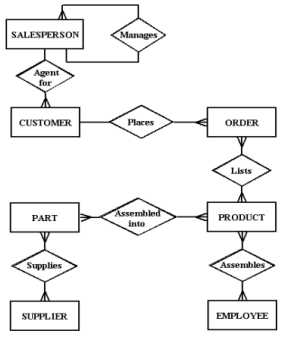
Department of Computer Science
University of Delhi

Time: 1 hour | June 17, 2022 | Maximum Marks: 15

1. Mr. X wants to set up a database to record details related to customers, salespeople, p etc., for his recently launched grocery store. For smooth functioning, he has listed following requirements.



   - A salesperson may manage many other salespeople.
   - A salesperson is managed by only one salespeople.
   - A salesperson can be an agent for many customers.
   - A customer is managed by one salespeople
   - A customer can place many orders
   - An order can be placed by one customer and may contain many inventory items
   - An inventory item may be listed on many orders and can be assembled from many parts
   - A part may be assembled into many inventory items
   - Many employees assemble an inventory item from many parts
   - A supplier supplies many parts and a part may be supplied by many suppliers.

   Construct an E-R diagram that models the above scenario.

2. Consider the relation $Employee(Name, Manager, Salary)$ given below. [1]

Name	Manager	Salary
Amit	Prakash	10000
Arun	Ankit	5000
Aditya	Prakash	7000

   What is the output of the following SQL query?

```
SELECT Count(*)
FROM  ( (SELECT Name, Manager
         FROM   Employee) AS S
         NATURAL RIGHT OUTER JOIN (SELECT Salary
                  FROM   Employee) AS T );
```

9

If you feel, the answer provided by you is correct, you can show the same in class.

3. What does the following SQL query list? Justify your answer. [2]

```
SELECT Student_name
FROM Students
WHERE class_name=(SELECT class_name
FROM Students
WHERE math_marks=100);
```

Error if subquery returns more than 1 row. For example, students of two/more classes (let's say, Math and CS) have secured 100 marks in math or, two/more students of the same class have secured 100 marks in math.

Otherwise, list all the students of the class in which only one student has secured 100 marks in math

If you feel, the solution provided by you is correct, you can show the same in class.

4. Write a sql query to delete duplicate records from the relation Employee(Name, Manager, Salary). [2]

CREATE TABLE TMP SELECT DISTINCT Name, manager, Salary FROM Employee;
DROP TABLE Employee;
RENAME TABLE Tmp TO Employee;

5. The relation Employee(Name, Salary) contains the names and salaries of different employees. Assuming that no two employees have the same salary, what does the following SQL query list? Justify your answer. [3]

```
SELECT Name
FROM Employee as B
WHERE (SELECT count(*)
       FROM Employee as T
       WHERE T.Salary > B.Salary) < 5
```

Names of top 5 salaried employees