrect join.

16. A domain is *atomic* if elements of the domain are considered to be _____ units.

    A. Different
    B. Indivisible
    C. Constant
    D. Divisible

17. In the following query how many rows will be deleted? person_id is a primary key in person table and has values 1, 2, 3 and 4.

    DELETE person WHERE person_id = 2;

    A. 0
    B. 1
    C. 2
    D. B and C both

18. Which of the following clause must be present with 'HAVING' clause in SQL?

    A. Group by
    B. Where
    C. Order by
    D. None of the above

19. What column names are displayed when this command is executed?
    SHOW COLUMNS FROM TableA LIKE '%name' ;

    A. first_name
    B. store_name
    C. company_name
    D. all of the above

20. What is xyz in the following statement?
    SELECT abc FROM xyz;

    A. row name
    B. column name
    C. table name
    D. database name

Section 2: Fill in the blanks

Total Points: 4 (All questions are equally weighted)

1. **Item** table has primary key I**temID** AUTO_INCREMENT and 10 rows of data inserted. Change AUTO_INCREMENT to start from 100.

   ALTER TABLE Item AUTO_ICREMENT = 100;

2. Table *Employee* has columns (empid, name and managerid). Complete to find employees who are also managers.

   SELECT e. name
   FROM employee e
   WHERE managerid is not NULL

3. ***Customerid*** is key in both **Orders O** and **Customers C** tables. Complete below to select records that exists in both tables.

   SELECT O.orderid, O.desc, C.name
   FROM Orders O
   INTERJOIN Customers C O.customerid = C.customerid

4. Update TableA to add 100 on *salary* for primary key *emp_id* = 10

   UPDATE TableA
   SET salary = salary + 100
   WHERE emp_id = 10

5. Complete below SQL statement to find count of records from Customers table.

   SELECT Country, State, City, Count(*) AS Count
   FROM Customers

6. Add FK on *child_table* (column1) refrencing from *parent_table* (column1).

   ALTER TABLE *child_table*
   ADD FOREIGN KEY (FK) REFERENCES parent_table(column1)

Section 3: Write SQL statements

Total Points: 5 (All questions are equally weighted)

Please answer all question based on below tables. Make sure to use table aliases:

Customer (C)

customer_id (PK)	first_name	last_name	job_title
C001	John	Kelly	DBA
C002	Amelia	Cruze	DBA
C003	Sophia	Henry	Cashier
C004	Tom	Smith	QA
C005	Mia	Stark	Cashier

Order (O)

order_id (PK)	*customer_id (FK)*	order_date	shipping_company
1	C001	9/27/2019	FedEx
2	C002	9/30/2019	UPS
3	C002	8/15/2019	UPS
4	C005	8/20/2019	FedEx
5	C005	9/15/2019	UPS

1. Select full name (i.e. first_name and last_name) and job_title whose customers records exists in customers table but NOT in orders table **using sub-query**.

   SELECT first_name, last_name, job_title, C.customer_id
   FROM Customer C
   WHERE customer_id
   NOT IN (Select customer_id FROM Order O)

2. Select first_name, last_name, shipping_company and order_date for all records from Customers table but ONLY matching records from Orders table for order_date after August 31st 2019.

   SELECT C.first_name, C.last_name, O.shipping_company, O.order_date
   FROM Customer C
   INNER JOIN Order O C.customer_id = O.customer_id
   WHERE order_date > '31/8/2019'

3. Write a SQL statement selecting shipping_company, order_date and their rank with most recent order_date rank first and so on.

   SELECT shipping_company, order_date
   FROM Order
   ORDER BY CONVERT (DateTIme, order_date, 108) DESC

4. Select first_name, last_name and shipping_company for matching records from both tables for customers first_name **ends** with **a** and sort by most recent order_date first.

   SELECT C.first_name, C.last_name, O.shipping_company
   FROM Customer C
   INNER JOIN Order O C.Customer_id = O.Customer_id
   WHERE C.first_name LIKE '%a'
   AND ORDER BY CONVERT (DateTime, O.order_date, 103) DESC

5. Write a SQL statement to find shipping_company and their count whose count is greater than 2.

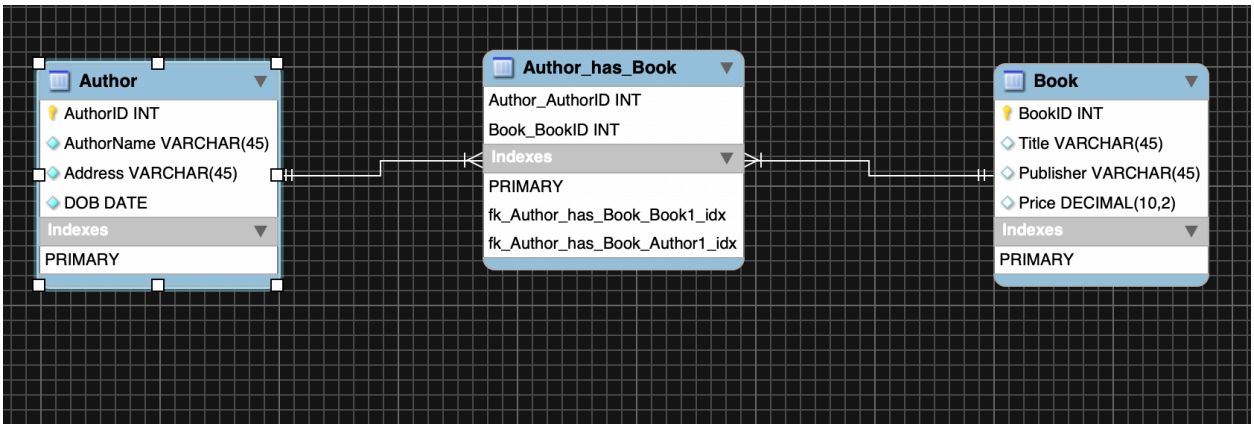
   SELECT shipping_company, COUNT (shipping_company)
   FROM Order
   WHERE COUNT(shipping_company) > 2

Section 4: Create relationship for below tables, use proper symbols, lines and captions

Total Points: 2

Note: Create Book and Author tables as below and solve relationship using MySQL Workbench Data Model (ERD). No need to generate DDL.

1. A Book **can be written** by several Authors
2. An Author **can write** several Books
   Assumption: Each book must have an author and each author must write a book.


Author
AuthorID INT
AuthorName VARCHAR(45)
Address VARCHAR(45)
DOB DATE
Indexes
PRIMARY
Author_has_Book
Author_AuthorID INT
Book_BookID INT
Indexes
PRIMARY
fk_Author_has_Book_Book1_idx
fk_Author_has_Book_Author1_idx
Book
BookID INT
Title VARCHAR(45)
Publisher VARCHAR(45)
Price DECIMAL(10,2)
Indexes
PRIMARY

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