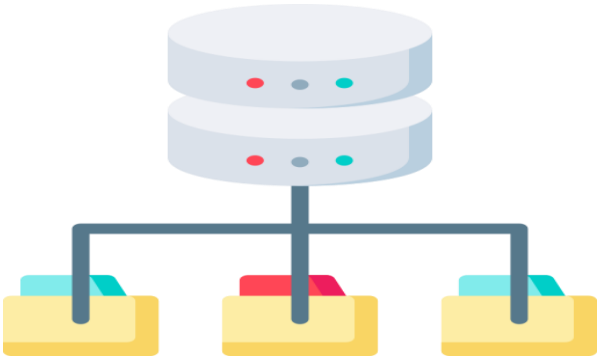
VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

LAB REPORT

CSE2004 – DATABASE MANAGEMENT SYSTEMS



(B.Tech. COMPUTER SCIENCE AND ENGINEERING)

FALL SEMESTER 2021-22

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VIT – A Place to Learn; A Chance to Grow

ASSIGNMENT – 2

OPERATORS AND FUNCTONS

QUESTION – 1

Find the male employee names having salary greater than 75000$.

QUERY

```
SELECT
    first_name,
    mid_name,
    last_name
FROM
    employee
WHERE
    sex IN ('m', 'M')
    AND salary > 75000;
```

RESULT

```
SQL> SELECT first_name,mid_name,last_name FROM employee WHERE sex IN ('m','M') AND salary > 75000;

FIRST_NAME      MI LAST_NAME
--------------- -- ---------------
Doug            E  Gilbert
```

QUESTION – 2

Find the employee names whose salary falls in the range of 50000 and 80000.

QUERY

```
SELECT
    first_name,
    mid_name,
    last_name
FROM
    employee
WHERE
    salary BETWEEN 50000
    AND 80000;
```

RESULT

```
SQL> SELECT first_name,mid_name,last_name FROM employee WHERE salary BETWEEN 50000 AND 80000;

FIRST_NAME      MI LAST_NAME
--------------- -- ---------------
Doug            E  Gilbert
Joyce              PAN
James           E  Borg
```

QUESTION – 3

Find all the employees who have no supervisor.

QUERY

```
SELECT
    *
FROM
    employee
WHERE
    supervisor_ssn IS NULL;
```

RESULT

```
SQL> SELECT * FROM employee WHERE supervisor_ssn IS NULL;

FIRST_NAME      MI LAST_NAME       SSN_NUMBE BIRTHDAY
--------------- -- --------------- --------- ---------
ADDRESS                                          S     SALARY SUPERVISO
------------------------------------------------- - ---------- ---------
DEPARTMENT_NUMBER
-----------------
Doug            E  Gilbert         554433221 09-JUN-60
11 S 59 E, Salt Lake City, UT                    M      80000
                3

Joyce              PAN             543216789 07-FEB-78
35 S 18 E, Salt Lake City, UT                    F      70000
                2

FIRST_NAME      MI LAST_NAME       SSN_NUMBE BIRTHDAY
--------------- -- --------------- --------- ---------
ADDRESS                                          S     SALARY SUPERVISO
------------------------------------------------- - ---------- ---------
DEPARTMENT_NUMBER
-----------------
```

QUESTION – 4

Get the employee names whose bdate not later than 1998.

QUERY

```
SELECT
    first_name || mid_name || last_name as "name"
FROM
    employee
WHERE
    birthday <('01-JAN-1998');
```

RESULT

```
SQL> SELECT first_name || mid_name || last_name as "name" FROM employee WHERE birthday<('01-JAN-1998');

name
------------------------------
DougE Gilbert
Joyce  PAN
FrankinT Wong
JenniferS Wallace
JohnyB Smith
RameshK Narayan
JoyceA English
JamesE Borg
AliciaJ Zelaya
AhmadV Jabbar

10 rows selected.
```

QUESTION – 5

Retrieve the employee names whose first name start with ‘L’ and have 5 characters in total.

QUERY

```
SELECT
    first_name,
    mid_name,
    last_name
FROM
    employee
WHERE
    first_name LIKE 'L%'
    AND length(first_name) = 5;
```

RESULT

```
SQL> SELECT first_name,mid_name,last_name FROM employee WHERE first_name LIKE 'L%' AND length(first_name)=5;

no rows selected
```

QUESTION – 6

Find the employee details whose middle initial is null.

QUERY

```
SELECT
    *
FROM
    employee
WHERE
    mid_name IS NULL;
```

RESULT

```
SQL> SELECT * FROM employee WHERE mid_name IS NULL;

FIRST_NAME      MI LAST_NAME       SSN_NUMBE BIRTHDAY
--------------- -- --------------- --------- ---------
ADDRESS                                          S     SALARY SUPERVISO
------------------------------------------------- - ---------- ---------
DEPARTMENT_NUMBER
-----------------
Joyce              PAN             543216789 07-FEB-78
35 S 18 E, Salt Lake City, UT                    F      70000
                2
```

QUESTION – 7

Display the department names that ends with ‘i’.

QUERY

```
SELECT
    department_name
FROM
    department
WHERE
    department_name LIKE '%i';
```

RESULT

```
SQL> SELECT department_name FROM department WHERE department_name LIKE '%i';

no rows selected
```

QUESTION – 8

Display the names of all the employees having supervisor with any of the following

SSN 554433221, 333445555.

QUERY

```
SELECT
    first_name,
    mid_name,
    last_name
FROM
    employee
WHERE
    supervisor_ssn IN ('554433221', '333445555');
```

RESULT

```
SQL> SELECT first_name,mid_name,last_name FROM employee WHERE supervisor_ssn IN ('554433221','333445555');

FIRST_NAME      MI LAST_NAME
--------------- -- ---------------
Frankin         T  Wong
Jennifer        S  Wallace
Johny           B  Smith
Ramesh          K  Narayan
Joyce           A  English
```

QUESTION – 9

Display all the department names in upper case and lower case.

QUERY

```
-- UPPER
SELECT
    UPPER(department_name)
FROM
    department;

-- Lower
SELECT
    LOWER(department_name)
FROM
    department;
```

RESULT

```
SQL> SELECT UPPER(department_name) FROM department;

UPPER(DEPARTMEN
--------------
MANUFACTURE
ADMINISTRATION
HEADQUARTER
FINANCE
RESEARCH

SQL> SELECT LOWER(department_name) FROM department;

LOWER(DEPARTMEN
--------------
manufacture
administration
headquarter
finance
research
```

QUESTION – 10

Display the first four characters of the department names using substring function.

QUERY

```
SELECT
    SUBSTR(department_name, 1, 4)
FROM
    department;
```

RESULT

```
SQL> SELECT SUBSTR(department_name,1,4) FROM department;

SUBSTR(DEPARTMEN
----------------
Manu
Admi
Head
Fina
Rese
```

QUESTION – 11

Display the substring of the address (starting from 5th position to 11 th position) of all employees.

QUERY

```
SELECT
    SUBSTR(address, 5, 11)
FROM
    employee;
```

RESULT

```
SQL> SELECT SUBSTR(address,5,11) FROM employee;

SUBSTR(ADDRESS,5,11)
-------------------------------------------
 59 E, Salt
 18 E, Salt
Voss,Housto
Berry, Bell
Fondren,Hou
Fire Oak,Hu
 Rice,Houst
Stone,Houst
 Castle,Spr
Dallas,Hous

10 rows selected.
```

QUESTION – 12

Display the Mgrstartdate on adding two months to it.

QUERY

```
SELECT
    ADD_MONTHS(manage_start_date, 2)
FROM
    DEPARTMENT;
```

RESULT

```
SQL> SELECT ADD_MONTHS(manage_start_date,2) FROM DEPARTMENT;

ADD_MONTH
---------
19-AUG-71
04-MAR-99
22-NOV-55
01-MAR-85
22-JUL-78
```

QUESTION – 13

Display the age of all the employees rounded to two digits.

QUERY

```
SELECT
    ROUND(MONTHS_BETWEEN(SYSDATE, birthday) / 12, 2)
FROM
    employee;
```

RESULT

```
SQL> SELECT ROUND(MONTHS_BETWEEN(SYSDATE,birthday)/12,2) FROM employee;

ROUND(MONTHS_BETWEEN(SYSDATE,BIRTHDAY)/12,2)
--------------------------------------------
                                       61.24
                                       53.57
                                       75.74
                                       90.21
                                       66.65
                                       68.97
                                       59.09
                                       93.82
                                       63.13
                                       62.43

10 rows selected.
```

QUESTION – 14

Find the last day and next day of the month in which each manager has joined.

QUERY

```
SELECT
    LAST_DAY(manage_start_date),
    NEXT_DAY(manage_start_date, 'MONDAY')
FROM
    department;
```

RESULT

```
SQL> SELECT LAST_DAY(manage_start_date), NEXT_DAY(manage_start_date,'MONDAY') FROM department;

LAST_DAY( NEXT_DAY(
--------- ---------
30-JUN-71 21-JUN-71
31-JAN-99 11-JAN-99
30-SEP-55 26-SEP-55
31-JAN-85 07-JAN-85
31-MAY-78 29-MAY-78
```

QUESTION – 15

Replace the string ‘na’ from ‘Ramana’ by ‘sri’.

QUERY

```
SELECT
    REPLACE('Ramana', 'na', 'sri')
FROM
    dual;
```

RESULT

```
SQL> SELECT REPLACE('Ramana','na','sri') FROM dual;

REPLACE
-------
Ramasri
```

QUESTION – 16

Print the length of all the department names.

QUERY

```
SELECT
    LENGTH(department_name)
FROM
    DEPARTMENT;
```

RESULT

```
SQL> SELECT LENGTH(department_name) FROM DEPARTMENT;

LENGTH(DEPARTMENT_NAME)
-----------------------
                     11
                     14
                     11
                      7
                      8
```

QUESTION – 17

Print the system date in the format 25 th May 2021.

QUERY

```
-- CHANGING FORMAT
ALTER session
set
    NLS_DATE_FORMAT = 'DDth Month YYYY';
-- SYSTEM DATE
SELECT
    SYSDATE
FROM
    DUAL;
```

RESULT

```
SQL> ALTER session set NLS_DATE_FORMAT='DDth Month YYYY';

Session altered.

SQL> SELECT SYSDATE FROM DUAL;

SYSDATE
-------------------
03RD September 2021
```

QUESTION – 18

Display the date after 8 months from current date.

QUERY

```
SELECT
    ADD_MONTHS(SYSDATE, 8)
FROM
    DUAL;
```

RESULT

```
SQL> SELECT ADD_MONTHS(SYSDATE,8) FROM DUAL;

ADD_MONTHS(SYSDATE,
-------------------
03RD May       2022
```

QUESTION – 19

Display the next occurrence of Friday in this month.

QUERY

```
SELECT
    NEXT_DAY(SYSDATE, 'FRIDAY')
FROM
    DUAL;
```

RESULT

```
SQL> SELECT NEXT_DAY(SYSDATE,'FRIDAY') FROM DUAL;

NEXT_DAY(SYSDATE,'F
-------------------
10TH September 2021
```

QUESTION – 20

Display the project location padded with **** on left side.

QUERY

```
SELECT
    LPAD(
        project_location,
        LENGTH(project_location) + 4,
        '*'
    )
FROM
    project;
```

RESULT

```
SQL> SELECT LPAD(project_location,LENGTH(project_location)+4,'*') FROM project;

LPAD(PROJECT_LOCATION,LENGTH(PROJECT_LOCATION)+4,'*')
--------------------------------------------------------------------------------
****Houston
****Salt Lake City
****Houston
****Bellaire
****Sugarland
****Salt Lake City
****New York
****Stafford
****Chicago
****San Francisco

10 rows selected.
```

GROUP FUNCTIONS

QUESTION – 1

How many different departments are there in the ‘employee’ table?

QUERY

```
SELECT COUNT(DISTINCT department_number) FROM employee;
```

RESULT

```
SQL> SELECT COUNT(DISTINCT department_number) FROM employee;

COUNT(DISTINCTDEPARTMENT_NUMBER)
--------------------------------
                               5
```

QUESTION – 2

For each department display the least and highest employee salaries along with department number.

QUERY

```
SELECT MIN(salary), MAX(salary), department_number FROM employee GROUP BY depa
rtment_number;
```

RESULT

```
SQL> SELECT MIN(salary), MAX(salary), department_number FROM employee GROUP BY department_number;

MIN(SALARY) MAX(SALARY) DEPARTMENT_NUMBER
----------- ----------- -----------------
      55000       55000                 1
      70000       70000                 2
      25000       40000                 5
      25000       43000                 4
      80000       80000                 3
```

QUESTION – 3

Print the number of projects on which each employee is working on.

QUERY

```
SELECT COUNT(DISTINCT project_number) FROM works_on;
```

RESULT

```
SQL> SELECT COUNT(DISTINCT project_number) FROM works_on;

COUNT(DISTINCTPROJECT_NUMBER)
-----------------------------
                            6
```

QUESTION – 4

Retrieve total number of hours spent on projects by each employee.

QUERY

```
SELECT project_number, SUM(hours) FROM works_on GROUP BY project_number;
```

RESULT

```
SQL> SELECT project_number, SUM(hours) FROM works_on GROUP BY project_number;

PROJECT_NUMBER SUM(HOURS)
-------------- ----------
          1945         29
          3388       72.5
          2212         77
          4345         35
          6688         10
          7745         30

6 rows selected.
```

QUESTION – 5

Count the number of employees over 30 ages.

QUERY

```
SELECT count(ssn_number) FROM employee WHERE MONTHS_BETWEEN(SYSDATE,BIRTHDAY)/
12>30;
```

RESULT

```
SQL> SELECT count(ssn_number) FROM employee WHERE MONTHS_BETWEEN(SYSDATE,BIRTHDAY)/12>30;

COUNT(SSN_NUMBER)
-----------------
               10
```

QUESTION – 6

Display the department number which contains more than 3 employees.

QUERY

```
SELECT department_number FROM employee GROUP BY department_number HAVING COUNT
(department_number) >=3;
```

RESULT

```
SQL> SELECT department_number FROM employee GROUP BY department_number HAVING COUNT(department_number) >=3;

DEPARTMENT_NUMBER
-----------------
                5
                4
```

QUESTION – 7

Calculate the average salary of employees in each department.

QUERY

```
SELECT AVG(salary),department_number FROM employee GROUP BY department_number;
```

RESULT

```
SQL> SELECT AVG(salary), department_number FROM employee GROUP BY department_number;

AVG(SALARY) DEPARTMENT_NUMBER
----------- -----------------
      55000                 1
      70000                 2
      33250                 5
      31000                 4
      80000                 3
```

QUESTION – 8

Count the number of dependents for each employee.

QUERY

```
SELECT COUNT(dependent_name), employee FROM dependent GROUP BY employee;
```

RESULT

```
SQL> SELECT COUNT(dependent_name), employee FROM dependent GROUP BY employee;

COUNT(DEPENDENT_NAME) EMPLOYEE
--------------------- ---------
                    3 333445555
                    2 123456789
                    1 987654321
```

QUESTION – 9

Count the number of employees based on the seniority.

QUERY

```
SELECT count(ssn_number) FROM employee WHERE MONTHS_BETWEEN(SYSDATE,birthday)/
12>60;
```

RESULT

```
SQL> SELECT count(ssn_number) FROM employee WHERE MONTHS_BETWEEN(SYSDATE,birthday)/12>60;

COUNT(SSN_NUMBER)
-----------------
                8
```

QUESTION – 10

Count the number of employees who works in ‘manufacture’ department.

QUERY

```
SELECT COUNT(department_number) FROM employee WHERE department_number IN(SELEC
T department_number FROM department WHERE department_name = 'Manufacture');
```

RESULT

```
SQL> SELECT COUNT(department_number) FROM employee WHERE department_number IN(SELECT department_number FROM department WHERE department_name = 'Manufacture');

COUNT(DEPARTMENT_NUMBER)
------------------------
                       1
```