2024

USE OF INBUILT FUNCTIONS AND RELATIONAL ALGEBRA OPERATIONS

LAB - 6

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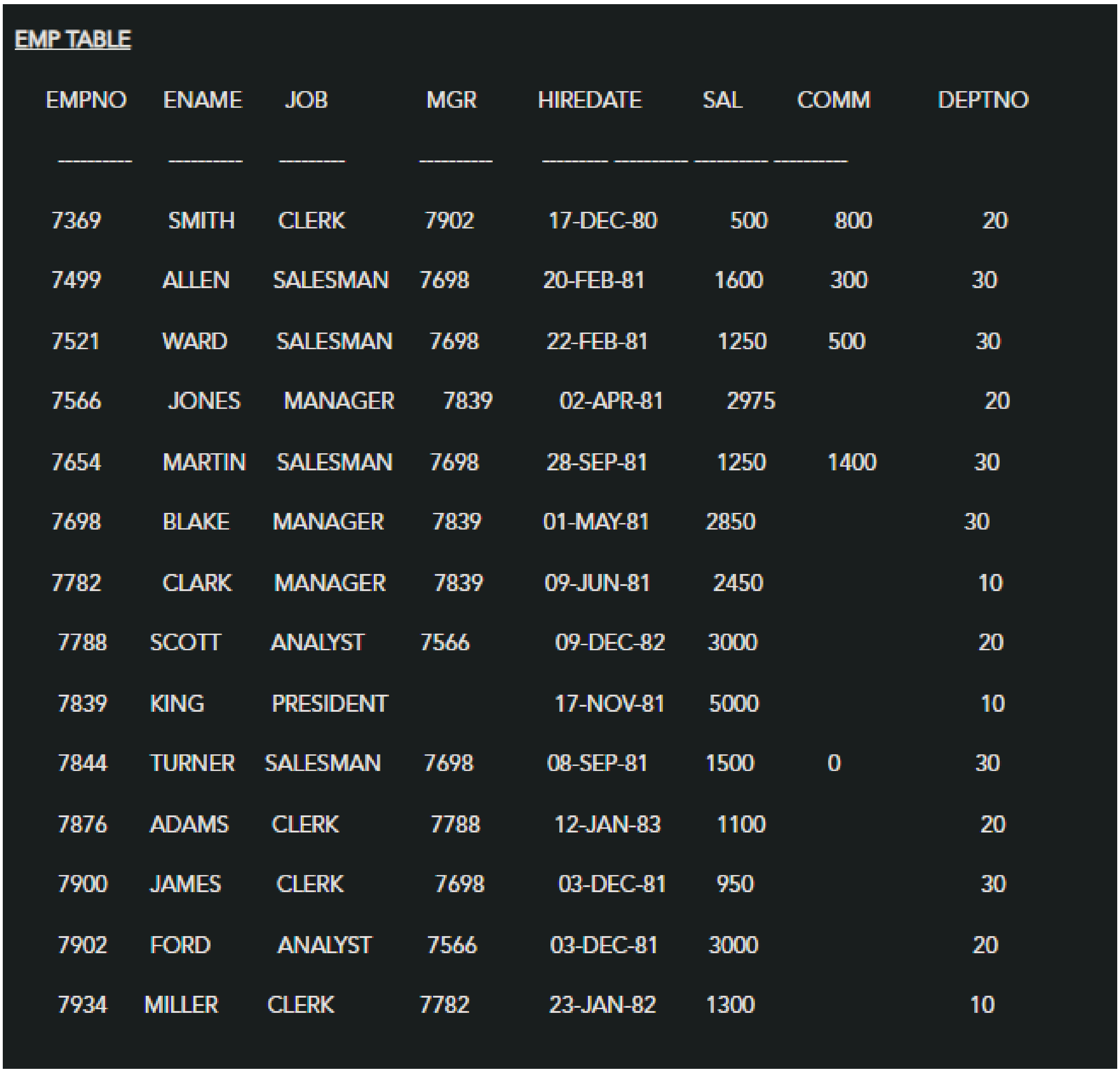
DBMS LAB

EXPERIMENT - 6

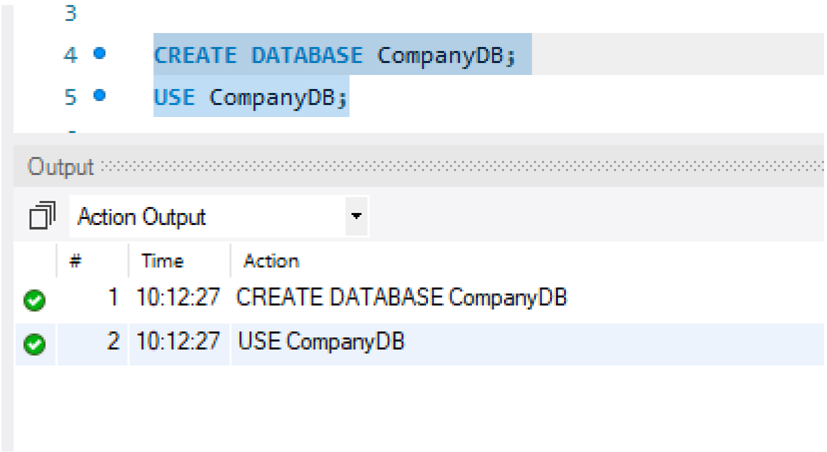
Title: Use of Inbuilt functions and relational algebra operation
Objective: To understand the use of inbuilt function and relational algebra with sql query.

1. Create the following two tables (EMP and DEPT)
EMP TABLE



EMP TABLE

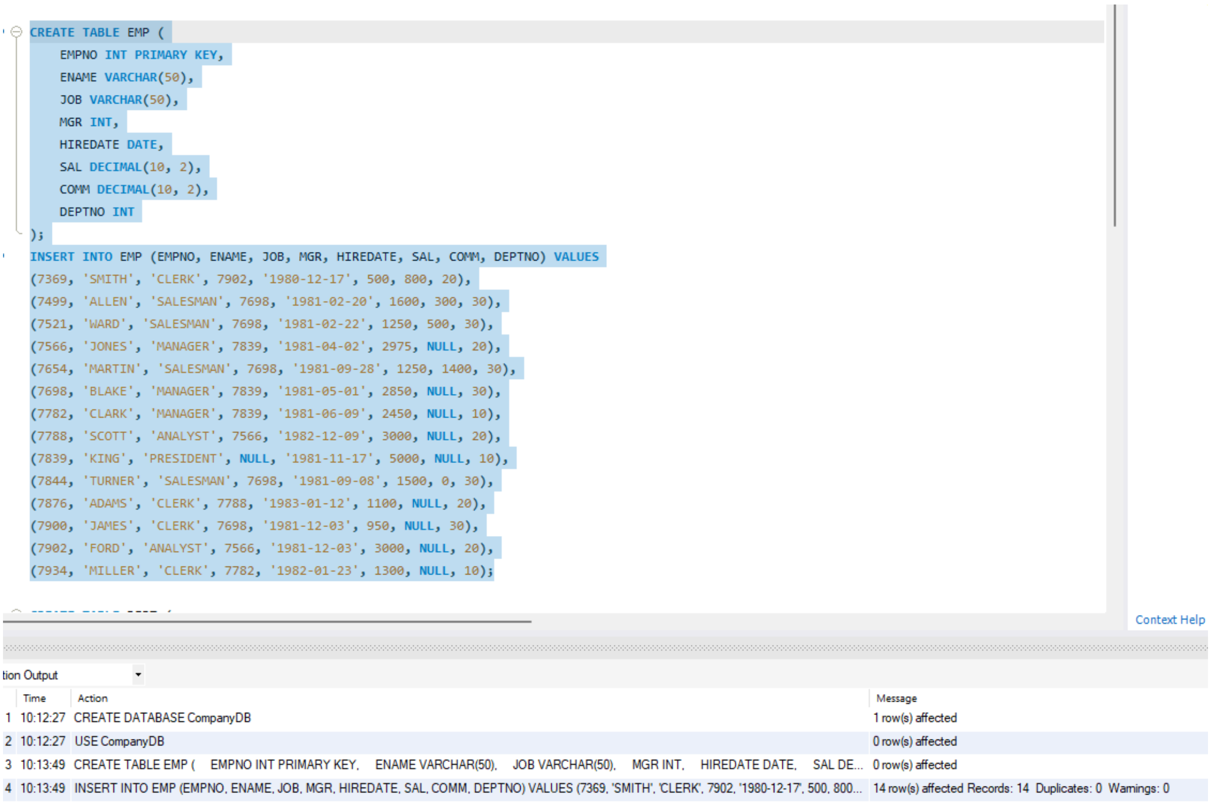
EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	17-DEC-80	500	800	20
7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
7566	JONES	MANAGER	7839	02-APR-81	2975		20
7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
7698	BLAKE	MANAGER	7839	01-MAY-81	2850		30
7782	CLARK	MANAGER	7839	09-JUN-81	2450		10
7788	SCOTT	ANALYST	7566	09-DEC-82	3000		20
7839	KING	PRESIDENT		17-NOV-81	5000		10
7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
7876	ADAMS	CLERK	7788	12-JAN-83	1100		20
7900	JAMES	CLERK	7698	03-DEC-81	950		30
7902	FORD	ANALYST	7566	03-DEC-81	3000		20
7934	MILLER	CLERK	7782	23-JAN-82	1300		10



```sql
CREATE DATABASE CompanyDB;
USE CompanyDB;
```

Output

```
#   Time      Action
1   10:12:27  CREATE DATABASE CompanyDB
2   10:12:27  USE CompanyDB
```

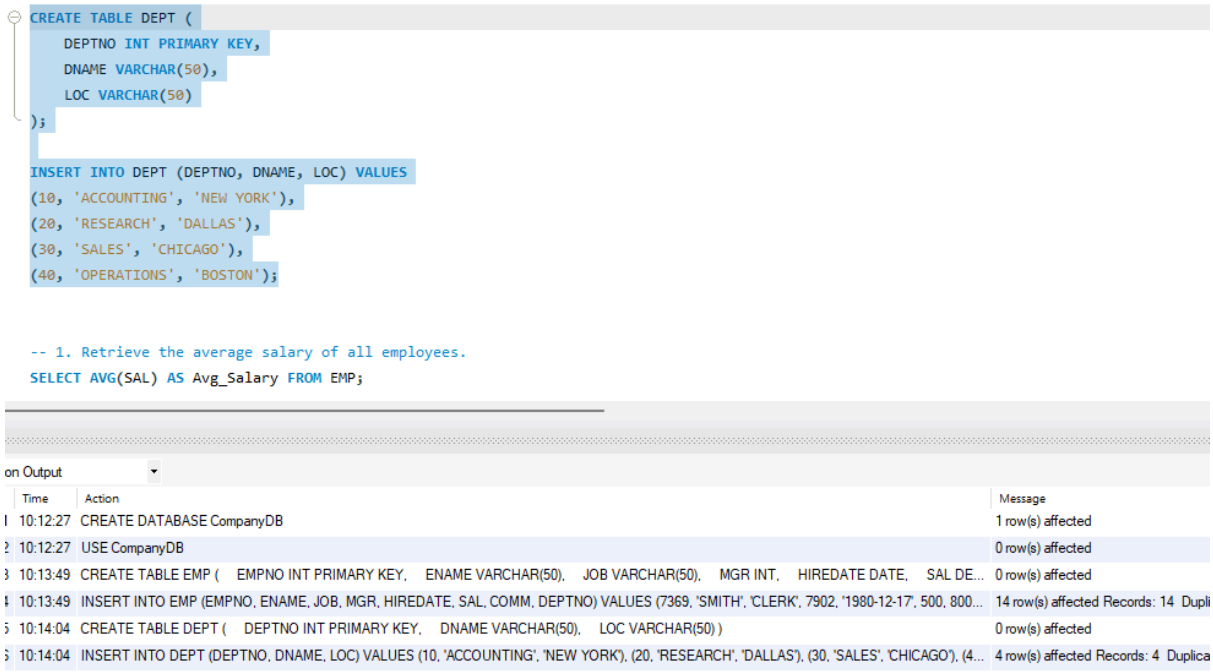


```sql
CREATE TABLE EMP (
    EMPNO INT PRIMARY KEY,
    ENAME VARCHAR(50),
    JOB VARCHAR(50),
    MGR INT,
    HIREDATE DATE,
    SAL DECIMAL(10, 2),
    COMM DECIMAL(10, 2),
    DEPTNO INT
);
INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO) VALUES
(7369, 'SMITH', 'CLERK', 7902, '1980-12-17', 500, 800, 20),
(7499, 'ALLEN', 'SALESMAN', 7698, '1981-02-20', 1600, 300, 30),
(7521, 'WARD', 'SALESMAN', 7698, '1981-02-22', 1250, 500, 30),
(7566, 'JONES', 'MANAGER', 7839, '1981-04-02', 2975, NULL, 20),
(7654, 'MARTIN', 'SALESMAN', 7698, '1981-09-28', 1250, 1400, 30),
(7698, 'BLAKE', 'MANAGER', 7839, '1981-05-01', 2850, NULL, 30),
(7782, 'CLARK', 'MANAGER', 7839, '1981-06-09', 2450, NULL, 10),
(7788, 'SCOTT', 'ANALYST', 7566, '1982-12-09', 3000, NULL, 20),
(7839, 'KING', 'PRESIDENT', NULL, '1981-11-17', 5000, NULL, 10),
(7844, 'TURNER', 'SALESMAN', 7698, '1981-09-08', 1500, 0, 30),
(7876, 'ADAMS', 'CLERK', 7788, '1983-01-12', 1100, NULL, 20),
(7900, 'JAMES', 'CLERK', 7698, '1981-12-03', 950, NULL, 30),
(7902, 'FORD', 'ANALYST', 7566, '1981-12-03', 3000, NULL, 20),
(7934, 'MILLER', 'CLERK', 7782, '1982-01-23', 1300, NULL, 10);
```

```
   Time      Action                                                                                                  Message
1  10:12:27  CREATE DATABASE CompanyDB                                                                               1 row(s) affected
2  10:12:27  USE CompanyDB                                                                                           0 row(s) affected
3  10:13:49  CREATE TABLE EMP (    EMPNO INT PRIMARY KEY,    ENAME VARCHAR(50),    JOB VARCHAR(50),    MGR INT,    HIREDATE DATE,    SAL DE...   0 row(s) affected
4  10:13:49  INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO) VALUES (7369, 'SMITH', 'CLERK', 7902, '1980-12-17', 500, 800...   14 row(s) affected Records: 14  Duplicates: 0  Warnings: 0
```

DEPT TABLE

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

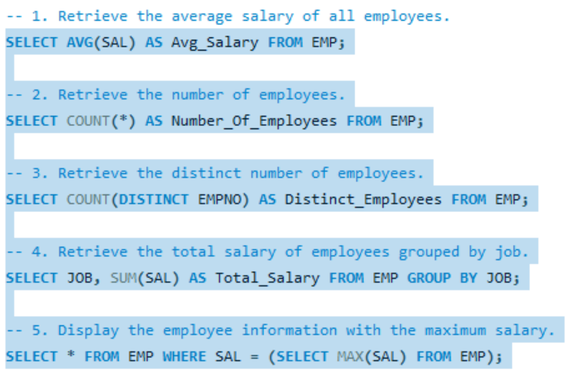


```
CREATE TABLE DEPT (
    DEPTNO INT PRIMARY KEY,
    DNAME VARCHAR(50),
    LOC VARCHAR(50)
);

INSERT INTO DEPT (DEPTNO, DNAME, LOC) VALUES
(10, 'ACCOUNTING', 'NEW YORK'),
(20, 'RESEARCH', 'DALLAS'),
(30, 'SALES', 'CHICAGO'),
(40, 'OPERATIONS', 'BOSTON');


-- 1. Retrieve the average salary of all employees.
SELECT AVG(SAL) AS Avg_Salary FROM EMP;
```

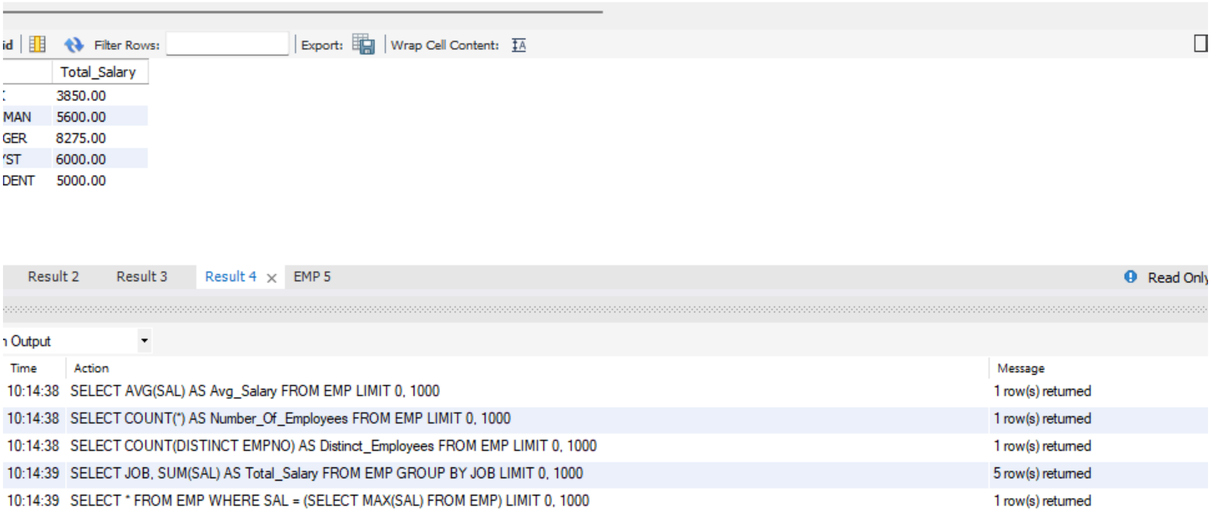
```
on Output
   Time      Action                                                                                                                   Message
1  10:12:27  CREATE DATABASE CompanyDB                                                                                                1 row(s) affected
2  10:12:27  USE CompanyDB                                                                                                            0 row(s) affected
3  10:13:49  CREATE TABLE EMP (    EMPNO INT PRIMARY KEY,    ENAME VARCHAR(50),    JOB VARCHAR(50),    MGR INT,    HIREDATE DATE,    SAL DE...   0 row(s) affected
4  10:13:49  INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO) VALUES (7369, 'SMITH', 'CLERK', 7902, '1980-12-17', 500, 800...   14 row(s) affected Records: 14  Dupli
5  10:14:04  CREATE TABLE DEPT (    DEPTNO INT PRIMARY KEY,    DNAME VARCHAR(50),    LOC VARCHAR(50) )                                  0 row(s) affected
6  10:14:04  INSERT INTO DEPT (DEPTNO, DNAME, LOC) VALUES (10, 'ACCOUNTING', 'NEW YORK'), (20, 'RESEARCH', 'DALLAS'), (30, 'SALES', 'CHICAGO'), (4...   4 row(s) affected Records: 4  Duplica
```

Write the Queries for the following using In-built functions.

1. Retrieve the average salary of all employees.
2. Retrieve the number of employees.
3. Retrieve a distinct number of employees.
4. Retrieve total salary of employee group by job.
5. Display the employee information with maximum salary.
6. Find the highest paid employee in department 10.
7. List the emps whose sal is equal to the average of max and minimum.
8. List the emps who joined the company on the same date.
9. Display the employee names in upper and lower case.
10.find the date of 3 days later from hiredate

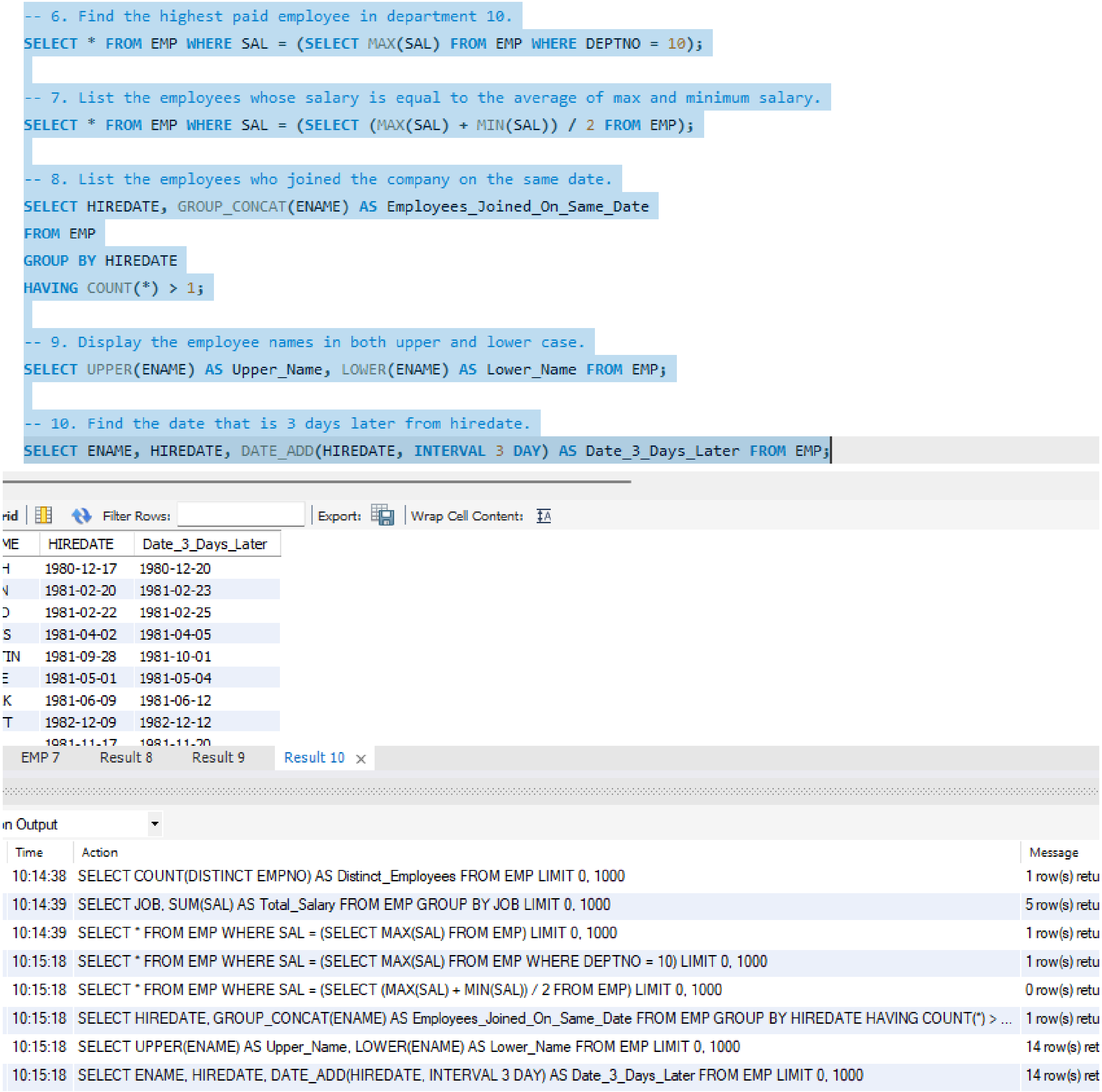


```
-- 1. Retrieve the average salary of all employees.
SELECT AVG(SAL) AS Avg_Salary FROM EMP;

-- 2. Retrieve the number of employees.
SELECT COUNT(*) AS Number_Of_Employees FROM EMP;

-- 3. Retrieve the distinct number of employees.
SELECT COUNT(DISTINCT EMPNO) AS Distinct_Employees FROM EMP;

-- 4. Retrieve the total salary of employees grouped by job.
SELECT JOB, SUM(SAL) AS Total_Salary FROM EMP GROUP BY JOB;

-- 5. Display the employee information with the maximum salary.
SELECT * FROM EMP WHERE SAL = (SELECT MAX(SAL) FROM EMP);
```



	Total_Salary
:	3850.00
MAN	5600.00
GER	8275.00
'ST	6000.00
DENT	5000.00

```
Time      Action                                                                      Message
10:14:38  SELECT AVG(SAL) AS Avg_Salary FROM EMP LIMIT 0, 1000                        1 row(s) returned
10:14:38  SELECT COUNT(*) AS Number_Of_Employees FROM EMP LIMIT 0, 1000               1 row(s) returned
10:14:38  SELECT COUNT(DISTINCT EMPNO) AS Distinct_Employees FROM EMP LIMIT 0, 1000   1 row(s) returned
10:14:39  SELECT JOB, SUM(SAL) AS Total_Salary FROM EMP GROUP BY JOB LIMIT 0, 1000    5 row(s) returned
10:14:39  SELECT * FROM EMP WHERE SAL = (SELECT MAX(SAL) FROM EMP) LIMIT 0, 1000      1 row(s) returned
```



```
-- 6. Find the highest paid employee in department 10.
SELECT * FROM EMP WHERE SAL = (SELECT MAX(SAL) FROM EMP WHERE DEPTNO = 10);

-- 7. List the employees whose salary is equal to the average of max and minimum salary.
SELECT * FROM EMP WHERE SAL = (SELECT (MAX(SAL) + MIN(SAL)) / 2 FROM EMP);

-- 8. List the employees who joined the company on the same date.
SELECT HIREDATE, GROUP_CONCAT(ENAME) AS Employees_Joined_On_Same_Date
FROM EMP
GROUP BY HIREDATE
HAVING COUNT(*) > 1;

-- 9. Display the employee names in both upper and lower case.
SELECT UPPER(ENAME) AS Upper_Name, LOWER(ENAME) AS Lower_Name FROM EMP;

-- 10. Find the date that is 3 days later from hiredate.
SELECT ENAME, HIREDATE, DATE_ADD(HIREDATE, INTERVAL 3 DAY) AS Date_3_Days_Later FROM EMP;
```

ME	HIREDATE	Date_3_Days_Later
H	1980-12-17	1980-12-20
N	1981-02-20	1981-02-23
D	1981-02-22	1981-02-25
S	1981-04-02	1981-04-05
TN	1981-09-28	1981-10-01
E	1981-05-01	1981-05-04
K	1981-06-09	1981-06-12
T	1982-12-09	1982-12-12
	1981-11-17	1981-11-20

Time	Action	Message
10:14:38	SELECT COUNT(DISTINCT EMPNO) AS Distinct_Employees FROM EMP LIMIT 0, 1000	1 row(s) retu
10:14:39	SELECT JOB, SUM(SAL) AS Total_Salary FROM EMP GROUP BY JOB LIMIT 0, 1000	5 row(s) retu
10:14:39	SELECT * FROM EMP WHERE SAL = (SELECT MAX(SAL) FROM EMP) LIMIT 0, 1000	1 row(s) retu
10:15:18	SELECT * FROM EMP WHERE SAL = (SELECT MAX(SAL) FROM EMP WHERE DEPTNO = 10) LIMIT 0, 1000	1 row(s) retu
10:15:18	SELECT * FROM EMP WHERE SAL = (SELECT (MAX(SAL) + MIN(SAL)) / 2 FROM EMP) LIMIT 0, 1000	0 row(s) retu
10:15:18	SELECT HIREDATE, GROUP_CONCAT(ENAME) AS Employees_Joined_On_Same_Date FROM EMP GROUP BY HIREDATE HAVING COUNT(*) > ...	1 row(s) retu
10:15:18	SELECT UPPER(ENAME) AS Upper_Name, LOWER(ENAME) AS Lower_Name FROM EMP LIMIT 0, 1000	14 row(s) ret
10:15:18	SELECT ENAME, HIREDATE, DATE_ADD(HIREDATE, INTERVAL 3 DAY) AS Date_3_Days_Later FROM EMP LIMIT 0, 1000	14 row(s) ret