

DB Fundamentals Exam

* Required

Answer the following questions

2

Which of the following refers to the number of entities in a relation? *
(1 Point)

- ☒ Degree
- ☐ Cardinality
- ☐ Participation

3

The primary key is selected from the: * (1 Point)

- ☐ Composite keys
- ☐ Determinants
- ☒ Candidate keys
- ☐ Foreign keys

4

Third normal form is based on the concept of _____ * (1 Point)

- ☐ Closure Dependency
- ☐ Transitive Dependency
- ☐ Normal Dependency
- ☒ Functional Dependency

5

Which one of the following commands is used to modify a column inside a table? * (1 Point)

- ☐ Drop
- ☒ Update
- ☐ Alter
- ☐ Set

6

Which of the following keys is generally used to represents the relationships between the tables? * (1 Point)

- ☐ Primary key
- ☒ Foreign key

- ☐ Secondary key
- ☐ None of the above

7

The degree of a relation refers to the number of entity classes in the relation * (1 Point)

- ☒ True
- ☐ False

8

In ER Diagram, derived attribute are represented by * (1 Point)

- ☐ Ellipse
- ☒ Dashed ellipse
- ☐ Rectangle
- ☐ Triangle

9

An attribute of relation schema R, that is not a part of Primary key is always considered as Non-Prime attribute * (1 Point)

- ☐ True

☒ False

10

The rule that a value of a foreign key must appear as a value of some specific table is called a _____ * (1 Point)

☒ Referential integrity

☐ Entity integrity

☐ Unique integrity

☐ Dependent integrity

11

Grant and revoke are _____ statements. * (1 Point)

☐ DDL

☐ TCL

☒ DCL

☐ DML

12

How data is actually stored can be expressed by the _____ * (1 Point)

☒ Physical level

- ☐ Logical level
- ☐ Model level
- ☐ View level

13

In ER Diagram, double line indicates _____ * (1 Point)

- ☐ Derived attributes
- ☐ Multi-values attributes
- ☒ Total participation
- ☐ Weak Entity

14

A function that has no partial dependency is in _____ form * (1 Point)

- ☐ 3NF
- ☒ 2NF
- ☐ 4NF
- ☐ 1NF

15

An index helps to speed up? * (1 Point)

☒ SELECT queries

☐ INSERT queries

☐ UPDATE queries

16

"AS" clause is used in SQL for * (1 Point)

☐ Selection

☒ Rename

☐ Join

☐ Projection

17

A table joined with itself is called _____ * (1 Point)

☒ Self Join

☐ Outer Join

☐ Equi Join

18

The Inner query is executed first then the outer query * (1 Point)

☒ True

☐ False

19

Write a query to display all the details about employees with a salary between 8000 and 10000. * (2 Points)

Employee table

| id | first_name | last_name | salary | joining_date | dept |
|----|------------|-----------|--------|--------------|-----------|
| 1 | Abdullah | Ashraf | 12000 | 2019-01-20 | Finance |
| 2 | Hassan | Mohamed | 8000 | 2019-01-15 | IT |
| 3 | Ahmed | Shokry | 10000 | 2019-02-05 | Banking |
| 4 | Mohamed | Kareem | 8900 | 2019-02-25 | Insurance |
| 5 | Farid | Sayed | 7000 | 2019-05-28 | Finance |
| 6 | Mohab | Mohamed | 9500 | 2019-05-10 | IT |
| 7 | Eslam | Emad | 6500 | 2019-06-20 | Banking |
| 8 | Farid | Ahmed | 8000 | 2019-06-21 | IT |

```
SELECT *
FROM Employee
WHERE salary BETWEEN 8000 AND 10000;
```

20

Write a query to display the average salary for each department *
(2 Points)

Employee table

| id | first_name | last_name | salary | joining_date | dep |
|----|------------|-----------|--------|--------------|------|
| 1 | Abdullah | Ashraf | 12000 | 2019-01-20 | Fina |
| 2 | Hassan | Mohamed | 8000 | 2019-01-15 | IT |
| 3 | Ahmed | Shokry | 10000 | 2019-02-05 | Ban |
| 4 | Mohamed | Kareem | 8900 | 2019-02-25 | Insu |
| 5 | Farid | Sayed | 7000 | 2019-05-28 | Fina |
| 6 | Mohab | Mohamed | 9500 | 2019-05-10 | IT |
| 7 | Eslam | Emad | 6500 | 2019-06-20 | Ban |
| 8 | Farid | Ahmed | 8000 | 2019-06-21 | IT |

```

SELECT department, AVG(salary) AS average_salary
FROM Employee
GROUP BY department;

```

21

Write a query to display employees whose salary is more than the average salary in that company. * (2 Points)

Employee table

| id | first_name | last_name | salary | joining_date | dep |
|----|------------|-----------|--------|--------------|------|
| 1 | Abdullah | Ashraf | 12000 | 2019-01-20 | Fina |
| 2 | Hassan | Mohamed | 8000 | 2019-01-15 | IT |
| 3 | Ahmed | Shokry | 10000 | 2019-02-05 | Ban |
| 4 | Mohamed | Kareem | 8900 | 2019-02-25 | Insu |
| 5 | Farid | Sayed | 7000 | 2019-05-28 | Fina |
| 6 | Mohab | Mohamed | 9500 | 2019-05-10 | IT |
| 7 | Eslam | Emad | 6500 | 2019-06-20 | Ban |
| 8 | Farid | Ahmed | 8000 | 2019-06-21 | IT |

```

SELECT *
FROM Employee
WHERE salary > (SELECT AVG(salary) FROM Employee);

```

22

Write a query to get all the details about employees whose first name contains 'a'. * (2 Points)

Employee table

| id | first_name | last_name | salary | joining_date | dep |
|----|------------|-----------|--------|--------------|------|
| 1 | Abdullah | Ashraf | 12000 | 2019-01-20 | Fina |
| 2 | Hassan | Mohamed | 8000 | 2019-01-15 | IT |
| 3 | Ahmed | Shokry | 10000 | 2019-02-05 | Ban |
| 4 | Mohamed | Kareem | 8900 | 2019-02-25 | Insu |
| 5 | Farid | Sayed | 7000 | 2019-05-28 | Fina |
| 6 | Mohab | Mohamed | 9500 | 2019-05-10 | IT |
| 7 | Eslam | Emad | 6500 | 2019-06-20 | Ban |
| 8 | Farid | Ahmed | 8000 | 2019-06-21 | IT |

```

SELECT *
FROM Employee
WHERE first_name LIKE '%a%';

```

23

Write a query to increase the salary of employees in IT department by 10%

*** (2 Points)**

Employee table

| id | first_name | last_name | salary | joining_date | dep |
|----|------------|-----------|--------|--------------|------|
| 1 | Abdullah | Ashraf | 12000 | 2019-01-20 | Fina |
| 2 | Hassan | Mohamed | 8000 | 2019-01-15 | IT |
| 3 | Ahmed | Shokry | 10000 | 2019-02-05 | Ban |
| 4 | Mohamed | Kareem | 8900 | 2019-02-25 | Insu |
| 5 | Farid | Sayed | 7000 | 2019-05-28 | Fina |
| 6 | Mohab | Mohamed | 9500 | 2019-05-10 | IT |
| 7 | Eslam | Emad | 6500 | 2019-06-20 | Ban |
| 8 | Farid | Ahmed | 8000 | 2019-06-21 | IT |

UPDATE Employee
SET salary = salary * 1.10
WHERE department = 'IT';

24

Write a query to fetch the list of employees with the same salary. *
(2 Points)

Employee table

| id | first_name | last_name | salary | joining_date | dep |
|----|------------|-----------|--------|--------------|------|
| 1 | Abdullah | Ashraf | 12000 | 2019-01-20 | Fina |
| 2 | Hassan | Mohamed | 8000 | 2019-01-15 | IT |
| 3 | Ahmed | Shokry | 10000 | 2019-02-05 | Ban |
| 4 | Mohamed | Kareem | 8900 | 2019-02-25 | Insu |
| 5 | Farid | Sayed | 7000 | 2019-05-28 | Fina |
| 6 | Mohab | Mohamed | 9500 | 2019-05-10 | IT |
| 7 | Eslam | Emad | 6500 | 2019-06-20 | Ban |
| 8 | Farid | Ahmed | 8000 | 2019-06-21 | IT |

```

SELECT *
FROM Employee
WHERE salary IN (
    SELECT salary
    FROM Employee
    GROUP BY salary
    HAVING COUNT(*) > 1
);

```

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