2022_26_II_RDBMS G1 CA1

Test Summary

- No. of Sections: 3
- No. of Questions: 17
- Total Duration: 90 min

Section 1 - MCQ

Section Summary

- No. of Questions: 9
- Duration: 30 min

Additional Instructions:

None

Q1. You have been given a database with a table named "employees" that contains the columns "name", "age", and "salary". You need to find out the data type of the "age" column.
Based on the scenario, which DDL command should you use to find the data type of the "age" column in the "employees" table?

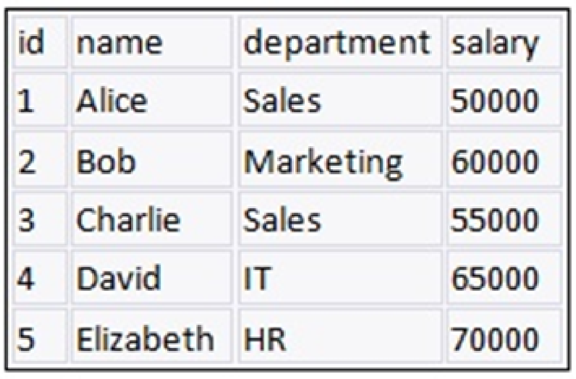
SELECT

ALTER

DESCRIBE

UPDATE

Q2. Consider the following table Employee:



id	name	department	salary
1	Alice	Sales	50000
2	Bob	Marketing	60000
3	Charlie	Sales	55000
4	David	IT	65000
5	Elizabeth	HR	70000

If the following query is executed, how many rows will be updated?
UPDATE Employees
SET salary = salary * 1.1
WHERE department = 'Sales';

1

2

3

4

Q3. If a transaction that includes a DML statement is not committed, the result will be ________

The changes made by the DML statement are permanently saved to the database

The changes made by the DML statement are rolled back

The DML statement is ignored

The database becomes corrupted

Q4. Among the given option, choose the right constraint that can be defined using DDL.

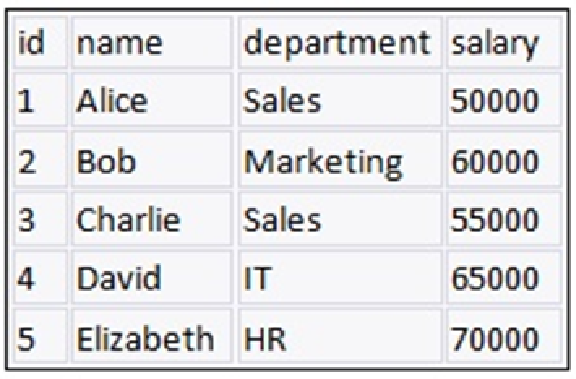
UNIQUE

DISTINCT

GROUP BY

JOIN

Q5. Consider the following table Employees:



id	name	department	salary
1	Alice	Sales	50000
2	Bob	Marketing	60000
3	Charlie	Sales	55000
4	David	IT	65000
5	Elizabeth	HR	70000

If the following query is executed, the number of attributes it displays is ________.

```
SELECT name, salary
FROM Employees
WHERE department = 'Sales'
ORDER BY salary DESC;
```

5

4

3

2

Q6. Among the given options, which one will be the right requirement for a relation to be in BCNF.

It must be in 1NF

It must be in 2NF

It must be in 3NF

It must have no non-trivial functional dependencies between its attributes

Q7. Consider the following Table Employees:

```
| id | name  | salary |
|----|-------------|-----------|
| 1 | Alice  | 50000  |
| 2 | Bob   | 60000  |
| 3 | Charlie | 70000  |
| 4 | David  | 80000  |
```

If the following query is executed, what will be the updated salary for an employee David in the given table.

```
SELECT name, salary * 1.05 AS new_salary
FROM Employees
WHERE salary > 60000;
```

84,000

84,000.50

80,000

85,000

Q8. The TRUNCATE command does ____________

To remove a column from a table

To delete all rows from a table

To modify the structure of a table

To rename a table

Q9. Choose the DDL command from the list given below:

INSERT

SELECT

CREATE

UPDATE

Section 2 - Query - Q1

Section Summary

- No. of Questions: 4
- Duration: 30 min

Additional Instructions:
None

Q1. Write a SQL query to add a new column Cust_Address of type varchar(30) to the existing table Customers.

Sample Input

Sample Output

```
Field   Type    Null    Key     Default Extra
Cust_Id int(11) NO      PRI     NULL
Cust_Name       varchar(30)     YES             NULL
Cust_MobNo      int(11) YES             NULL
```

Time Limit: - ms Memory Limit: - kb Code Size: - kb

Q2. Write a SQL query to fetch the details of all the Employees who is getting Salary more than 10000.
(Note: Table Name: Employees)

Sample Input

Sample Output

```
EmpId   EmpName Salary
101     Sudharshan      15000
103     Sathish 50000
```

Time Limit: - ms Memory Limit: - kb Code Size: - kb

Q3. Write a SQL query to create a table Student with the following fields:

Stu_Id of type int
Stu_Name of type varchar(30)
Stu_MobNo of type int
Stu_EmailId of type varchar(30)

Make Stu_Id as a Primary Key and make other fields as Not Null.

Sample Input

Sample Output

```
Field   Type    Null    Key     Default Extra
Stu_Id  int(11) NO      PRI     NULL
Stu_Name        varchar(30)     NO              NULL
Stu_MobNo       int(11) NO              NULL
```

Time Limit: - ms Memory Limit: - kb Code Size: - kb

Q4. Write a SQL query to replace the Last_Name of Mukesh Chandru as Mukesh Chandhru whose First_Name is Mukesh in the table called Info.
The table is created in the backend.

Sample Input

Sample Output

```
Id      First_Name      Last_Name
101     Mukesh  Chandhru
```

Time Limit: - ms Memory Limit: - kb Code Size: - kb

Section 3 - Query - Q2

Section Summary

- No. of Questions: 4
- Duration: 30 min

Additional Instructions:

None

Q1. Imagine you are managing a music streaming service that has different genres of music. You want to know which users have streamed the most number of songs in each genre in the last month. Write a nested query to find out.

Consider the following table: streaming_history

user_id	genre	song_title	artist	stream_date

The output should contain the fields like: genre, user_id, total_songs

Sample Input

Sample Output

```
genre   user_id total_songs
Country 2       1
Country 5       1
Country 9       1
```

Time Limit: - ms Memory Limit: - kb Code Size: - kb

Q2. Consider a database schema with the following tables:

- Customer (customer_id: int, customer_name: varchar)
- Order (order_id: int, customer_id: int, order_date: date)
- Order_Item (order_id: int, item_id: int, quantity: int, price: float)
- Item (item_id: int, item_name: varchar)

Write a SQL query that returns the names of customers who have placed at least two orders and the names of the items that they have ordered more than once (i.e., the output should contain the header like customer_name, item_name). The query should return the result in alphabetical order of customer names, with the corresponding item names also sorted in alphabetical order.

Sample Input

Sample Output

```
customer_name  item_name
Alice   Widget A
Alice   Widget B
Alice   Widget C
```

Time Limit: - ms Memory Limit: - kb Code Size: - kb

Q3. A company wants to create a new table in their database to store information about their customers. They want to include fields for the cust_id of type int and it is a prime attribute, cust_name of type varchar(30), cust_address of type varchar(30) , cust_number of type int, and cust_email of type varchar(50). Write the appropriate DDL query to create table and also write a query to insert any three records.
Note: The table name should be customer.

Sample Input

Sample Output

```
Field   Type    Null    Key     Default Extra
cust_id int(11) NO      PRI     NULL
cust_name       varchar(30)     YES             NULL
cust_address    varchar(30)     YES             NULL
```

Time Limit: - ms Memory Limit: - kb Code Size: - kb

Q4. You are a manager of a hotel and you want to find out which customers have booked the most number of rooms in each category in the last week (2023-04-25 to 2023-05-01). Write a nested query to find out.

Consider the following table:

booking_id	customer_id	room_category	check_in_date	check_out_date
1	101	Deluxe	2023-04-18	2023-04-20
2	102	Standard	2023-04-19	2023-04-21
3	103	Deluxe	2023-04-20	2023-04-22
4	104	Standard	2023-04-21	2023-04-23
5	105	Deluxe	2023-04-22	2023-04-24
6	106	Standard	2023-04-23	2023-04-25
7	107	Deluxe	2023-04-24	2023-04-26
8	108	Standard	2023-04-25	2023-04-27
9	109	Deluxe	2023-04-26	2023-04-28
10	110	Standard	2023-04-27	2023-04-29
11	111	Deluxe	2023-04-28	2023-04-30
12	112	Standard	2023-04-29	2023-05-01
13	113	Deluxe	2023-04-30	2023-05-02
14	114	Standard	2023-05-01	2023-05-03
15	115	Deluxe	2023-05-02	2023-05-04

The output should contain the fields like: room_category customer_id num_bookings

Sample Input

Sample Output

```
room_category  customer_id    num_bookings
Deluxe  113     1
Deluxe  109     1
Deluxe  111     1
```

Time Limit: - ms Memory Limit: - kb Code Size: - kb

Answer Key & Solution

Section 1 - MCQ

Q1

DESCRIBE

Solution

No Solution

Q2

2

Solution

No Solution

Q3

The changes made by the DML statement are rolled back

Solution

No Solution

Q4

UNIQUE

Solution

No Solution

Q5

2

Solution

No Solution

Q6

It must have no non-trivial functional dependencies between its attributes

Solution

No Solution

Q7

84,000

Solution

No Solution

Q8

To delete all rows from a table

Solution

No Solution

Q9

CREATE

Solution

No Solution

Section 2 - Query - Q1

Q1

Test Case

Input **Output**

```
Field   Type    Null    Key     Default Extra
Cust_Id int(11) NO      PRI     NULL
Cust_Name       varchar(30)     YES             NULL
Cust_MobNo      int(11) YES             NULL
```

Weightage - 100

Sample Input

Sample Output

```
Field   Type    Null    Key     Default Extra
Cust_Id int(11) NO      PRI     NULL
Cust_Name       varchar(30)     YES             NULL
Cust_MobNo      int(11) YES             NULL
```

Solution

```
alter table Customers add Cust_Address varchar(30);
```

Footer

```
desc Customers;
```

Q2

Test Case

Input

Output

```
EmpId   EmpName Salary
101     Sudharshan      15000
103     Sathish 50000
```

Weightage - 100

Sample Input

Sample Output

```
EmpId   EmpName Salary
101     Sudharshan      15000
103     Sathish 50000
```

Solution

```
select * from Employees where Salary>10000;
```

Q3

Test Case

Input

Output

```
Field   Type    Null    Key     Default Extra
Stu_Id  int(11) NO      PRI     NULL
Stu_Name        varchar(30)     NO              NULL
Stu_MobNo       int(11) NO              NULL
```

Weightage - 100

Sample Input

Sample Output

```
Field   Type    Null    Key     Default Extra
Stu_Id  int(11) NO      PRI     NULL
Stu_Name        varchar(30)     NO              NULL
Stu_MobNo       int(11) NO              NULL
```

Solution

```
 create table Student(
Stu_Id int primary key,
Stu_Name varchar(30) not null,
Stu_MobNo int not null,
Stu_EmailId varchar(30) not null
);
```

Footer

```
desc Student;
```

Q4 **Test Case**

Input

```

```

Output

```
Id      First_Name      Last_Name
101     Mukesh  Chandhru
```

Weightage - 100

Sample Input

```

```

Sample Output

```
Id      First_Name      Last_Name
101     Mukesh  Chandhru
```

Solution

```
update Info set Last_Name="Chandhru" where First_Name="Mukesh";
```

Footer

```
select * from Info where First_Name="Mukesh";
```

Section 3 - Query - Q2

Q1 **Test Case**

Input

```

```

Output

```
genre   user_id total_songs
Country 2       1
Country 5       1
Country 9       1
```

Weightage - 100

Sample Input

```

```

Sample Output

```
genre   user_id total_songs
Country 2       1
Country 5       1
Country 9       1
```

Solution

```
SELECT genre, user_id, COUNT(*) AS total_songs
FROM streaming_history
WHERE date BETWEEN '2023-03-01' AND '2023-03-31'
GROUP BY genre, user_id
HAVING total_songs = (
    SELECT MAX(total_songs)
    FROM (
        SELECT genre, user_id, COUNT(*) AS total_songs
        FROM streaming_history
        WHERE date BETWEEN '2023-03-01' AND '2023-03-31'
        GROUP BY genre, user_id
    ) AS t
    WHERE t.genre = streaming_history.genre
    GROUP BY genre
)
```

Q2 **Test Case**

Input

Output

```
customer_name  item_name
Alice   Widget A
Alice   Widget B
Alice   Widget C
```

Weightage - 100

Sample Input

Sample Output

```
customer_name  item_name
Alice   Widget A
Alice   Widget B
Alice   Widget C
```

Solution

```
 SELECT c.customer_name, i.item_name
FROM Customer c
JOIN Orders o ON c.customer_id = o.customer_id
JOIN Order_Item oi ON o.order_id = oi.order_id
JOIN Item i ON oi.item_id = i.item_id
WHERE c.customer_id IN (
  SELECT o.customer_id
  FROM Orders o
  GROUP BY o.customer_id
  HAVING COUNT(DISTINCT o.order_id) >= 2
)
GROUP BY c.customer_name, i.item_name
HAVING COUNT(DISTINCT oi.order_id) >= 2
ORDER BY c.customer_name, i.item_name;
```

Q3

Test Case

Input

Output

```
Field   Type    Null    Key     Default Extra
cust_id int(11) NO      PRI     NULL
cust_name       varchar(30)     YES             NULL
cust_address    varchar(30)     YES             NULL
```

Weightage - 100

Sample Input

Sample Output

```
Field   Type    Null    Key     Default Extra
cust_id int(11) NO      PRI     NULL
cust_name       varchar(30)     YES             NULL
cust_address    varchar(30)     YES             NULL
```

Solution

```
 create table customer(cust_id int primary key, cust_name varchar(30), cust_address varchar(30), cust_number int, cust_email varchar(50));

insert into customer values(101,"Nisha","Tiruvallur",123456,"nisha@iamneo.ai"),
(102,"Vani","Tiruvallur",123789,"vani@iamneo.ai"),
(103,"Nandu","Tiruvallur",789456,"nandu@iamneo.ai");
```

Footer

```
 desc customer;
select count(*) as num_of_records from customer;
```

Q4

Test Case

Input

Output

```
room_category  customer_id     num_bookings
Deluxe  111     1
Deluxe  113     1
Deluxe  109     1
```

Weightage - 100

Sample Input

Sample Output

```
room_category   customer_id     num_bookings
Deluxe  113     1
Deluxe  109     1
Deluxe  111     1
```

Solution

```
 SELECT b.room_category, b.customer_id, COUNT(*) AS num_bookings
FROM bookings b
WHERE b.check_in_date BETWEEN '2023-04-25' AND '2023-05-01'
GROUP BY b.room_category, b.customer_id
HAVING COUNT(*) = (
  SELECT MAX(num_bookings)
  FROM (
    SELECT b2.room_category, b2.customer_id, COUNT(*) AS num_bookings
    FROM bookings b2
    WHERE b2.check_in_date BETWEEN '2023-04-25' AND '2023-05-01'
    GROUP BY b2.room_category, b2.customer_id
  ) t
  WHERE t.room_category = b.room_category
)
ORDER BY b.room_category, num_bookings DESC;
```