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Programme: B.Tech CSE (Spec. AI&ML)

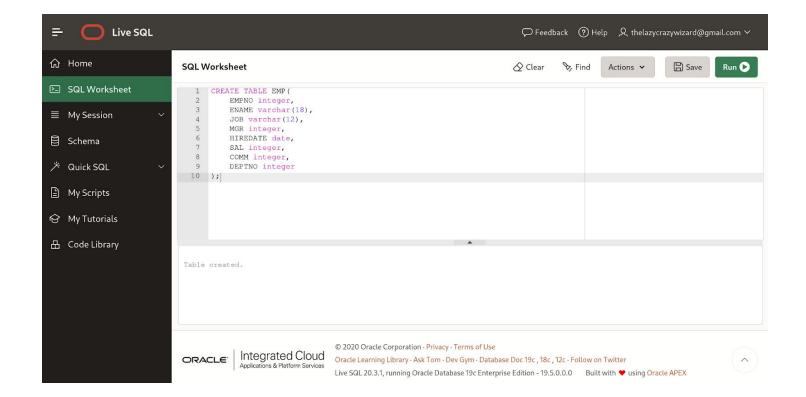
Course: Advanced Database Management Systems

LAB 4

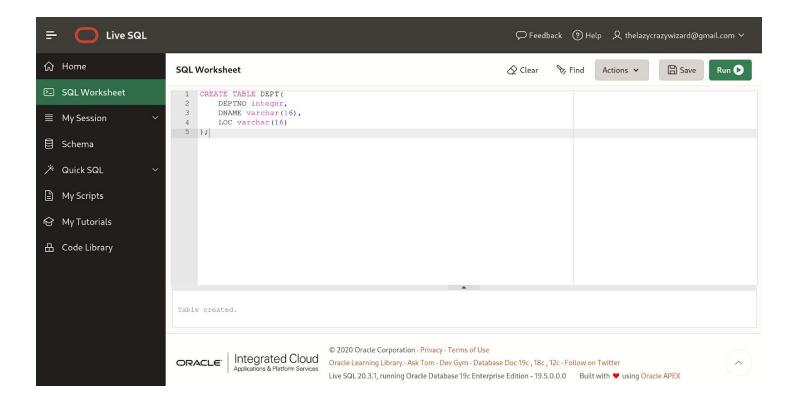
Title: Use of Inbuilt functions and relational algebra operation **Objective**: To understand the use of inbuilt function and relational algebra with sql query.

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

```
CREATE TABLE EMP(
EMPNO integer,
ENAME varchar(18),
JOB varchar(12),
MGR integer,
HIREDATE date,
SAL integer,
COMM integer,
DEPTNO integer
```



```
CREATE TABLE DEPT(
DEPTNO integer,
DNAME varchar(16),
LOC varchar(16)
);
```



INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO) VALUES (7369, 'SMITH', 'CLERK', 7902, '17-DEC-80', 500, 800, 20);

INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO) VALUES (7499, 'ALLEN', 'SALESMAN', 7698, '20-FEB-81', 1600, 300, 30);

INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO) VALUES (7521, 'WARD', 'SALESMAN', 7698, '22-FEB-81', 1250, 500, 30);

INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, DEPTNO) VALUES (7566, 'JONES', 'MANAGER', 7839, '02-APR-81', 2975, 20);

INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO) VALUES (7654, 'MARTIN', 'SALESMAN', 7698, '28-SEP-81', 1250, 1400, 30);

INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, DEPTNO) VALUES (7698, 'BLAKE', 'MANAGER', 7839, '01-MAY-81', 2850, 30);

INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, DEPTNO) VALUES (7782, 'CLARK', 'MANAGER', 7839, '09-JUN-81', 2450, 10);

INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, DEPTNO) VALUES (7788, 'SCOTT', 'ANALYST', 7566, '09-DEC-82', 3000, 20);

INSERT INTO EMP (EMPNO, ENAME, JOB, HIREDATE, SAL, DEPTNO) VALUES (7839, 'KING', 'PRESIDENT', '17-NOV-81', 5000, 10);

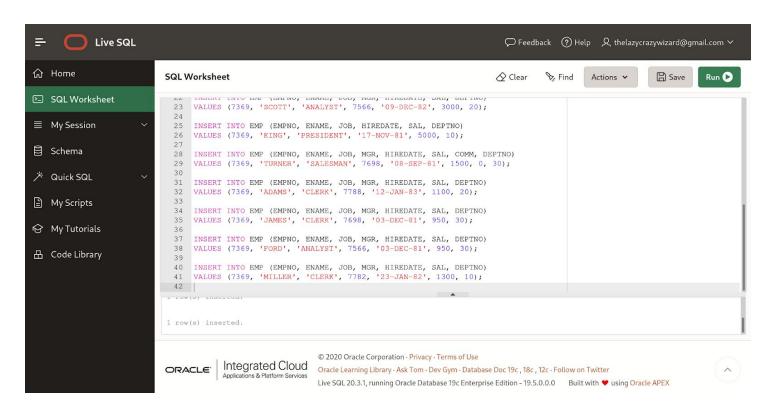
INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO) VALUES (7844, 'TURNER', 'SALESMAN', 7698, '08-SEP-81', 1500, 0, 30);

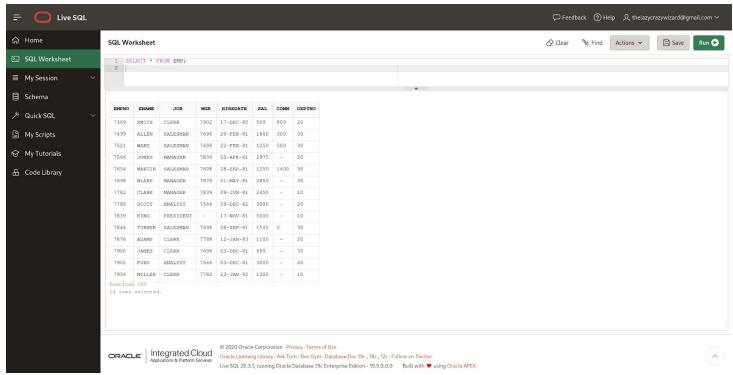
INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, DEPTNO) VALUES (7876, 'ADAMS', 'CLERK', 7788, '12-JAN-83', 1100, 20);

INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, DEPTNO) VALUES (7900, 'JAMES', 'CLERK', 7698, '03-DEC-81', 950, 30);

INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, DEPTNO) VALUES (7902, 'FORD', 'ANALYST', 7566, '03-DEC-81', 3000, 20);

INSERT INTO EMP (EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, DEPTNO) VALUES (7934, 'MILLER', 'CLERK', 7782, '23-JAN-82', 1300, 10);



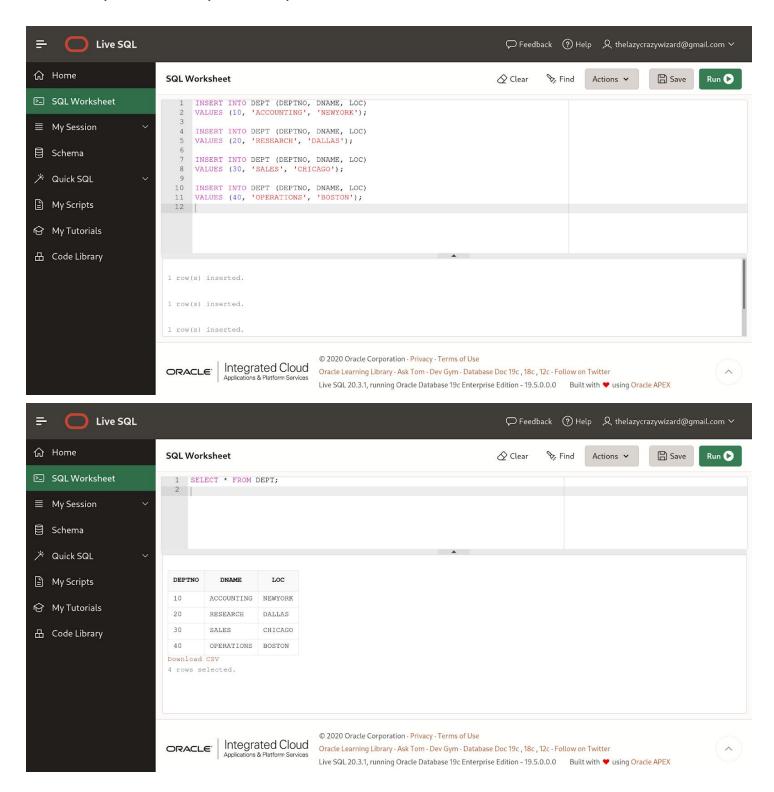


INSERT INTO DEPT (DEPTNO, DNAME, LOC) VALUES (10, 'ACCOUNTING', 'NEWYORK');

INSERT INTO DEPT (DEPTNO, DNAME, LOC) VALUES (20, 'RESEARCH', 'DALLAS');

INSERT INTO DEPT (DEPTNO, DNAME, LOC) VALUES (30, 'SALES', 'CHICAGO');

INSERT INTO DEPT (DEPTNO, DNAME, LOC) VALUES (40, 'OPERATIONS', 'BOSTON');

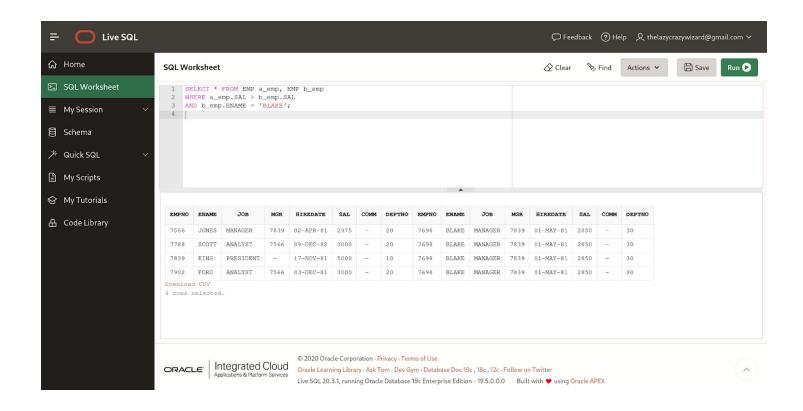


Write the Nested Queries for the following queries.

1. List the details of the emps whose Salaries more than the employee BLAKE.

1. Solution.

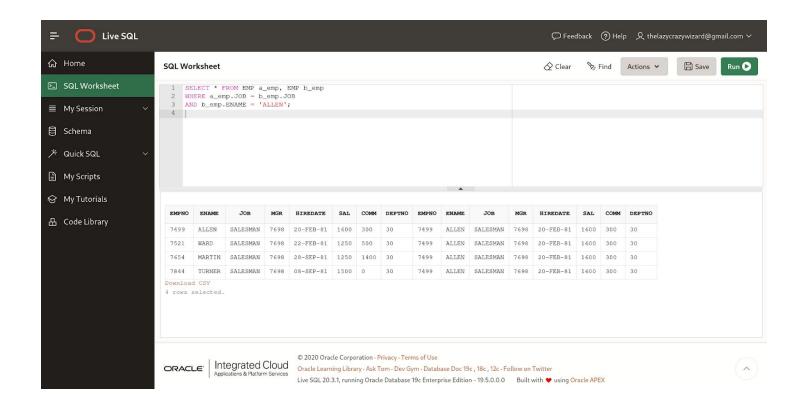
SELECT * FROM EMP a_emp, EMP b_emp WHERE a_emp.SAL > b_emp.SAL AND b_emp.ENAME = 'BLAKE';



2. List the emps whose Jobs are the same as ALLEN.

2. Solution.

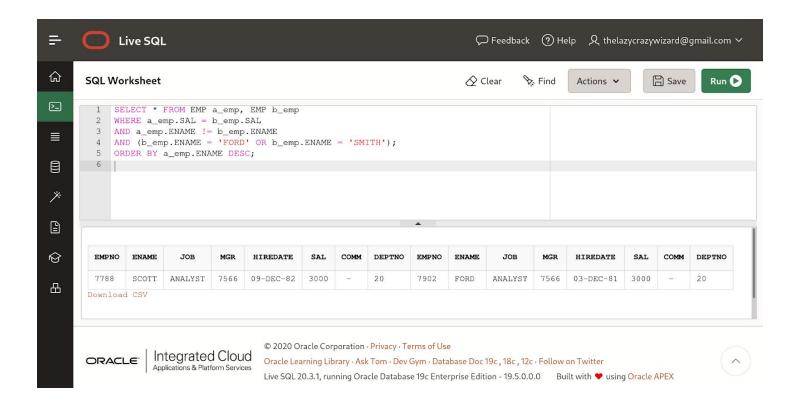
SELECT * FROM EMP a_emp, EMP b_emp WHERE a_emp.JOB = b_emp.JOB AND b_emp.ENAME = 'ALLEN';



3. List the Emps whose Sal is same as FORD or SMITH in desc order of Names.

3. Solution.

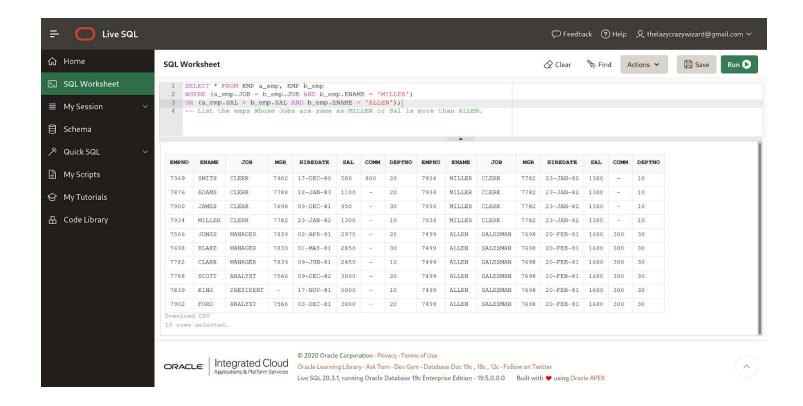
```
SELECT * FROM EMP a_emp, EMP b_emp
WHERE a_emp.SAL = b_emp.SAL
AND a_emp.ENAME != b_emp.ENAME
AND (b_emp.ENAME = 'FORD' OR b_emp.ENAME = 'SMITH');
ORDER BY a_emp.ENAME DESC;
```



4. List the emps Whose Jobs are same as MILLER or Sal is more than ALLEN.

4. Solution.

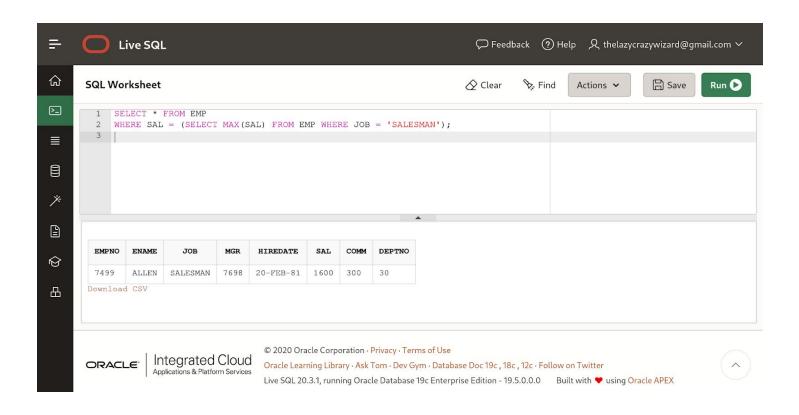
SELECT * FROM EMP a_emp, EMP b_emp
WHERE (a_emp.JOB = b_emp.JOB AND b_emp.ENAME = 'MILLER')
OR (a_emp.SAL > b_emp.SAL AND b_emp.ENAME = 'ALLEN');



5. Find the highest paid employee of the sales department.

5. Solution.

SELECT * FROM EMP
WHERE SAL = (SELECT MAX(SAL) FROM EMP WHERE JOB = 'SALESMAN');



6. List the employees who are senior to most recently hired employee working under king.

6.Solution.

- -- Everyone works under King since he is the president
- -- Seniors will have more salary then juniors\

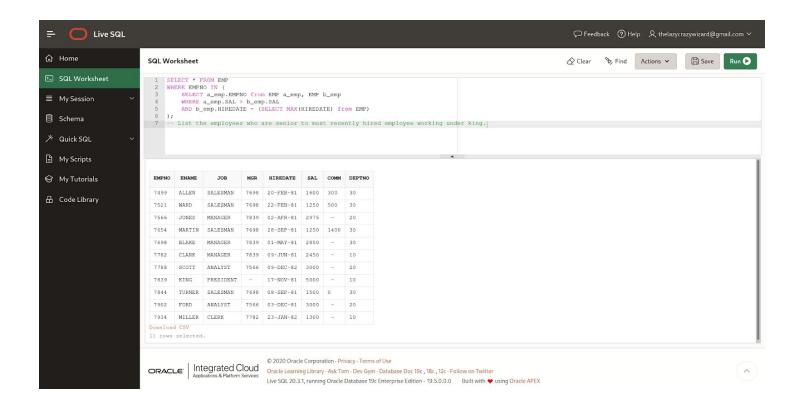
```
SELECT * FROM EMP

WHERE EMPNO IN (

SELECT a_emp.EMPNO from EMP a_emp, EMP b_emp

WHERE a_emp.SAL > b_emp.SAL

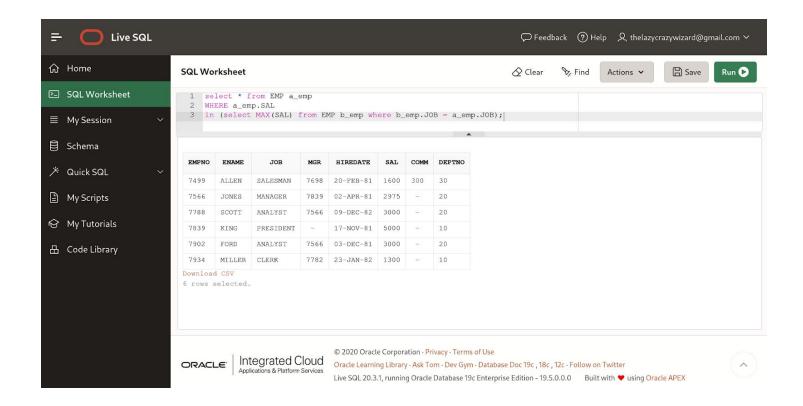
AND b_emp.HIREDATE = (SELECT MAX(HIREDATE) from EMP)
);
```



7. List the names of the emps who are getting the highest sal dept wise.

7. Solution.

SELECT * FROM EMP a_emp
WHERE a_emp.SAL
IN (SELECT MAX(SAL) FROM EMP b_emp WHERE b_emp.JOB = a_emp.JOB);



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

8. Solution.

```
SELECT * FROM EMP

WHERE SAL = (

SELECT AVG(SAL) FROM emp

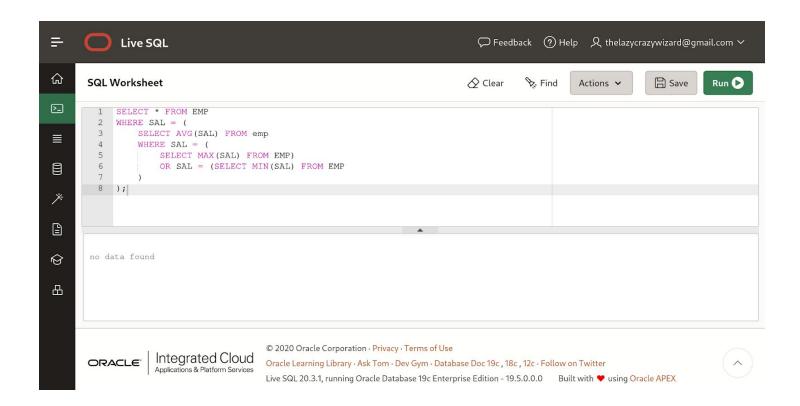
WHERE SAL = (

SELECT MAX(SAL) FROM EMP)

OR SAL = (SELECT MIN(SAL) FROM EMP

)

);
```



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

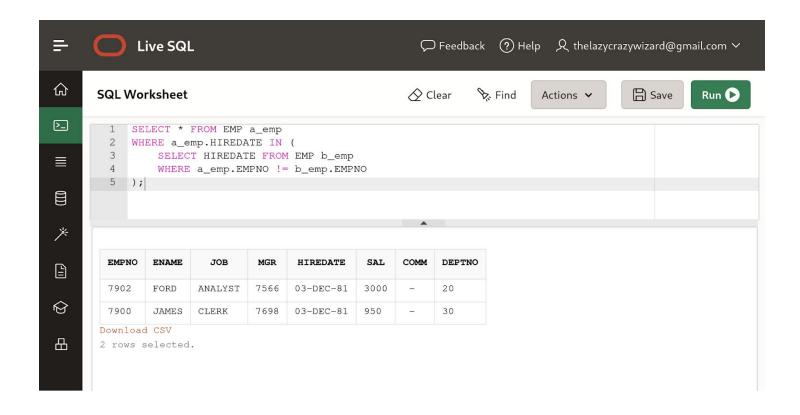
9.Solution.

```
SELECT * FROM EMP a_emp

WHERE a_emp.HIREDATE IN (

SELECT HIREDATE FROM EMP b_emp

WHERE a_emp.EMPNO != b_emp.EMPNO
);
```



10. Find out the emps who joined in the company before their Managers.

10. Solution.

SELECT a_emp.* FROM EMP a_emp, EMP b_emp WHERE a_emp.HIREDATE < b_emp.HIREDATE AND a_emp.MGR = b_emp.EMPNO;

