CSE 4308 - DBMS LAB

DBMS LAB 05 TASKS AND SOLUTIONS

Prepared by:
Mohammad Anas Jawad
Lecturer, IUT CSE

Department of Computer Science and Engineering
Islamic University of Technology
February 15, 2020

Note: Write down your commands and errors encountered in a notepad file to be evaluated.

1. What is the maximum salary?

```
SELECT MAX(SALARY)FROM CITIZEN;
```

2. Which male person has the maximum income? [Hint: nested query]

```
SELECT C_NAME, SALARY FROM CITIZEN WHERE GENDER IN 'Male'AND SALARY = (SELECT
MAX(SALARY)FROM CITIZEN WHERE GENDER IN 'Male');
```

Note: Notice that we have used (`WHERE GENDER IN 'Male'`) condition twice in our implementation. Whenever nested query is involved, the innermost query is executed first. In this case, when the innermost query is executed, suppose the result returned is 100,000. Now, if there isn't any gender condition on the outer query, the outer query essentially becomes

```
SELECT C_NAME, SALARY FROM CITIZEN WHERE SALARY = 100000
```

Since there is no condition for gender here, it will return the names of both male and female citizens whose salary is equal to 100000. Hence we need to use the condition for both the inner and outer queries.

The desired answer can also be obtained without using aggregate function in this case:

```
SELECT C_NAME, SALARY FROM (SELECT * FROM CITIZEN WHERE GENDER IN 'Male'ORDER
BY SALARY DESC)WHERE ROWNUM=1;
```

3. Who is the oldest male person? [Hint: nested query]

```
SELECT C_NAME, AGE FROM CITIZEN WHERE GENDER IN 'Male'AND AGE = (SELECT MAX(AGE)FROM
CITIZEN WHERE GENDER IN 'Male');
```

4. Which female person has the least income? [Hint: Nested Query]

```
SELECT C_NAME, SALARY FROM CITIZEN WHERE GENDER IN 'Female'AND SALARY = (SELECT
MIN(SALARY)FROM CITIZEN WHERE GENDER='Female');
```

5. Which female person is the youngest? [Hint: nested query]

```
SELECT C_NAME, AGE FROM CITIZEN WHERE GENDER IN 'Female'AND AGE = (SELECT MIN(AGE)FROM
CITIZEN WHERE GENDER IN 'Female');
```

6. Which teacher has the most income?

```
SELECT C_NAME, SALARY, OCCUPATION FROM CITIZEN WHERE OCCUPATION IN 'Teacher'AND
SALARY = (SELECT MAX(SALARY)FROM CITIZEN WHERE OCCUPATION IN 'Teacher');
```

7. Who is the most earning doctor?

```
SELECT C_NAME, SALARY, OCCUPATION FROM CITIZEN WHERE OCCUPATION IN 'Doctor'AND
SALARY = (SELECT MAX(SALARY)FROM CITIZEN WHERE OCCUPATION IN 'Doctor');
```

8. Which citizens have 'r' in their name?

```
SELECT C_NAME FROM CITIZEN WHERE C_NAME LIKE '%r%';
```

9. Which citizens have 'a' in their name?

```
SELECT C_NAME FROM CITIZEN WHERE C_NAME LIKE '%a%';
```

10. Which citizens have 'y' as the third character in their name?

```
SELECT C_NAME FROM CITIZEN WHERE C_NAME LIKE '__y%';
```

11. What is the average salary of this table?

```
SELECT AVG(SALARY)AS AVG_SAL FROM CITIZEN;
```

12. What is the average age of this table?

```
SELECT AVG(AGE)AS AVG_AGE FROM CITIZEN;
```

13. What is the total income of all the teachers of the table?

```
SELECT SUM(SALARY)FROM CITIZEN WHERE OCCUPATION IN 'Teacher';
```

14. What is the average income of the doctors?

```
SELECT AVG(SALARY)FROM CITIZEN WHERE OCCUPATION IN 'Doctor';
```

15. What is the average income of the students?

```
SELECT AVG(SALARY)FROM CITIZEN WHERE OCCUPATION IN 'Student';
```

16. Show the name of the least earning student.

```
SELECT C_NAME, SALARY, OCCUPATION FROM CITIZEN WHERE OCCUPATION IN 'Student'AND
SALARY = (SELECT MIN(SALARY)FROM CITIZEN WHERE OCCUPATION IN 'Student');
```

17. Show the name of the most earning female student.

```
SELECT C_NAME,GENDER, OCCUPATION, SALARY FROM CITIZEN WHERE GENDER IN 'Female'AND
OCCUPATION IN 'Student'AND SALARY = (SELECT MAX(SALARY)FROM CITIZEN WHERE GENDER
IN 'Female'AND OCCUPATION IN 'Student');
```

18. What is the number of cities with 'aka' in their name?

```
SELECT COUNT(DISTINCT C_HOME)FROM CITIZEN WHERE C_HOME LIKE '%aka%';
```

Or,

```
SELECT COUNT(CITY)FROM (SELECT DISTINCT C_HOME AS CITY FROM CITIZEN WHERE C_HOME
LIKE '%aka%');
```

19. What is the number of cities with 'tg' in their name?

```
SELECT COUNT(DISTINCT C_HOME)FROM CITIZEN WHERE C_HOME LIKE '%tg%';
```

20. What is the maximum salary of citizens whose name starts with 'A'?

```
SELECT MAX(SALARY)FROM CITIZEN WHERE C_NAME LIKE 'A%';
```

21. Show the description of the maximum earning teacher.

```
SELECT * FROM CITIZEN WHERE OCCUPATION IN 'Teacher'AND SALARY = (SELECT MAX(SALARY)FROM
CITIZEN WHERE OCCUPATION IN 'Teacher');
```

22. What is the average age of the students?

```
SELECT AVG(AGE)FROM CITIZEN WHERE OCCUPATION IN 'Student';
```

23. Make a list which will show the number of citizens belonging to each occupation.

```
SELECT OCCUPATION, COUNT(*)FROM CITIZEN GROUP BY OCCUPATION;
```

24. Make a list which will show the number of citizens belonging to each city.

```
SELECT C_HOME, COUNT(*)FROM CITIZEN GROUP BY C_HOME;
```

25. Find the maximum salary of each occupation.

```
SELECT OCCUPATION, MAX(SALARY)FROM CITIZEN GROUP BY OCCUPATION;
```

26. Categorize the average salary of male citizens based on occupation.

```
SELECT OCCUPATION, AVG(SALARY)FROM CITIZEN WHERE GENDER IN 'Male'GROUP BY OCCUPATION;
```

27. Categorize the average salary of male citizens based on occupation where the average salary is at least 10000.

```
SELECT OCCUPATION, AVG(SALARY)FROM CITIZEN WHERE GENDER IN 'Male'GROUP BY OCCUPATION
HAVING AVG(SALARY)>=10000;
```

28. Categorize the average salary of female citizens based on occupation where the maximum salary is at least 10000.

```
SELECT OCCUPATION, AVG(SALARY)FROM CITIZEN WHERE GENDER IN 'Female'GROUP BY
OCCUPATION HAVING MAX(SALARY)>=10000;
```

29. What is the number of citizens whose salary is not within the range 40000-50000?

```
SELECT COUNT(*)FROM CITIZEN WHERE SALARY NOT BETWEEN 40000 AND 50000;
```

30. If the state decided to oust the citizens whose salary is less than 20000, what will be the remaining number of citizens in Ctg? [Hint: You can use nested query]

```
SELECT COUNT(*)AS REMAINING_CHATGAIYYA FROM CITIZEN WHERE C_HOME IN 'Ctg'AND
SALARY >= 20000;
```

Or, if you're feeling fancy and want to show off your subquery skills,

```
SELECT (SELECT COUNT(*)FROM CITIZEN WHERE C_HOME IN 'Ctg')- (SELECT COUNT(*)FROM
CITIZEN WHERE C_HOME IN 'Ctg'AND SALARY<20000)AS REMAINING_CHATGAIYYA FROM
DUAL;
```

31. If the state decided to oust the citizens whose salary is greater than 20000 but less than 50000, what will be the remaining number of citizens in Ctg? [Hint: You can use nested query]

```
SELECT COUNT(*)AS REMAINING_CHATGAIYYA FROM CITIZEN WHERE C_HOME IN 'Ctg'AND
NOT (SALARY>20000 AND SALARY<50000);
```

Or,

```
 SELECT (SELECT COUNT(*)FROM CITIZEN WHERE C_HOME IN 'Ctg'AND SALARY<=20000)+
(SELECT COUNT(*)FROM CITIZEN WHERE C_HOME IN 'Ctg'AND SALARY>=50000)AS REMAINING_CHATGAI
FROM DUAL;
```

32. Find the average salary of upper middle-class citizens (i.e. salary >= 55000) under each occupation if there are at least two citizens in that occupation.

```
SELECT OCCUPATION, AVG(SALARY)FROM CITIZEN WHERE SALARY>=55000 GROUP BY OCCUPATION
HAVING COUNT(*)>=2;
```

33. Find the average salary of upper middle-class citizens (i.e. salary >= 55000) under each city if there are at least two citizens in that city.

```
SELECT C_HOME, AVG(SALARY)FROM CITIZEN WHERE SALARY>=55000 GROUP BY C_HOME
HAVING COUNT(*)>=2;
```