

Mid-Term Exam
Classroom Online
Assignment Points: 20 points

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Exam rules:

- You must submit this mid-term by **3/31/2022, 11:59 pm**. **No late submission.**
- Submission: submit in Canvas in pdf or word doc.
- This is open book exam and any kind of resource materials are allowed.
- Collaborations and consultations are NOT allowed. Do your own work.

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

Total Points: 5 (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 the table is joined with itself, 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. Text
 - 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 of the following 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*? Select all that apply.
- A. COUNT
 - B. TOTAL
 - C. LOWER
 - D. All of the above

14. *Character* data type can be stored as

- A. Fixed length string
- B. Variable length string
- C. Either Fixed or Variable length string
- D. Integer

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 missing "Having" clause
- B. The query is syntactically incorrect
- C. The query is syntactically correct
- D. The query contains incorrect join.

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

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

17. Person table has PK personid with values of 1, 2, 3 and 4. "DELETE from Person WHERE personid = 2".

How many rows will be deleted when you run above SQL?

- A. 0
- B. 1
- C. 2
- D. None of the above

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 SQL 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: 6 (All questions are equally weighted)

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

ALTER TABLE **Item** AUTO_INCREMENT=100;.....

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

SELECT e. name
FROM employee e
INNER JOIN
employee o ON e.employeeid = o.managerid GROUP BY e.name.....

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  
INNER JOIN Customers C ON 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  
GROUP BY country, state, city;.....
```

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

```
ALTER TABLE child_table  
  
ADD FOREIGN KEY (column1).....  
  
REFERENCES parent_table(column1);.....
```

Section 3: Write SQL statements

Total Points: 6 (All questions are equally weighted)

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

| Customer (C) | | | | Order (O) | | | |
|----------------------------|------------|-----------|-----------|-------------------------|----------------------------|------------|------------------|
| <i>customer_id</i> (PK) | first_name | last_name | job_title | <i>order_id</i> (PK) | <i>customer_id</i> (FK) | order_date | shipping_company |
| C001 | John | Kelly | DBA | 1 | C001 | 9/27/2019 | FedEx |
| C002 | Amelia | Cruze | DBA | 2 | C002 | 9/30/2019 | UPS |
| C003 | Sohpia | Henry | Cashier | 3 | C002 | 8/15/2019 | UPS |
| C004 | Tom | Smith | QA | 4 | C005 | 8/20/2019 | FedEx |
| C005 | Mia | Stark | Cashier | 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 FROM Customer c WHERE customer_id NOT IN  
(SELECT customer_id from Order);
```

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 first_name, last_name, shipping_company, order_date from Customer c INNER  
JOIN Order o on c.customer_id = o.customer_id WHERE order_date > "2019-08-31";
```

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, RANK() OVER (ORDER BY order_date DESC) AS RankOrder FROM Order o ORDER BY RankOrder;
```

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 first_name, last_name, shipping_company from Customer c INNER JOIN Order o ON c.customer_id = o.customer_id WHERE first_name LIKE '%a' ORDER BY order_date DESC;
```

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

```
SELECT shipping_company, count(*) AS "Count" FROM Order o GROUP BY shipping_company HAVING COUNT(shipping_company)>2;
```


Section 4: Create relationship for below tables, use proper symbols, lines and captions
Total Points: 3

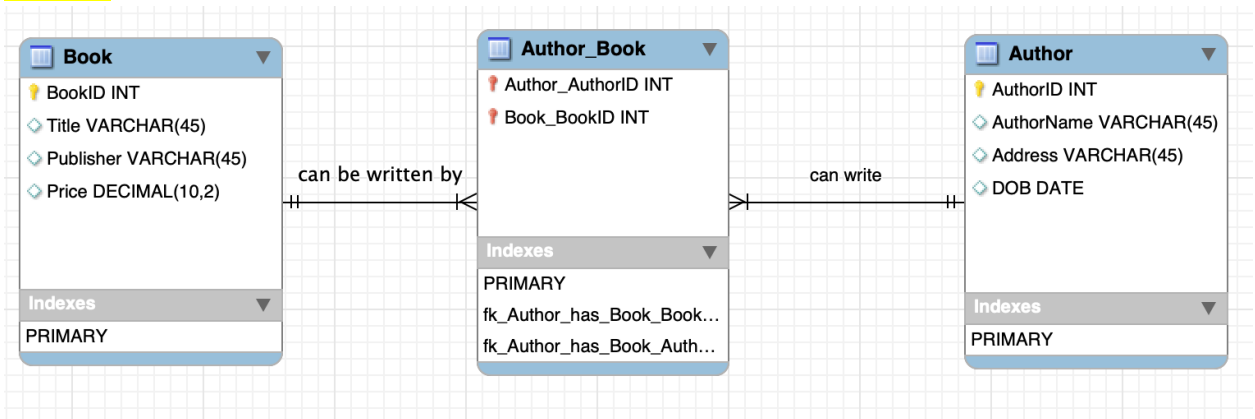
**Note: Create Book and Author tables as below and solve relationship using MySQL Workbench Data Model (ERD).
DDL generation NOT NEEDED.**

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.



Answer:



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