EXERCISE 3: SQL BUILT IN FUNCTIONS & SUBQUERIES

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Create an EMPLOYEE Table with the following attributes EMPID, EMPNAME, JOB, DOB, SALARY, DEPTNO, GENDER

- create table employee_24mcs1017 (
  empid number primary key,empname varchar2(20) not null,
  job varchar2(20),dob date,salary number(10, 2),
  deptno number,gender char(1));

```
SQL> create table employee_24mcs1017 (
  2  empid number primary key,empname varchar2(20) not null,
  3  job varchar2(20),dob date,salary number(10, 2),
  4  deptno number,gender char(1));

Table created.
```

```
SQL> insert all
  2      into employee_24mcs1017 values (1, 'Mahesh', 'Software Engineer', to_date('1985-06-15', 'YYYY-MM-DD'), 75000.356, 10, 'M')
  3      into employee_24mcs1017 values (2, 'Virat', 'Data Analyst', to_date('1990-08-22', 'YYYY-MM-DD'), 68000.26, 20, 'M')
  4      into employee_24mcs1017 values (3, 'Rohit', 'Project Manager', to_date('1982-03-11', 'YYYY-MM-DD'), 85000.178, 10, 'M')
  5      into employee_24mcs1017 values (4, 'Rahul', 'System Administrator', to_date('1979-11-30', 'YYYY-MM-DD'), 70000.00, 30, 'M')
  6      into employee_24mcs1017 values (5, 'Akshay', 'HR Specialist', to_date('1988-05-24', 'YYYY-MM-DD'), 62000.15, 20, 'M')
  7  select * from dual;

5 rows created.
```

```
SQL> select * from employee_24mcs1017;

    EMPID EMPNAME                                          JOB                                                DOB          SALARY     DEPTNO G
--------- ---------------------------------------------------------------------------------------------------- --------- ---------- ---------- -
        1 Mahesh                                         Software Engineer                                  15-JUN-85  75000.356         10 M
        2 Virat                                          Data Analyst                                       22-AUG-90   68000.26         20 M
        3 Rohit                                          Project Manager                                    11-MAR-82  85000.178         10 M
        4 Rahul                                          System Administrator                               30-NOV-79      70000         30 M
        5 Akshay                                         HR Specialist                                      24-MAY-88   62000.15         20 M

SQL>
```

1. Calculate the square root of the salary of all employees.

```
SELECT empid,  empname, dob, salary, gender,
        SQRT(salary) AS salary_sqrt
FROM employee_24mcs1017;
```

```
SQL> SELECT empid,  empname, dob, salary, gender,
  2     SQRT(salary) AS salary_sqrt
  3  FROM employee_24mcs1017;

     EMPID EMPNAME                                            DOB           SALARY G SALARY_SQRT
---------- -------------------------------------------------- --------- ---------- - -----------
         1 Mahesh                                             15-JUN-85  75000.356 M  273.861929
         2 Virat                                              22-AUG-90   68000.26 M  260.768595
         3 Rohit                                              11-MAR-82  85000.178 M    291.5479
         4 Rahul                                              30-NOV-79      70000 M  264.575131
         5 Akshay                                             24-MAY-88   62000.15 M  248.998293

SQL>
```

2. Apply any other five numeric built in function to ‘salary’ attribute of employee table.

```
SELECT empid,
        empname,
        salary,
        FLOOR(salary) AS floor_salary,
        CEIL(salary) AS ceil_salary,
        TRUNC(salary, 0) AS truncated_salary,
        ROUND(salary, 2) AS rounded_salary,
        MOD(salary, 10000) AS mod_salary
FROM employee_24mcs1017;
```

```
SQL> SELECT empid,
  2         empname,
  3         salary,
  4         FLOOR(salary) AS floor_salary,
  5         CEIL(salary) AS ceil_salary,
  6         TRUNC(salary, 0) AS truncated_salary,
  7         ROUND(salary, 2) AS rounded_salary,
  8         MOD(salary, 10000) AS mod_salary
  9  FROM employee_24mcs1017;

     EMPID EMPNAME                                            SALARY FLOOR_SALARY CEIL_SALARY TRUNCATED_SALARY ROUNDED_SALARY MOD_SALARY
---------- -------------------------------------------------- ---------- ------------ ----------- ---------------- -------------- ----------
         1 Mahesh                                             75000.356        75000       75001            75000       75000.36   5000.356
         2 Virat                                               68000.26        68000       68001            68000       68000.26    8000.26
         3 Rohit                                              85000.178        85000       85001            85000       85000.18   5000.178
         4 Rahul                                                  70000        70000       70000            70000          70000          0
         5 Akshay                                             62000.15        62000       62001            62000       62000.15    2000.15
```

3. Extract only the first 5 characters of the employee names.

```
SELECT empid,
    empname,
    SUBSTR(empname, 1, 5) AS first_5_chars
FROM employee_24mcs1017;
```

```
SQL> SELECT empid,
  2         empname,
  3         SUBSTR(empname, 1, 5) AS first_5_chars
  4  FROM employee_24mcs1017;

     EMPID EMPNAME                                              FIRST_5_CHARS
---------- -------------------------------------------------- ---------------
         1 Mahesh                                             Mahes
         2 Virat                                              Virat
         3 Rohit                                              Rohit
         4 Rahul                                              Rahul
         5 Akshay                                             Aksha
```

4. Apply any other five string built in function to ‘name’ attribute of employee table

```
SELECT empid,
        empname,
        UPPER(empname) AS upper_name,
        LOWER(empname) AS lower_name,
        LENGTH(empname) AS name_length,
        INITCAP(empname) AS initcap_name,
        REPLACE(empname, 'Rohit', 'Kumar') AS replaced_name,
        REVERSE(empname) AS reversed_name
FROM employee_24mcs1017;
```

```
SQL> SELECT empid,
  2         empname,
  3         UPPER(empname) AS upper_name,
  4         LOWER(empname) AS lower_name,
  5         LENGTH(empname) AS name_length,
  6         INITCAP(empname) AS initcap_name,
  7         REPLACE(empname, 'Rohit', 'Kumar') AS replaced_name,
  8         REVERSE(empname) AS reversed_name
  9  FROM employee_24mcs1017;

     EMPID EMPNAME            UPPER_NAME          LOWER_NAME          NAME_LENGTH INITCAP_NAME        REPLACED_NAME       REVERSED_NAME
---------- -------------------- -------------------- -------------------- ----------- -------------------- -------------------- -------------
         1 Mahesh               MAHESH               mahesh                        6 Mahesh               Mahesh               hsehaM
         2 Virat                VIRAT                virat                         5 Virat                Virat                tariV
         3 Rohit                ROHIT                rohit                         5 Rohit                Kumar                tihoR
         4 Rahul                RAHUL                rahul                         5 Rahul                Rahul                luhaR
         5 Akshay               AKSHAY               akshay                        6 Akshay               Akshay               yahskA
```

5. Determine the max and min salary and rename the column as max_salary and Min_salary.

```
SELECT MAX(salary) AS max_salary,
    MIN(salary) AS min_salary
FROM employee_24mcs1017;
```

```
SQL> SELECT MAX(salary) AS max_salary,
  2         MIN(salary) AS min_salary
  3  FROM employee_24mcs1017;

MAX_SALARY MIN_SALARY
---------- ----------
 85000.178   62000.15
```

6. Display the month name of date “14-jul-15” in number.

SELECT TO_CHAR(TO_DATE('14-JUL-15', 'DD-MON-YY'), 'MM') AS month_number FROM dual;

```
SQL> SELECT TO_CHAR(TO_DATE('14-JUL-15', 'DD-MON-YY'), 'MM') AS month_number from dual;

MO
--
07
```

7. Display the Dob of all employees in the format “dd-mm-yy”.

SELECT empid, empname,
TO_CHAR(dob, 'DD-MM-YY') AS formatted_dob
FROM employee_24mcs1017;

```
SQL> SELECT empid,
  2         empname,
  3         TO_CHAR(dob, 'DD-MM-YY') AS formatted_dob
  4  FROM employee_24mcs1017;

     EMPID EMPNAME                                              FORMATTE
---------- -------------------------------------------------- --------
         1 Mahesh                                             15-06-85
         2 Virat                                              22-08-90
         3 Rohit                                              11-03-82
         4 Rahul                                              30-11-79
         5 Akshay                                             24-05-88
```

8. Display the date two months after the Dob of employees.

SELECT empid,
empname,
dob,
ADD_MONTHS(dob, 2) AS dob_plus_2_months
FROM employee_24mcs1017;

```
SQL> SELECT empid,
  2         empname,
  3         dob,
  4         ADD_MONTHS(dob, 2) AS dob_plus_2_months
  5  FROM employee_24mcs1017;

     EMPID EMPNAME                                            DOB       DOB_PLUS_
---------- -------------------------------------------------- --------- ---------
         1 Mahesh                                             15-JUN-85 15-AUG-85
         2 Virat                                              22-AUG-90 22-OCT-90
         3 Rohit                                              11-MAR-82 11-MAY-82
         4 Rahul                                              30-NOV-79 31-JAN-80
         5 Akshay                                             24-MAY-88 24-JUL-88

SQL>
```

9. Display the last date of that month in “05-Oct-15”.

SELECT LAST_DAY(TO_DATE('05-OCT-15', 'DD-MON-YY')) AS last_day_of_month FROM dual;

```
SQL> SELECT LAST_DAY(TO_DATE('05-OCT-15', 'DD-MON-YY')) AS last_day_of_month
  2  FROM dual;

LAST_DAY_
---------
31-OCT-15
```

10. Display the rounded date in the year format, month format, day format

SELECT dob,ROUND(dob, 'YEAR') AS rounded_year FROM employee_24mcs1017;

```
SQL> SELECT dob,ROUND(dob, 'YEAR') AS rounded_year
  2  FROM employee_24mcs1017;

DOB       ROUNDED_Y
--------- ---------
15-JUN-85 01-JAN-85
22-AUG-90 01-JAN-91
11-MAR-82 01-JAN-82
30-NOV-79 01-JAN-80
24-MAY-88 01-JAN-88
```

SELECT dob,ROUND(dob, 'MONTH') AS rounded_month FROM employee_24mcs1017;

```
SQL> SELECT dob,ROUND(dob, 'MONTH') AS rounded_month
  2  FROM employee_24mcs1017;

DOB       ROUNDED_M
--------- ---------
15-JUN-85 01-JUN-85
22-AUG-90 01-SEP-90
11-MAR-82 01-MAR-82
30-NOV-79 01-DEC-79
24-MAY-88 01-JUN-88
```

```
SQL> SELECT dob, ROUND(dob) AS rounded_day
  2  FROM employee_24mcs1017;

DOB       ROUNDED_D
--------- ---------
15-JUN-85 15-JUN-85
22-AUG-90 22-AUG-90
11-MAR-82 11-MAR-82
30-NOV-79 30-NOV-79
24-MAY-88 24-MAY-88
```

11. Display the date 60 days before current date.

```
SQL> SELECT SYSDATE,SYSDATE - 60 AS date_60_days_ago
  2  FROM dual;

SYSDATE   DATE_60_D
--------- ---------
04-AUG-24 05-JUN-24
```

12. Display the names and dob of all employees who were born in August.

```
SQL> SELECT empname,
  2         dob
  3  FROM employee_24mcs1017
  4  WHERE TO_CHAR(dob, 'MM') = '08';

EMPNAME                                            DOB
-------------------------------------------------- ---------
Virat                                              22-AUG-90
```

13. List out the employee names who will celebrate their birthdays during the current month.

```
SQL> SELECT empname
  2  FROM employee_24mcs1017
  3  WHERE TO_CHAR(dob, 'MM') = TO_CHAR(SYSDATE, 'MM');

EMPNAME
--------------------------------------------------
Virat
```

14. List all female employees who were born in April

```
SQL> SELECT empname,
  2         dob
  3  FROM employee_24mcs1017
  4  WHERE TO_CHAR(dob, 'MM') = '04'
  5    AND gender = 'F';

EMPNAME                                            DOB
-------------------------------------------------- ---------
Riya                                               18-APR-99
```

15.What is the difference between maximum and minimum salaries of employees in the organization?

```
SQL> SELECT MAX(salary),MIN(salary),MAX(salary) - MIN(salary) AS salary_difference
  2  FROM employee_24mcs1017;

MAX(SALARY) MIN(SALARY) SALARY_DIFFERENCE
----------- ----------- -----------------
  85000.178   41000.356         43999.822
```

16. Display number of employees working in each department and their department name.

```
SQL> SELECT deptno,
  2         COUNT(*) AS number_of_employees
  3  FROM employee_24mcs1017
  4  GROUP BY deptno;

    DEPTNO NUMBER_OF_EMPLOYEES
---------- ------------------
        30                  1
        20                  2
        50                  1
        10                  2
```

17. Display total salary spent for employees.

```
SQL> SELECT SUM(salary) AS total_salary_spent
  2  FROM employee_24mcs1017;

TOTAL_SALARY_SPENT
------------------
         401001.3
```

18. Display total salary spent for each job category.

```
SQL> SELECT job,
  2         SUM(salary) AS total_salary_spent
  3  FROM employee_24mcs1017
  4  GROUP BY job;

JOB                                                TOTAL_SALARY_SPENT
-------------------------------------------------- ------------------
System Administrator                                            70000
HR Specialist                                                62000.15
Analyst                                                     41000.356
Project Manager                                             85000.178
Software Engineer                                           75000.356
Data Analyst                                                 68000.26

6 rows selected.
```

19. Display lowest paid employee details under each manager.

```
SQL> SELECT empid,
  2         empname,
  3         job,
  4         salary,
  5         deptno
  6  FROM employee_24mcs1017 e
  7  WHERE salary = (
  8      SELECT MIN(salary)
  9      FROM employee_24mcs1017
 10      WHERE deptno = e.deptno
 11  )
 12  ORDER BY deptno;

     EMPID EMPNAME                                            JOB                                                 SALARY     DEPTNO
---------- -------------------------------------------------- -------------------------------------------------- ---------- ----------
         1 Mahesh                                             Software Engineer                                  75000.356         10
         5 Akshay                                             HR Specialist                                      62000.15          20
         4 Rahul                                              System Administrator                                   70000         30
         6 Riya                                               Analyst                                            41000.356         50
```

20. Find how many job titles are available in the employee table.

```
SQL> SELECT COUNT(DISTINCT job) AS number_of_job_titles
  2  FROM employee_24mcs1017;

NUMBER_OF_JOB_TITLES
--------------------
                   6
```

SUBQUERIES:

Consider the database for an organization and create the following tables. DEPARTMENT (dept_no, dept_name, location). EMPLOYEE (emp_no,emp_name,DOB, address, doj, mobile_no, dept_no, salary).

```
SQL> create table department_24mcs1017 (
  2       dept_no number primary key,
  3       dept_name varchar2(15) not null,
  4       location varchar2(15)
  5  );

Table created.
```

```
SQL> create table employee_24mcs1017 (
  2      emp_no number primary key,
  3      emp_name varchar2(15) not null,
  4      dob date,
  5      address varchar2(15),
  6      doj date,
  7      mobile_no varchar2(10),
  8      dept_no number,
  9      salary number(10, 2),
 10      foreign key (dept_no) references department_24mcs1017(dept_no)
 11  );

Table created.
```

```
SQL> select * from department_24mcs1017;

   DEPT_NO DEPT_NAME       LOCATION
---------- --------------- ---------------
      1001 Human Resources b1
      1002 Research        b2
      1004 Engineering     b4
      1005 Admin           b5
```

```
SQL> select * from employee_24mcs1017;

    EMP_NO EMP_NAME        DOB       ADDRESS         DOJ       MOBILE_NO     DEPT_NO     SALARY
---------- --------------- --------- --------------- --------- ---------- ---------- ----------
       101 John            15-MAR-85 Mumbai          10-JAN-20 8945544786       1001      18000
       102 akshay          22-JUL-90 Pune            15-JUN-19 7845632149       1001      20000
       103 Aditya          30-NOV-82 Delhi           25-MAR-18 4368791657       1004      35000
       104 David           05-MAY-88 Chennai         19-JUL-21 3657894651       1005      22000
       105 Reena           10-SEP-95 Bengluru        28-FEB-22 8476325694       1002      15000
```

21. Display the names of the employees working for dept no. 1001.

```
SQL> SELECT emp_name
  2  FROM employee_24mcs1017
  3  WHERE dept_no = 1001;

EMP_NAME
----------------
John
akshay
```

22. Display names of employees whose salary is greater than the employee emp_no=104

```
SQL> SELECT emp_name,salary
  2  FROM employee_24mcs1017
  3  WHERE salary > (
  4      SELECT salary
  5      FROM employee_24mcs1017
  6      WHERE emp_no = 104
  7  );

EMP_NAME            SALARY
--------------- ----------
Aditya               35000
```

23. Display all the employees drawing more than or equal to the average salary of department number 1005.

```
SQL> SELECT emp_name, salary
  2  FROM employee_24mcs1017
  3  WHERE salary >= (
  4       SELECT AVG(salary)
  5       FROM employee_24mcs1017
  6       WHERE dept_no = 1005
  7  );

EMP_NAME            SALARY
--------------- ----------
Aditya               35000
David                22000
```

24. Display the name of the highest paid employee.

```
SQL> SELECT emp_name,salary
  2  FROM employee_24mcs1017
  3  WHERE salary = (
  4       SELECT MAX(salary)
  5       FROM employee_24mcs1017
  6  );

EMP_NAME            SALARY
--------------- ----------
Aditya               35000
```

25.Find the Name and Salary of people who draw in the range Rs. 20,000 to Rs. 40,000.

```
SQL> SELECT emp_name, salary
  2  FROM employee_24mcs1017
  3  WHERE salary BETWEEN 20000 AND 40000;

EMP_NAME             SALARY
-------------- ----------
akshay                20000
Aditya                35000
David                 22000
```

26. Update the salary by 0.25 times for all employees who work in research department.

```
SQL> UPDATE employee_24mcs1017
  2  SET salary = salary * 1.25
  3  WHERE dept_no = (
  4      SELECT dept_no
  5      FROM department_24mcs1017
  6      WHERE dept_name = 'Research'
  7  );

1 row updated.
```

27. Delete all the employee details from the admin department.

```
SQL> DELETE FROM employee_24mcs1017
  2  WHERE dept_no = (
  3      SELECT dept_no
  4      FROM department_24mcs1017
  5      WHERE dept_name = 'Admin'
  6  );

1 row deleted.
```

28. Display the department name in which employee that has lowest salary.

```
SQL> SELECT dept_name
  2  FROM department_24mcs1017
  3  WHERE dept_no = (
  4       SELECT dept_no
  5       FROM employee_24mcs1017
  6       WHERE salary = (
  7            SELECT MIN(salary)
  8            FROM employee_24mcs1017
  9       )
 10  );

DEPT_NAME
---------------
Human Resources
```

29. Display the employee details of all employees who earn more than that of 'Reena' and in the same department as 'John'

```
SQL> SELECT *
  2  FROM employee_24mcs1017
  3  WHERE salary > (
  4      SELECT salary
  5      FROM employee_24mcs1017
  6      WHERE emp_name = 'Reena'
  7  )
  8  AND dept_no = (
  9      SELECT dept_no
 10      FROM employee_24mcs1017
 11      WHERE emp_name = 'John'
 12  );

    EMP_NO EMP_NAME        DOB       ADDRESS         DOJ       MOBILE_NO     DEPT_NO     SALARY
---------- --------------- --------- --------------- --------- ---------- ---------- ----------
       102 akshay          22-JUL-90 Pune            15-JUN-19 7845632149       1001      20000
```

30. Display the name of the employees whose salary is less than the average salary of department no 1001.

```
SQL> SELECT emp_name
  2  FROM employee_24mcs1017
  3  WHERE salary < (
  4       SELECT AVG(salary)
  5       FROM employee_24mcs1017
  6       WHERE dept_no = 1001
  7  );

EMP_NAME
---------------
John
Reena
```

31. Count the number of employees of department where “John” works.

```
SQL> SELECT COUNT(*) AS num_employees
  2  FROM employee_24mcs1017
  3  WHERE dept_no = (
  4       SELECT dept_no
  5       FROM employee_24mcs1017
  6       WHERE emp_name = 'John'
  7  );

NUM_EMPLOYEES
-------------
            2
```