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EXPERIMENT -6

Title: Use of Inbuilt functions and relational algebra operation

Objective: To understand the use of inbuilt function and relational algebra with sql query.

```
mysql> CREATE DATABASE EXP6;
Query OK, 1 row affected (0.01 sec)
```

```
mysql> CREATE TABLE EMP (
    ->     EMPNO INT PRIMARY KEY,
    ->     ENAME VARCHAR(50),
    ->     JOB VARCHAR(50),
    ->     MGR INT,
    ->     HIREDATE DATE,
    ->     SAL DECIMAL(10, 2),
    ->     COMM DECIMAL(10, 2),
    ->     DEPTNO INT
    -> );
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO)

    -> VALUES
    -> (7369, 'SMITH', 'CLERK', 7902, TO_DATE('17-DEC-1980', 'DD-MON-YYYY'), 800, NULL, 20),
    -> (7499, 'ALLEN', 'SALESMAN', 7698, TO_DATE('20-FEB-1981', 'DD-MON-YYYY'), 1600, 300, 30),
    -> (7521, 'WARD', 'SALESMAN', 7698, TO_DATE('22-FEB-1981', 'DD-MON-YYYY'), 1250, 500, 30),
    -> (7566, 'JONES', 'MANAGER', 7839, TO_DATE('02-APR-1981', 'DD-MON-YYYY'), 2975, NULL, 20),
    -> (7654, 'MARTIN', 'SALESMAN', 7698, TO_DATE('28-SEP-1981', 'DD-MON-YYYY'), 1250, 1400, 30),
    -> (7698, 'BLAKE', 'MANAGER', 7839, TO_DATE('01-MAY-1981', 'DD-MON-YYYY'), 2850, NULL, 30),
    -> (7782, 'CLARK', 'MANAGER', 7839, TO_DATE('09-JUN-1981', 'DD-MON-YYYY'), 2450, NULL, 10),
    -> (7788, 'SCOTT', 'ANALYST', 7566, TO_DATE('09-DEC-1982', 'DD-MON-YYYY'), 3000, NULL, 20),
    -> (7839, 'KING', 'PRESIDENT', NULL, TO_DATE('17-NOV-1981', 'DD-MON-YYYY'), 5000, NULL, 10),
    -> (7844, 'TURNER', 'SALESMAN', 7698, TO_DATE('08-SEP-1981', 'DD-MON-YYYY'), 1500, 0, 30),
    -> (7876, 'ADAMS', 'CLERK', 7788, TO_DATE('12-JAN-1983', 'DD-MON-YYYY'), 1100, NULL, 20),
    -> (7900, 'JAMES', 'CLERK', 7698, TO_DATE('03-DEC-1981', 'DD-MON-YYYY'), 950, NULL, 30),
    -> (7902, 'FORD', 'ANALYST', 7566, TO_DATE('03-DEC-1981', 'DD-MON-YYYY'), 3000, NULL, 20),
    -> (7934, 'MILLER', 'CLERK', 7782, TO_DATE('23-JAN-1982', 'DD-MON-YYYY'), 1300, NULL, 10);
ERROR 1305 (42000): FUNCTION exp6.TO_DATE does not exist
mysql> DROP TABLE EMP;
Query OK, 0 rows affected (0.04 sec)

mysql> CREATE TABLE EMP (
    ->     EMPNO INT PRIMARY KEY,
    ->     ENAME VARCHAR(50),
    ->     JOB VARCHAR(50),
    ->     MGR INT,
    ->     HIREDATE VARCHAR(10),
    ->     SAL DECIMAL(10, 2),
    ->     COMM DECIMAL(10, 2),
    ->     DEPTNO INT
    -> );
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> CREATE TABLE EMP (
    ->     EMPNO INT PRIMARY KEY,
    ->     ENAME VARCHAR(50),
    ->     JOB VARCHAR(50),
    ->     MGR INT,
    ->     HIREDATE VARCHAR(10),
    ->     SAL DECIMAL(10, 2),
    ->     COMM DECIMAL(10, 2),
    ->     DEPTNO INT
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO)

    -> VALUES
    -> (7369, 'SMITH', 'CLERK', 7902, '17-DEC-80', 800, NULL, 20),
    -> (7499, 'ALLEN', 'SALESMAN', 7698, '20-FEB-81', 1600, 300, 30),
    -> (7521, 'WARD', 'SALESMAN', 7698, '22-FEB-81', 1250, 500, 30),
    -> (7566, 'JONES', 'MANAGER', 7839, '02-APR-81', 2975, NULL, 20),
    -> (7654, 'MARTIN', 'SALESMAN', 7698, '28-SEP-81', 1250, 1400, 30),
    -> (7698, 'BLAKE', 'MANAGER', 7839, '01-MAY-81', 2850, NULL, 30),
    -> (7782, 'CLARK', 'MANAGER', 7839, '09-JUN-81', 2450, NULL, 10),
    -> (7788, 'SCOTT', 'ANALYST', 7566, '09-DEC-82', 3000, NULL, 20),
    -> (7839, 'KING', 'PRESIDENT', NULL, '17-NOV-81', 5000, NULL, 10),
    -> (7844, 'TURNER', 'SALESMAN', 7698, '08-SEP-81', 1500, 0, 30),
    -> (7876, 'ADAMS', 'CLERK', 7788, '12-JAN-83', 1100, NULL, 20),
    -> (7900, 'JAMES', 'CLERK', 7698, '03-DEC-81', 950, NULL, 30),
    -> (7902, 'FORD', 'ANALYST', 7566, '03-DEC-81', 3000, NULL, 20),
    -> (7934, 'MILLER', 'CLERK', 7782, '23-JAN-82', 1300, NULL, 10);
Query OK, 14 rows affected (0.01 sec)
Records: 14  Duplicates: 0  Warnings: 0
```

```
mysql> CREATE TABLE DEPT (
    ->     DEPTNO INT PRIMARY KEY,
    ->     DNAME VARCHAR(50),
    ->     LOC VARCHAR(50)
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql> INSERT INTO DEPT (DEPTNO, DNAME, LOC)
    -> VALUES
    -> (10, 'ACCOUNTING', 'NEW YORK'),
    -> (20, 'RESEARCH', 'DALLAS'),
    -> (30, 'SALES', 'CHICAGO'),
    -> (40, 'OPERATIONS', 'BOSTON');
Query OK, 4 rows affected (0.01 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

```
mysql> SELECT * FROM EMP;
+-------+--------+-----------+------+-----------+---------+---------+--------+
| EMPNO | ENAME  | JOB       | MGR  | HIREDATE  | SAL     | COMM    | DEPTNO |
+-------+--------+-----------+------+-----------+---------+---------+--------+
|  7369 | SMITH  | CLERK     | 7902 | 17-DEC-80 |  800.00 |    NULL |     20 |
|  7499 | ALLEN  | SALESMAN  | 7698 | 20-FEB-81 | 1600.00 |  300.00 |     30 |
|  7521 | WARD   | SALESMAN  | 7698 | 22-FEB-81 | 1250.00 |  500.00 |     30 |
|  7566 | JONES  | MANAGER   | 7839 | 02-APR-81 | 2975.00 |    NULL |     20 |
|  7654 | MARTIN | SALESMAN  | 7698 | 28-SEP-81 | 1250.00 | 1400.00 |     30 |
|  7698 | BLAKE  | MANAGER   | 7839 | 01-MAY-81 | 2850.00 |    NULL |     30 |
|  7782 | CLARK  | MANAGER   | 7839 | 09-JUN-81 | 2450.00 |    NULL |     10 |
|  7788 | SCOTT  | ANALYST   | 7566 | 09-DEC-82 | 3000.00 |    NULL |     20 |
|  7839 | KING   | PRESIDENT | NULL | 17-NOV-81 | 5000.00 |    NULL |     10 |
|  7844 | TURNER | SALESMAN  | 7698 | 08-SEP-81 | 1500.00 |    0.00 |     30 |
|  7876 | ADAMS  | CLERK     | 7788 | 12-JAN-83 | 1100.00 |    NULL |     20 |
|  7900 | JAMES  | CLERK     | 7698 | 03-DEC-81 |  950.00 |    NULL |     30 |
|  7902 | FORD   | ANALYST   | 7566 | 03-DEC-81 | 3000.00 |    NULL |     20 |
|  7934 | MILLER | CLERK     | 7782 | 23-JAN-82 | 1300.00 |    NULL |     10 |
+-------+--------+-----------+------+-----------+---------+---------+--------+
14 rows in set (0.01 sec)
```

1.Retrieve average salary of all employees.

```
mysql> SELECT AVG(SAL) FROM EMP;
+-------------+
| AVG(SAL)    |
+-------------+
| 2073.214286 |
+-------------+
1 row in set (0.00 sec)
```

2. Retrieve the number of employees.

```
mysql> SELECT COUNT(*) FROM EMP;
+----------+
| COUNT(*) |
+----------+
|       14 |
+----------+
1 row in set (0.01 sec)
```

3. Retrieve distinct number of employees.

```
mysql> SELECT COUNT(DISTINCT ENAME) FROM EMP;
+------------------------+
| COUNT(DISTINCT ENAME) |
+------------------------+
|                     14 |
+------------------------+
1 row in set (0.01 sec)
```

4. Retrieve total salary of employee group by job.

```
mysql> SELECT JOB,SUM(SAL)FROM EMP GROUP BY JOB ;
+-----------+----------+
| JOB       | SUM(SAL) |
+-----------+----------+
| CLERK     |  4150.00 |
| SALESMAN  |  5600.00 |
| MANAGER   |  8275.00 |
| ANALYST   |  6000.00 |
| PRESIDENT |  5000.00 |
+-----------+----------+
5 rows in set (0.00 sec)
```

5. Display the employee information with maximum salary.

```
mysql> SELECT * FROM EMP WHERE SAL = (SELECT MAX(SAL) FROM EMP WHERE SAL < (SELECT MAX(SAL) FROM EMP));
+-------+-------+---------+------+-----------+---------+------+--------+
| EMPNO | ENAME | JOB     | MGR  | HIREDATE  | SAL     | COMM | DEPTNO |
+-------+-------+---------+------+-----------+---------+------+--------+
|  7788 | SCOTT | ANALYST | 7566 | 09-DEC-82 | 3000.00 | NULL |     20 |
|  7902 | FORD  | ANALYST | 7566 | 03-DEC-81 | 3000.00 | NULL |     20 |
+-------+-------+---------+------+-----------+---------+------+--------+
2 rows in set (0.00 sec)
```

6. Find the highest paid employee in department 10.

```
mysql> SELECT * FROM EMP WHERE DEPTNO = 10 AND SAL = (SELECT MAX(SAL) FROM EMP WHERE DEPTNO = 10);
+-------+-------+-----------+------+-----------+---------+------+--------+
| EMPNO | ENAME | JOB       | MGR  | HIREDATE  | SAL     | COMM | DEPTNO |
+-------+-------+-----------+------+-----------+---------+------+--------+
|  7839 | KING  | PRESIDENT | NULL | 17-NOV-81 | 5000.00 | NULL |     10 |
+-------+-------+-----------+------+-----------+---------+------+--------+
1 row in set (0.00 sec)
```

7. List the emps whose sal is equal to the average of max and minimum.

```
mysql> SELECT * FROM EMP WHERE SAL = (SELECT (MAX(SAL) + MIN(SAL))/2 FROM EMP);
Empty set (0.00 sec)
```

8. List the emps who joined in the company on the same date.

```
mysql> SELECT * FROM EMP E WHERE HIREDATE IN (SELECT HIREDATE FROM EMP WHERE EMPNO <> E.EMPNO);
+-------+-------+---------+------+-----------+---------+------+--------+
| EMPNO | ENAME | JOB     | MGR  | HIREDATE  | SAL     | COMM | DEPTNO |
+-------+-------+---------+------+-----------+---------+------+--------+
|  7900 | JAMES | CLERK   | 7698 | 03-DEC-81 |  950.00 | NULL |     30 |
|  7902 | FORD  | ANALYST | 7566 | 03-DEC-81 | 3000.00 | NULL |     20 |
+-------+-------+---------+------+-----------+---------+------+--------+
2 rows in set (0.00 sec)
```

9. Display the employee names in upper and lower case.

```
mysql> SELECT UPPER (ENAME), LOWER(ENAME) FROM EMP;
+--------------+-------------+
| UPPER (ENAME) | LOWER(ENAME) |
+--------------+-------------+
| SMITH         | smith       |
| ALLEN         | allen       |
| WARD          | ward        |
| JONES         | jones       |
| MARTIN        | martin      |
| BLAKE         | blake       |
| CLARK         | clark       |
| SCOTT         | scott       |
| KING          | king        |
| TURNER        | turner      |
| ADAMS         | adams       |
| JAMES         | james       |
| FORD          | ford        |
| MILLER        | miller      |
+--------------+-------------+
14 rows in set (0.00 sec)
```

10. find the date of 3 days later from hiredate.

```
mysql> SELECT HIREDATE, (HIREDATE + 3) FROM EMP;
+-----------+----------------+
| HIREDATE  | (HIREDATE + 3) |
+-----------+----------------+
| 17-DEC-80 |             20 |
| 20-FEB-81 |             23 |
| 22-FEB-81 |             25 |
| 02-APR-81 |              5 |
| 28-SEP-81 |             31 |
| 01-MAY-81 |              4 |
| 09-JUN-81 |             12 |
| 09-DEC-82 |             12 |
| 17-NOV-81 |             20 |
| 08-SEP-81 |             11 |
| 12-JAN-83 |             15 |
| 03-DEC-81 |              6 |
| 03-DEC-81 |              6 |
| 23-JAN-82 |             26 |
+-----------+----------------+
14 rows in set, 14 warnings (0.01 sec)
```