MYSQL PRACTICE QUESTIONS

SUBMITED BY-:

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ENROLL NO-: 23BCT0008

SUBJECT -: DATABASE DESIGN (MYSQL)

1. **Insert a new student with the following details: ID = 2, Name = 'Jane Smith', Age = 22, and Grade = 'A' into the student table.**
   QUERY-->

```
INSERT INTO student VALUE(2 , 'Jane Smith', 22, 'A' );
```

INPUT:

```
1   -- 1. Insert a new student with the following details: ID = 2, Name = 'Jane Smith', Age =22, and Grade = 'A' into the student table.
2
3 • CREATE DATABASE college;
4 • SHOW DATABASES;
5 • Use college;
6
7 • CREATE TABLE student(
8   ID int PRIMARY KEY NOT NULL,
9   S_Name varchar(50) NOT NULL,
10  Age INT NOT NULL,
11  grade char(3) NOT NULL);
12
13 • INSERT INTO student VALUE(2 , 'Jane Smith', 22, 'A' );
14 • SELECT* from student;
```

OUTPUT:

	ID	S_Name	Age	grade
▶	2	Jane Smith	22	A
*	NULL	NULL	NULL	NULL

2. **Insert a record into an employees table with columns emp_id, emp_name, department, and salary. Insert emp_id = 101, emp_name = 'Alice', department = 'HR', and salary = 50000.**

QUERY ->

```
25 •  INSERT INTO employee VALUE(101 , 'Alice ', 'HR', 50000 );
```

INPUT:

```
16    -- 2 Insert a record into an employees table with columns emp_id, emp_name, department, and salary. Insert emp_id = 101, emp_name = 'Alice', department = 'HR',and salary = 50000.
17 •  CREATE DATABASE company;
18 •  USE company;
19 •  CREATE table employee(
20    emp_id INT PRIMARY KEY NOT NULL,
21    emp_name VARCHAR(50) NOT NULL,
22    department VARCHAR(50) NOT NULL,
23    salary FLOAT NOT NULL);
24
25 •  INSERT INTO employee VALUE(101 , 'Alice ', 'HR', 50000 );
26 •  SELECT * from employee;
```

OUTPUT:

	emp_id	emp_name	department	salary
▶	101	Alice	HR	50000
*	NULL	NULL	NULL	NULL

---

3. **Insert multiple records into the student table in a single query. Insert one student with ID = 3, Name = 'Mark', Age = 23, Grade = 'B' and another student with ID = 4, Name = 'Lisa', Age = 21, Grade = 'A'.**

QUERY ->

```
32 •  INSERT INTO student (ID, S_Name, Age, grade) VALUES ( 3, 'Mark', 23, 'B'), (4, 'Lisa',21, 'A');
```

INPUT:

```
28      -- 3. Insert multiple records into the student table in a single query. Insert one student with
29      --  ID = 3, Name = 'Mark', Age = 23, Grade = 'B' and another student with ID = 4, Name
30      --  = 'Lisa', Age = 21, Grade = 'A'.
31 •    use college;
32 •    INSERT INTO student (ID, S_Name, Age, grade) VALUES ( 3, 'Mark', 23, 'B'), (4, 'Lisa',21, 'A');
33 •    SELECT * FROM student;
```

OUTPUT:

ID	S_Name	Age	grade
2	Jane Smith	22	A
3	Mark	23	B
4	Lisa	21	A
NULL	NULL	NULL	NULL

---

4. **Add a new book to the books table with BookID = 101, Title = 'MySQL Essentials', Author = 'John Doe', Price = 29.99.**

QUERY ->

```
46 •    INSERT INTO book VALUE(101, 'MySQL Essentials','John Doe',29.99);
```

INPUT:

```
35      --  4. Add anewbook to the books table with BookID = 101, Title = 'MySQL Essentials',
36      --  Author = 'John Doe', Price = 29.99.
37
38 •    CREATE DATABASE library;
39 •    USE library;
40 •    show DATABASES;
41 •    CREATE TABLE book(
42      BookID INT PRIMARY KEY NOT NULL,
43      Title VARCHAR(50) NOT NULL,
44      Author VARCHAR(50) NOT NULL,
45       Price FLOAT NOT NULL);
46 •     INSERT INTO book VALUE(101, 'MySQL Essentials','John Doe',29.99);
47 •     SELECT * FROM booK;
```

OUPUT:

BookID	Title	Author	Price
101	MySQL Essentials	John Doe	29.99
NULL	NULL	NULL	NULL

---

5. Retrieve all the students from the student table

QUERY ->

```
51 •    SELECT * FROM student;
```

INPUT:

```
49      -- 5. Retrieve all the students from the student table
50 •    USE college;
51 •    SELECT * FROM student;
```

OUTPUT:

ID	S_Name	Age	grade
2	Jane Smith	22	A
3	Mark	23	B
4	Lisa	21	A
NULL	NULL	NULL	NULL

---

6. Get the names and majors of all students who are 21 years old or older from the student table

ID	S_Name	Age	grade	major
3	Mark	23	B	CS
4	Lisa	21	A	CS
6	Ava Hernandez	19	A	CS
403	Ethan Clark	21	A	CE
404	Mia Patel	0	C	CS
405	Noah Walker	22	B	CE
407	Lucas Evans	21	B	CS
NULL	NULL	NULL	NULL	NULL

QUERY->

```
-- 6.   Get the names and majors of all students who are 21 years old or older from the student table

SELECT S_NAME , MAJOR
FROM STUDENT
WHERE AGE >=21;
```

OUTPUT:

S_NAME	MAJOR
Mark	CS
Lisa	CS
Ethan Clark	CE
Noah Walker	CE
Lucas Evans	CS

---

7. **Select all books from the books table that cost more than 20 dollars**

QUERY ->

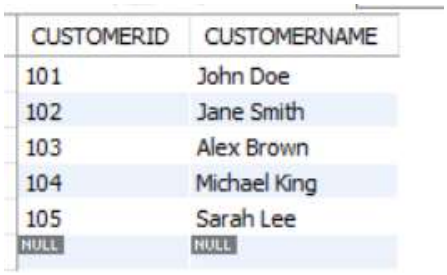
```
-- 7.  Select all books from the books table that cost more than 20 dollars
USE library;
SELECT * FROM book WHERE price > 20;
```

OUTPUT:

BookID	Title	Author	Price
101	MySQL Essentials	John Doe	29.99
NULL	NULL	NULL	NULL

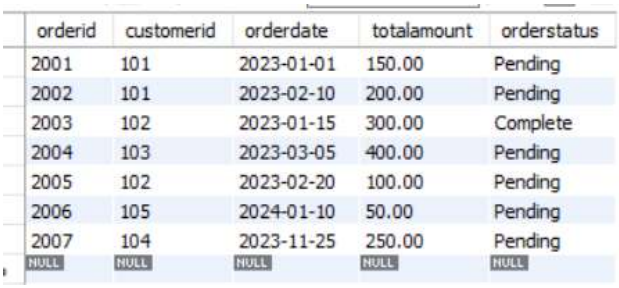
---

8. **Retrieve all customers who have placed at least one order from the orders table. Display their CustomerID, CustomerName, and the TotalAmount of their first order (earliest by date**).



CUSTOMERID	CUSTOMERNAME
101	John Doe
102	Jane Smith
103	Alex Brown
104	Michael King
105	Sarah Lee
NULL	NULL

CUSTOMERS TABLE



orderid	customerid	orderdate	totalamount	orderstatus
2001	101	2023-01-01	150.00	Pending
2002	101	2023-02-10	200.00	Pending
2003	102	2023-01-15	300.00	Complete
2004	103	2023-03-05	400.00	Pending
2005	102	2023-02-20	100.00	Pending
2006	105	2024-01-10	50.00	Pending
2007	104	2023-11-25	250.00	Pending
NULL	NULL	NULL	NULL	NULL

ORDERS TABLE

QUERY->

```sql
SELECT c.customerid, c.customername, o.totalamount
FROM customers c
JOIN (
    SELECT customerid, MIN(orderdate) AS first_order_date
    FROM orders
    GROUP BY customerid
) AS first_order ON c.customerid = first_order.customerid
JOIN orders o ON o.customerid = first_order.customerid AND o.orderdate = first_order.first_order_date;
```

OUTPUT:

customerid	customername	totalamount
101	John Doe	150.00
102	Jane Smith	300.00
103	Alex Brown	400.00
104	Michael King	250.00
105	Sarah Lee	50.00

---

9. List the names of employees who earn more than the average salary in the employees table.

QUERY-:

```sql
SELECT emp_name
FROM employee
WHERE salary > (SELECT AVG(salary) FROM employee);
```

OUTPUT:-

emp_name
Olivia Harris
Emma Turner

---

10. Retrieve all products from the products table that have never been ordered. Display the ProductID, ProductName, and Price.

ProductID	ProductName	Price	StockQuantity	orderdate
1	Laptop	75000	10	2024-10-01
2	Smartphone	25000	50	2024-09-25
3	Headphones	1500	200	2024-09-20
4	Tablet	30000	3	2024-10-05
5	Smartwatch	5000	1	2024-09-30
6	Monitor	12000	2	2024-09-28
7	Keyboard	1200	150	2024-09-22
8	Mouse	800	300	2024-10-03
9	Printer	8000	20	2024-10-07
10	External Hard Drive	4000	60	2024-10-02
NULL	NULL	NULL	NULL	NULL

Product table

orderid	customerid	orderdate	totalamount	orderstatus	productid
2001	101	2023-01-01	150.00	Complete	1
2002	101	2023-02-10	200.00	Complete	2
2003	102	2023-01-15	300.00	Complete	3
2004	103	2023-03-05	400.00	Complete	4
2005	102	2023-02-20	100.00	Pending	5
2006	105	2024-01-10	50.00	Pending	6
2007	104	2023-11-25	250.00	Complete	7
3001	105	2024-01-15	250.50	Pending	NULL
NULL	NULL	NULL	NULL	NULL	NULL

orders table

Query->

```
SELECT p.productid, p.productname, p.price
FROM product p
LEFT JOIN orders o ON p.productid = o.productid
WHERE o.productid IS NULL;
```

Output:-

productid	productname	price
8	Mouse	800
9	Printer	8000
10	External Hard Drive	4000
11	PHONE	17000

---

11. For each CustomerID, show the total number of orders they have placed, the total amount spent, and the average amount spent per order

orderid	customerid	orderdate	totalamount	orderstatus
2001	101	2023-01-01	150.00	Pending
2002	101	2023-02-10	200.00	Pending
2003	102	2023-01-15	300.00	Complete
2004	103	2023-03-05	400.00	Pending
2005	102	2023-02-20	100.00	Pending
2006	105	2024-01-10	50.00	Pending
2007	104	2023-11-25	250.00	Pending
NULL	NULL	NULL	NULL	NULL

QUERY->

```sql
SELECT customerid,
       COUNT(orderid) AS total_orders,
       SUM(totalamount) AS total_spent,
       AVG(totalamount) AS avg_spent_per_order
FROM orders
GROUP BY customerid;
```

OUTPUT:

customerid	total_orders	total_spent	avg_spent_per_order
101	2	350.00	175.000000
102	2	400.00	200.000000
103	1	400.00	400.000000
104	1	250.00	250.000000
105	1	50.00	50.000000

---

12. Update the age of the student whose ID = 1 to 21 in the student table.

ID	S_Name	Age	grade
1	Jane Smith	22	A
3	Mark	23	B
4	Lisa	21	A
6	Ava Hernandez	19	A
403	Ethan Clark	21	A
404	Mia Patel	0	C
405	Noah Walker	22	B
407	Lucas Evans	21	B
NULL	NULL	NULL	NULL

ANS->

```sql
-- 12.  Update the age of the student whose ID = 1 to 21 in the student table.
UPDATE student
Set ID = 21
WHERE ID = 1;
SELECT * FROM student;
```

OUTPUT:

ID	S_Name	Age	grade
4	Lisa	21	A
6	Ava Hernandez	19	A
21	Jane Smith	22	A
403	Ethan Clark	21	A
404	Mia Patel	0	C
405	Noah Walker	22	B
407	Lucas Evans	21	B
NULL	NULL	NULL	NULL

---

13. Increase the price of all books by 10% in the books table.

BookID	Title	Author	Price
101	MySQL Essentials	John Doe	29.99
301	The Silent Forest	aniel Moore	18.5
303	"Journey to the Stars"	Michael Carter	9.2
304	"The Hidden Truth"	Olivia Brown	14.95
306	"Beneath the Waves"	Emma Roberts	12.6
307	"Shadows of the Night"	William Davis	13.85
NULL	NULL	NULL	NULL

QUERY->

```
UPDATE BOOK
SET PRICE = PRICE * 1.10;
```

OUTPUT:-

BookID	Title	Author	Price
101	MySQL Essentials	John Doe	32.989
301	The Silent Forest	aniel Moore	20.35
303	"Journey to the Stars"	Michael Carter	10.12
304	"The Hidden Truth"	Olivia Brown	16.445
306	"Beneath the Waves"	Emma Roberts	13.86
307	"Shadows of the Night"	William Davis	15.235
NULL	NULL	NULL	NULL

---

14. Increase the salary of employees who have been in the employees table for more than 5 years by 10%. Assume there's a column HireDate in the table, and only those hired before 2019-09-30 should get the raise.

emp_id	emp_name	department	salary	DEPARTMENTID	HIREDATE
5	Olivia Harris	IT	68200	10	2016-05-10
101	Alice	HR	55000	1	2018-02-14
201	Alice Green	HR	49500	4	2015-11-30
206	William Carter	Sales	52800	20	2018-02-14
207	Emma Turner	Operations	53000	15	2017-08-21
NULL	NULL	NULL	NULL	NULL	NULL

QUERY-:

```
UPDATE employee
SET salary = salary * 1.10
WHERE hiredate < '2019-09-30';
SELECT * from employee;
```

OUTPUT-:

emp_id	emp_name	department	salary	DEPARTMENTID	HIREDATE
5	Olivia Harris	IT	68200	10	2016-05-10
101	Alice	HR	55000	1	2018-02-14
201	Alice Green	HR	49500	4	2015-11-30
206	William Carter	Sales	52800	20	2018-02-14
207	Emma Turner	Operations	53000	15	2017-08-21
NULL	NULL	NULL	NULL	NULL	NULL

---

15. Change the OrderStatus to 'Completed' for all orders in the orders table that were placed before 2023-12-31 and whose TotalAmount is greater than 100

orderid	customerid	orderdate	totalamount	orderstatus
2001	101	2023-01-01	150.00	Pending
2002	101	2023-02-10	200.00	Pending
2003	102	2023-01-15	300.00	Complete
2004	103	2023-03-05	400.00	Pending
2005	102	2023-02-20	100.00	Pending
2006	105	2024-01-10	50.00	Pending
2007	104	2023-11-25	250.00	Pending
NULL	NULL	NULL	NULL	NULL

QUERY -:

```
SET SQL_SAFE_UPDATES = 0;
UPDATE orderS
SET orderstatus = 'Complete'
WHERE orderdate < '2023-12-31' AND totalamount > 100;
SELECT * FROM ORDERS;
```

OUTPUT:-

orderid	customerid	orderdate	totalamount	orderstatus
2001	101	2023-01-01	150.00	Complete
2002	101	2023-02-10	200.00	Complete
2003	102	2023-01-15	300.00	Complete
2004	103	2023-03-05	400.00	Complete
2005	102	2023-02-20	100.00	Pending
2006	105	2024-01-10	50.00	Pending
2007	104	2023-11-25	250.00	Complete
NULL	NULL	NULL	NULL	NULL

---

16. Delete the student with ID = 1 from the student table.

ID	S_Name	Age	grade
1	Jane Smith	22	A
3	Mark	23	B
4	Lisa	21	A
6	Ava Hernandez	19	A
403	Ethan Clark	21	A
404	Mia Patel	0	C
405	Noah Walker	22	B
407	Lucas Evans	21	B
NULL	NULL	NULL	NULL

QUERY->

```
-- -- 16.   Delete the student with ID = 1 from the student table.
DELETE FROM student WHERE ID = 1;
SELECT * FROM student;
```

OUTPUT:

ID	S_Name	Age	grade
3	Mark	23	B
4	Lisa	21	A
6	Ava Hernandez	19	A
403	Ethan Clark	21	A
404	Mia Patel	0	C
405	Noah Walker	22	B
407	Lucas Evans	21	B
NULL	NULL	NULL	NULL

---

17. Remove all books from the books table that are priced below 15 dollar

BookID	Title	Author	Price
101	MySQL Essentials	John Doe	32.989
301	The Silent Forest	aniel Moore	20.35
303	"Journey to the Stars"	Michael Carter	10.12
304	"The Hidden Truth"	Olivia Brown	16.445
306	"Beneath the Waves"	Emma Roberts	13.86
307	"Shadows of the Night"	William Davis	15.235
NULL	NULL	NULL	NULL

ANS ->

```
DELETE FROM BOOK
WHERE PRICE < 15;
SELECT * FROM BOOK;
```

OUTPUT:-

BookID	Title	Author	Price
101	MySQL Essentials	John Doe	32.989
301	The Silent Forest	aniel Moore	20.35
304	"The Hidden Truth"	Olivia Brown	16.445
307	"Shadows of the Night"	William Davis	15.235
NULL	NULL	NULL	NULL

---

18. Delete all customers who have not placed any orders in the orders table. Ensure no orders exist for those customers before deleting.

CUSTOMERID	CUSTOMERNAME
101	John Doe
102	Jane Smith
103	Alex Brown
104	Michael King
105	Sarah Lee
NULL	NULL

QUERY-:

```
DELETE FROM customers
WHERE customerid NOT IN (SELECT DISTINCT customerid FROM orders);
select * from customers;
```

OUTPUT-:

CUSTOMERID	CUSTOMERNAME
101	John Doe
102	Jane Smith
103	Alex Brown
104	Michael King
105	Sarah Lee
NULL	NULL

---

19. Remove all products from the products table where the StockQuantity is less than 5 and the product has not been ordered in the past 6 months

ProductID	ProductName	Price	StockQuantity	orderdate
1	Laptop	75000	10	2024-10-01
2	Smartphone	25000	50	2024-09-25
3	Headphones	1500	200	2024-09-20
4	Tablet	30000	3	2024-10-05
5	Smartwatch	5000	1	2024-09-30
6	Monitor	12000	2	2024-09-28
7	Keyboard	1200	150	2024-09-22
8	Mouse	800	300	2024-10-03
9	Printer	8000	20	2024-10-07
10	External Hard Drive	4000	60	2024-10-02
NULL	NULL	NULL	NULL	NULL

QUERY->

```
DELETE FROM product
WHERE stockquantity < 5
AND productid NOT IN (
    SELECT DISTINCT productid
    FROM orders
    WHERE orderdate >= DATE_SUB(CURDATE(), INTERVAL 6 MONTH)
);
```

OUTPUT:-

ProductID	ProductName	Price	StockQuantity	orderdate
1	Laptop	75000	10	2024-10-01
2	Smartphone	25000	50	2024-09-25
3	Headphones	1500	200	2024-09-20
7	Keyboard	1200	150	2024-09-22
8	Mouse	800	300	2024-10-03
9	Printer	8000	20	2024-10-07
10	External Hard Drive	4000	60	2024-10-02
11	PHONE	17000	6	2024-10-01
NULL	NULL	NULL	NULL	NULL

---

20. Create a new table called courses with the following columns: CourseID, CourseName, and Credits.

QUERY ->

```sql
CREATE TABLE course(
CourseID INT PRIMARY KEY NOT NULL,
 CourseName VARCHAR(50) NOT NULL,
 Credits INT NOT NULL);
```

INPUT:

```sql
-- 20. Create a new table called courses with the following columns: CourseID, CourseName, and Credits.
USE college;
CREATE TABLE course(
CourseID INT PRIMARY KEY NOT NULL,
 CourseName VARCHAR(50) NOT NULL,
 Credits INT NOT NULL);
```

OUTPUT:

Field	Type	Null	Key	Default	Extra
CourseID	int	NO	PRI	NULL	
CourseName	varchar(50)	NO		NULL	
Credits	int	NO		NULL	

---

21. Insert two new courses into the courses table. One with CourseID = 201, CourseName = 'Database Management', and Credits = 3, and another with CourseID = 202, CourseName = 'Web Development', and Credits = 4.

ANS->

```sql
INSERT INTO course (CourseID, CourseName,Credits) VALUES (201,'Database Management', 3), (202, 'Web Development', 4);
```

INPUT:

```sql
-- 21. Insert two new courses into the courses table. One with CourseID = 201, CourseName = 'Database Management', and Credits = 3, and another with CourseID = 202, CourseName = 'Web Development', and Cre

INSERT INTO course (CourseID, CourseName,Credits) VALUES (201,'Database Management', 3), (202, 'Web Development', 4);
SELECT * From course;
```

OUTPUT:

CourseID	CourseName	Credits
201	Database Management	3
202	Web Development	4
NULL	NULL	NULL

---

22. Insert a new record into the orders table with OrderID = 3001, CustomerID = 105, OrderDate = '2024-01-15', and TotalAmount = 250.50. Ensure that the CustomerID exists in the customers table.

orderid	customerid	orderdate	totalamount	orderstatus
2001	101	2023-01-01	150.00	Pending
2002	101	2023-02-10	200.00	Pending
2003	102	2023-01-15	300.00	Complete
2004	103	2023-03-05	400.00	Pending
2005	102	2023-02-20	100.00	Pending
2006	105	2024-01-10	50.00	Pending
2007	104	2023-11-25	250.00	Pending
NULL	NULL	NULL	NULL	NULL

QUERY-:

```
INSERT INTO orderS (orderid, customerid, orderdate, totalamount, orderstatus)
VALUES (3001, 105, '2024-01-15', 250.50, 'Pending');
SELECT * FROM ORDERS;
```

OUTPUT-:

orderid	customerid	orderdate	totalamount	orderstatus
2001	101	2023-01-01	150.00	Complete
2002	101	2023-02-10	200.00	Complete
2003	102	2023-01-15	300.00	Complete
2004	103	2023-03-05	400.00	Complete
2005	102	2023-02-20	100.00	Pending
2006	105	2024-01-10	50.00	Pending
2007	104	2023-11-25	250.00	Complete
3001	105	2024-01-15	250.50	Pending

---

23. the employee who earns the highest salary in each department. Assume there's a DepartmentID in the employees table

emp_id	emp_name	department	salary	DEPARTMENTID
5	Olivia Harris	IT	62000	10
101	Alice	HR	50000	1
201	Alice Green	HR	45000	4
206	William Carter	Sales	48000	20
207	Emma Turner	Operations	53000	15
NULL	NULL	NULL	NULL	NULL

QUERY-:

```
SELECT emp_id, emp_name, department, salary
FROM employee e
WHERE salary = (
    SELECT MAX(salary)
    FROM employee
    WHERE department = e.department
);
```

OUTPUT:-

emp_id	emp_name	department	salary
5	Olivia Harris	IT	62000
101	Alice	HR	50000
206	William Carter	Sales	48000
207	Emma Turner	Operations	53000
NULL	NULL	NULL	NULL

---

24. Display the CustomerID and TotalAmount for the top 5 largest orders placed in the orders table.

customerID	customerName	TotalAmount	orderStatus	orderdate
101	John Smith	150.75	completed	2024-10-01
102	Emily Johnson	99.5	Pending	2024-10-03
103	Robert Brown	200	completed	2024-10-05
104	Sarah Williams	350.25	Shipped	2024-10-02
NULL	NULL	NULL	NULL	NULL

QUERY->

```
SELECT  customerId , totalamount FROM order_ ORDER BY totalamount DESC LIMIT 5;
```

OUTPUT-:

customerId	totalamount
104	350.25
103	200
101	150.75
102	99.5

_____*****COMPLETE*****_____