# Creating and Managing Tables

**EX_NO:1** **DATE:**

1.Create the DEPT table based on the DEPARTMENT following the table instance chart below. Confirm that the table is created.

| **Column name** | ID | NAME |
|---|---|---|
| **Key Type** | | |
| **Nulls/Unique** | | |
| **FK table** | | |
| **FK column** | | |
| **Data Type** | Number | Varchar2 |
| **Length** | 7 | 25 |

**QUERY:**

Create table dept(id number(7) not null, name varchar2(25));

**OUTPUT:**

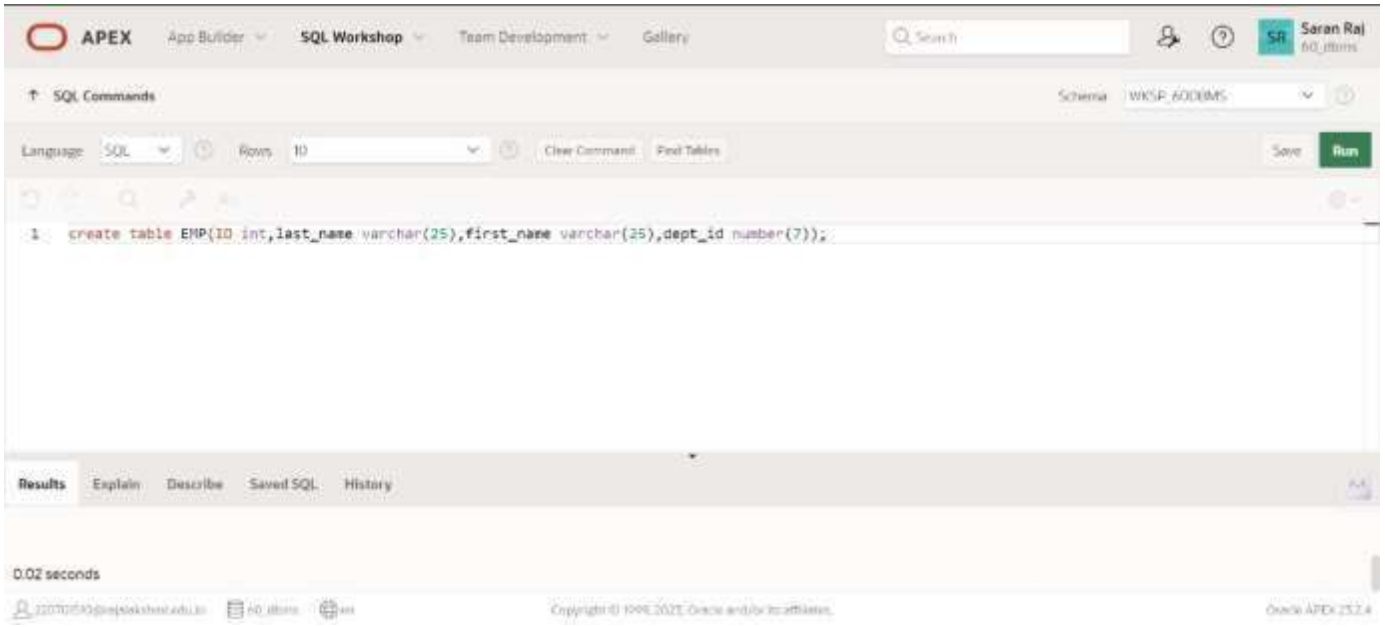

2.Create the EMP table based on the following instance chart. Confirm that the table is created.

| **Column name** | ID | LAST_NAME | FIRST_NAME | DEPT_ID |
|---|---|---|---|---|
| **Key Type** | | | | |
| **Nulls/Unique** | | | | |
| **FK table** | | | | |
| **FK column** | | | | |
| **Data Type** | Number | Varchar2 | Varchar2 | Number |
| **Length** | 7 | 25 | 25 | 7 |

**QUERY:**

Create table emp(id number(7),lastname varchar(25),firstname varchar(25),deptid number(7));

**OUTPUT:**

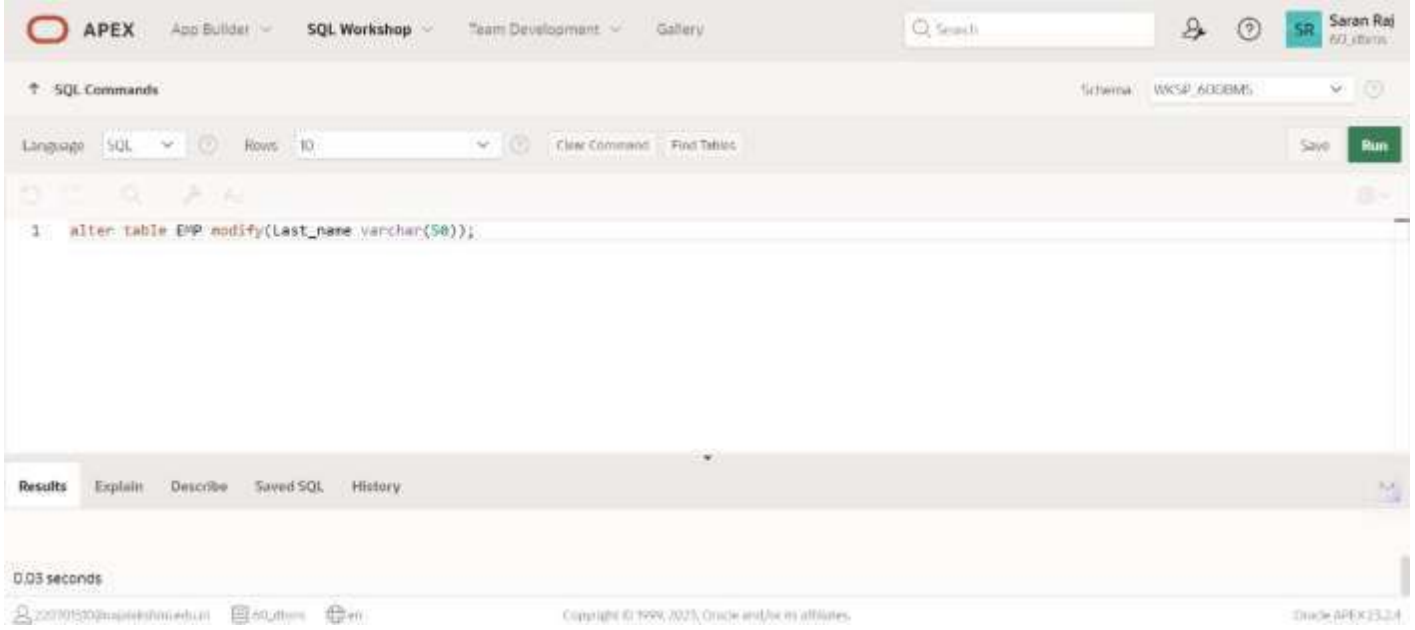



3.Modify the EMP table to allow for longer employee last names. Confirm the modification.(Hint: Increase the size to 50)

**QUERY:**

Alter table emp modify(lastname varchar(50));

**OUTPUT:**

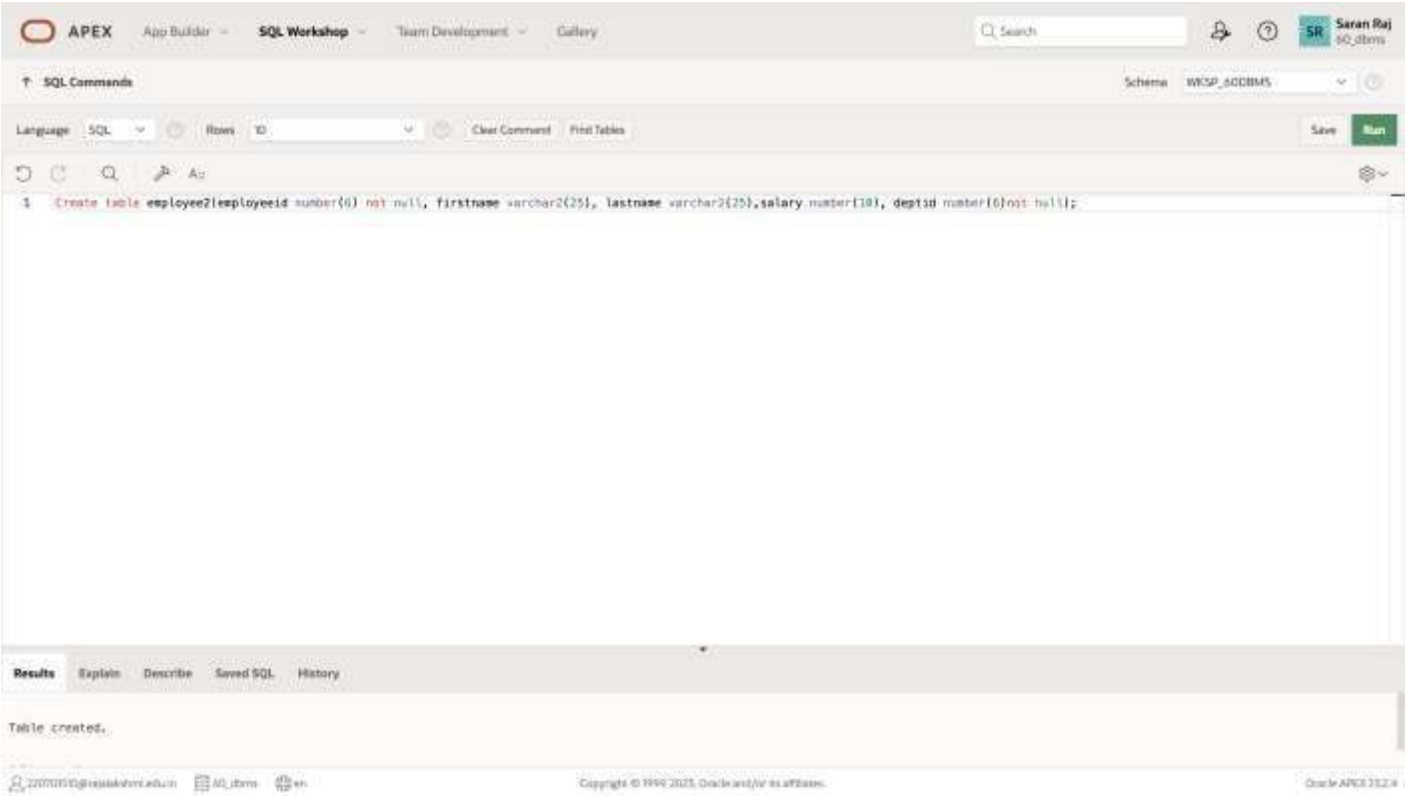



4.Create the EMPLOYEES2 table based on the structure of EMPLOYEES table. Include Only the Employee_id, First_name, Last_name, Salary and Dept_id coloumns. Name the columns Id, First_name, Last_name, salary and Dept_id respectively.

**QUERY:**

Create table employee2(employeeid number(6) not null, firstname varchar2(25), lastname varchar2(25),salary number(10), deptid number(6)not null);

**OUTPUT:**

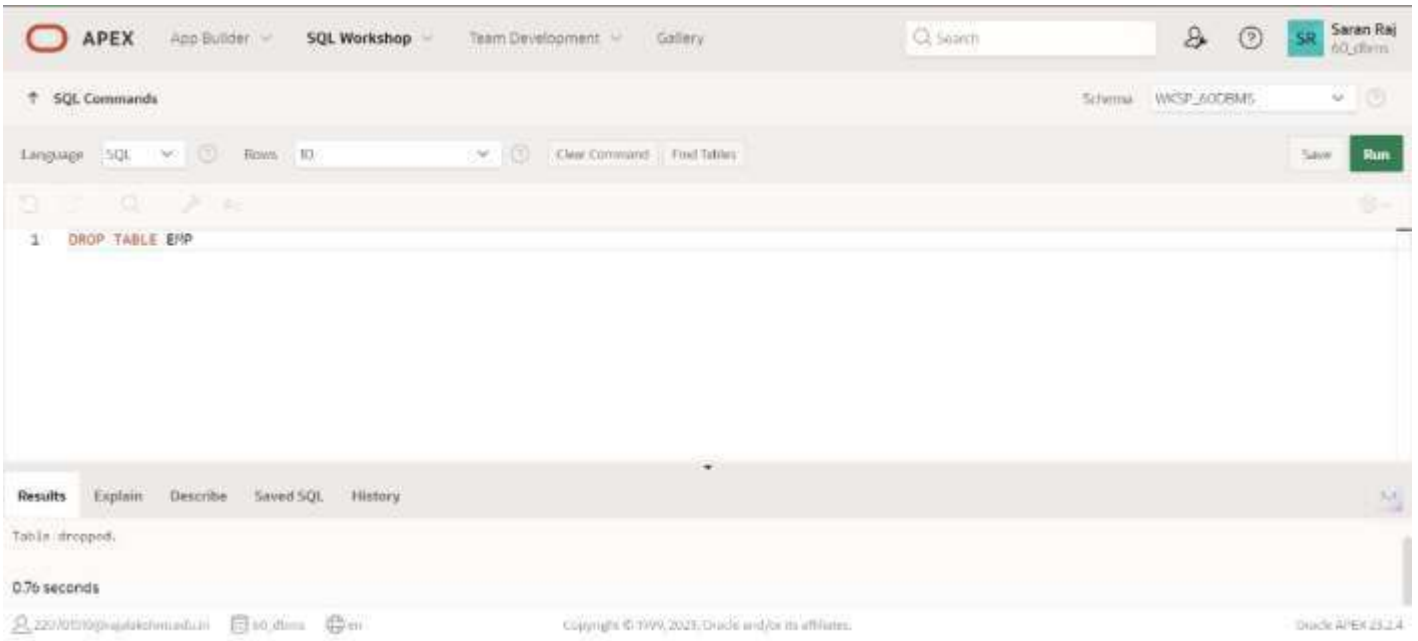



5. Drop the EMP table.

**QUERY:**

Drop table emp;

**OUTPUT:**

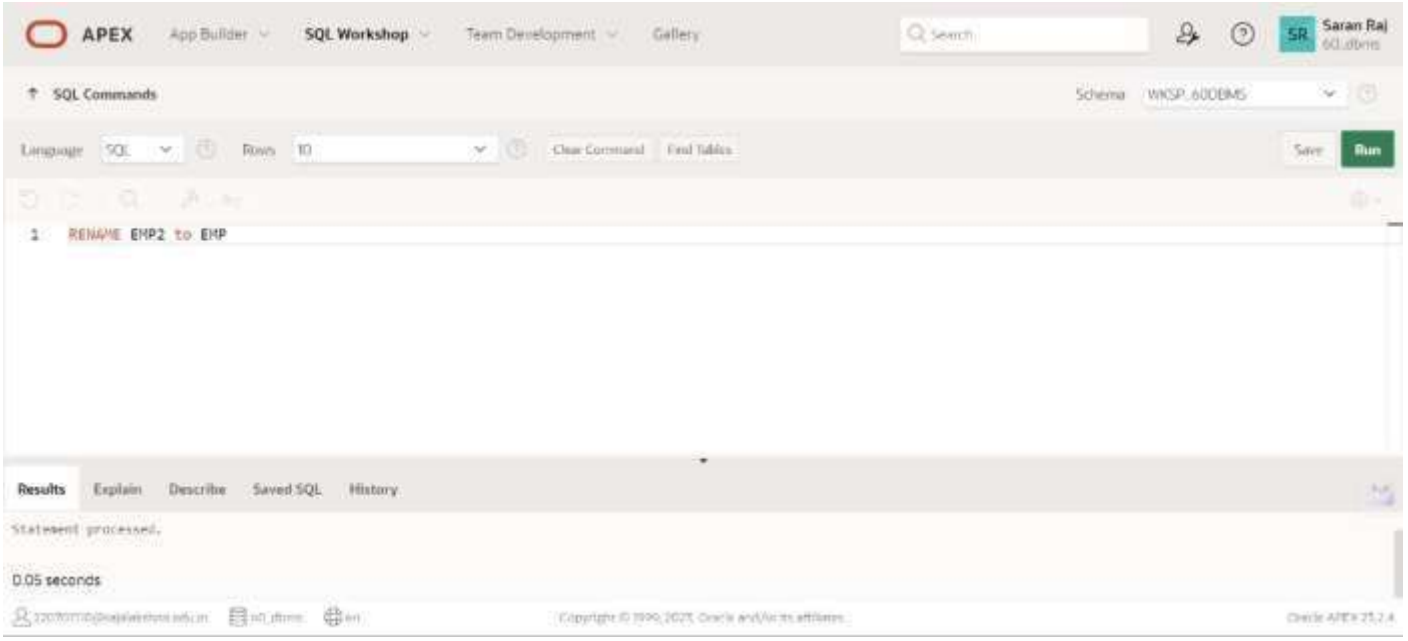



6. Rename the EMPLOYEES2 table as EMP.

**QUERY:**

Rename emp2 to emp;

**OUTPUT:**



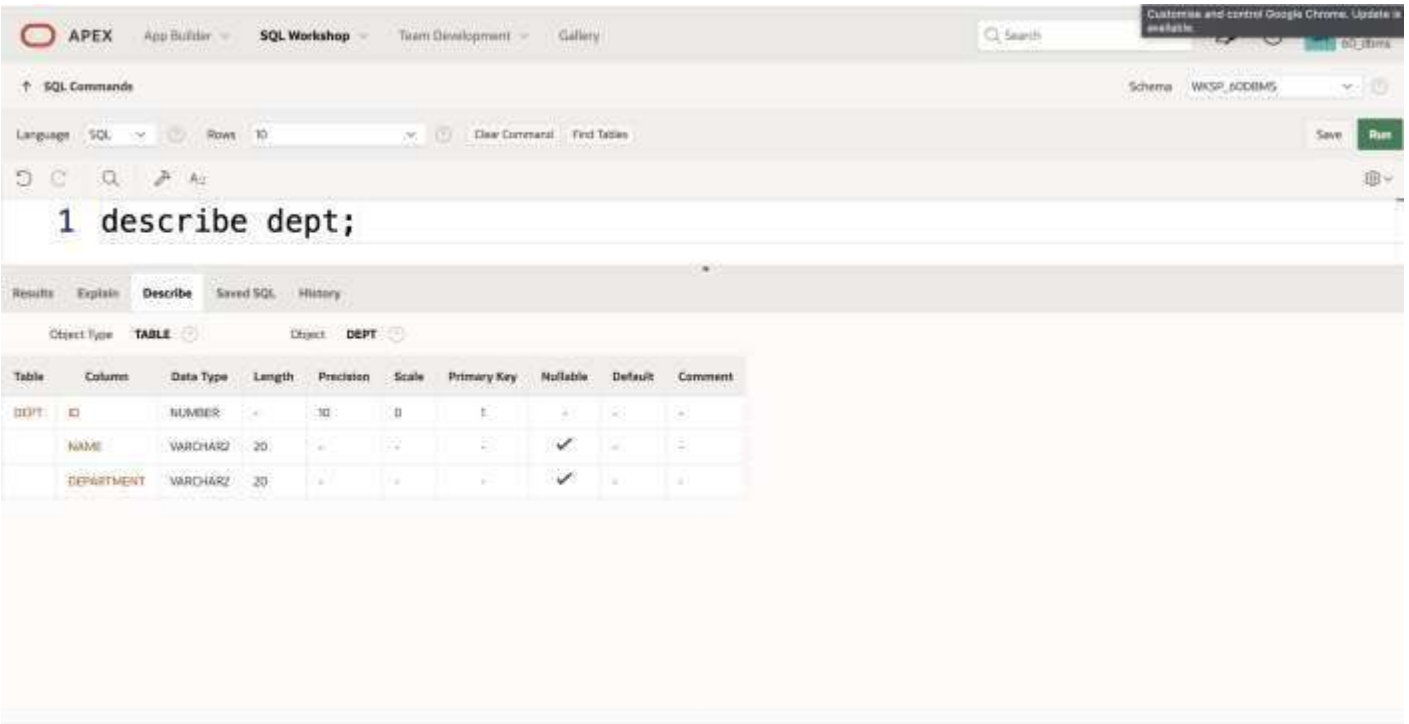

7. Add a comment on DEPT and EMP tables. Confirm the modification by describing the table.

**QUERY:**

comment on table dept is 'Department info';

comment on table emp is Employee info';

**OUTPUT:**

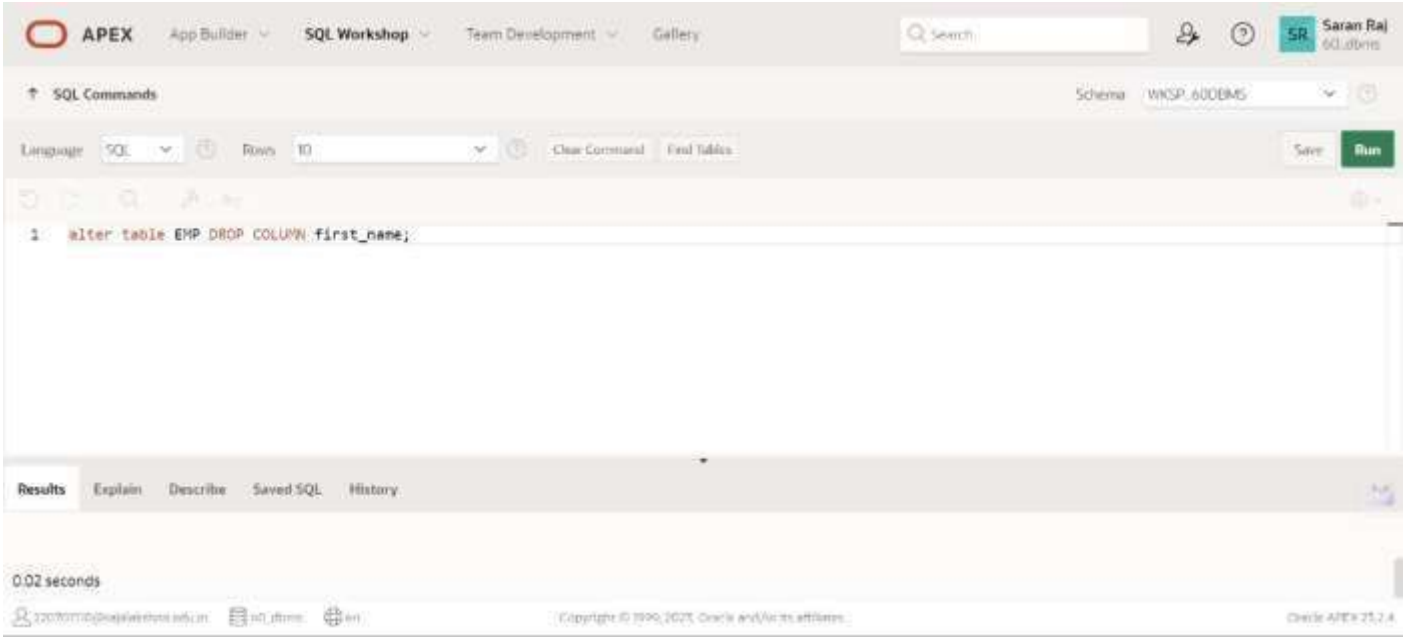



8. Drop the First_name column from the EMP table and confirm it.

**QUERY:**

Alter table emp drop column firstname;

**OUTPUT:**




| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

# MANIPULATING DATA

**EX_NO:2** **DATE:**

1.Create MY_EMPLOYEE table with the following structure

| NAME | NULL? | TYPE |
|---|---|---|
| ID | Not null | Number(4) |
| Last_name | | Varchar(25) |
| First_name | | Varchar(25) |
| Userid | | Varchar(25) |
| Salary | | Number(9,2) |

**QUERY:**

**Create table myemployee(id number(4) not null ,lastname varchar(25),firstname varchar(25),userid varchar(25),salary number(9,2);**

**OUTPUT:**

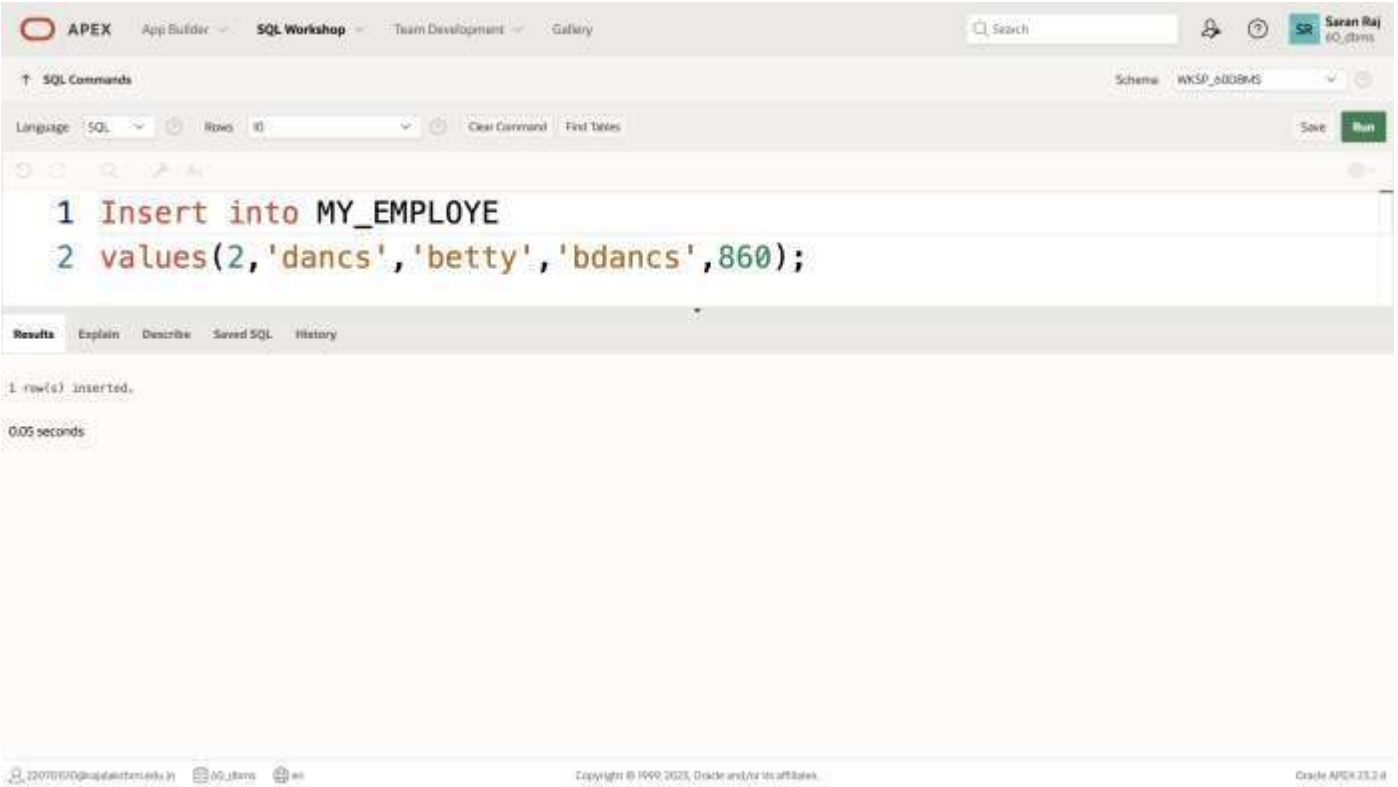

2.Add the first and second rows data to MY_EMPLOYEE table from the following sample data.

| ID | Last_name | First_name | Userid | salary |
|---|---|---|---|---|
| 1 | Patel | Ralph | rpatel | 895 |
| 2 | Dancs | Betty | bdancs | 860 |
| 3 | Biri | Ben | bbiri | 1100 |
| 4 | Newman | Chad | Cnewman | 750 |
| 5 | Ropebur | Audrey | aropebur | 1550 |

**QUERY:**

**Insert into myemployee values(2,’dancs’,’betty’,’bdancs’,860);**

**OUTPUT:**




3. Display the table with values.

**QUERY:**

**Select * from employee;**

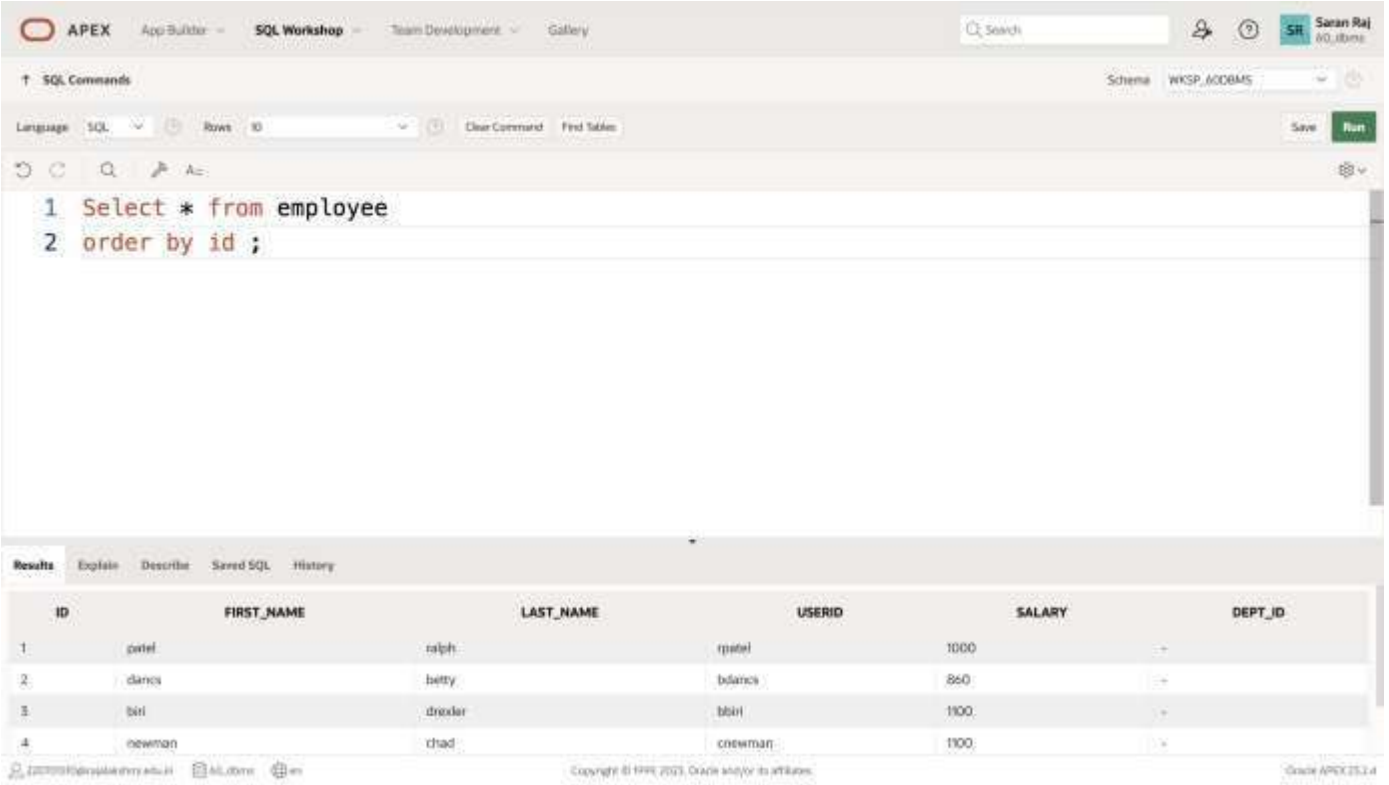
**OUTPUT:**


4. Populate the next two rows of data from the sample data. Concatenate the first letter of the first_name with the first seven characters of the last_name to produce Userid.

**QUERY:**

**Insert into employee values (4,’newman’,’chad’,’cnewman’,860);**

**OUTPUT:**



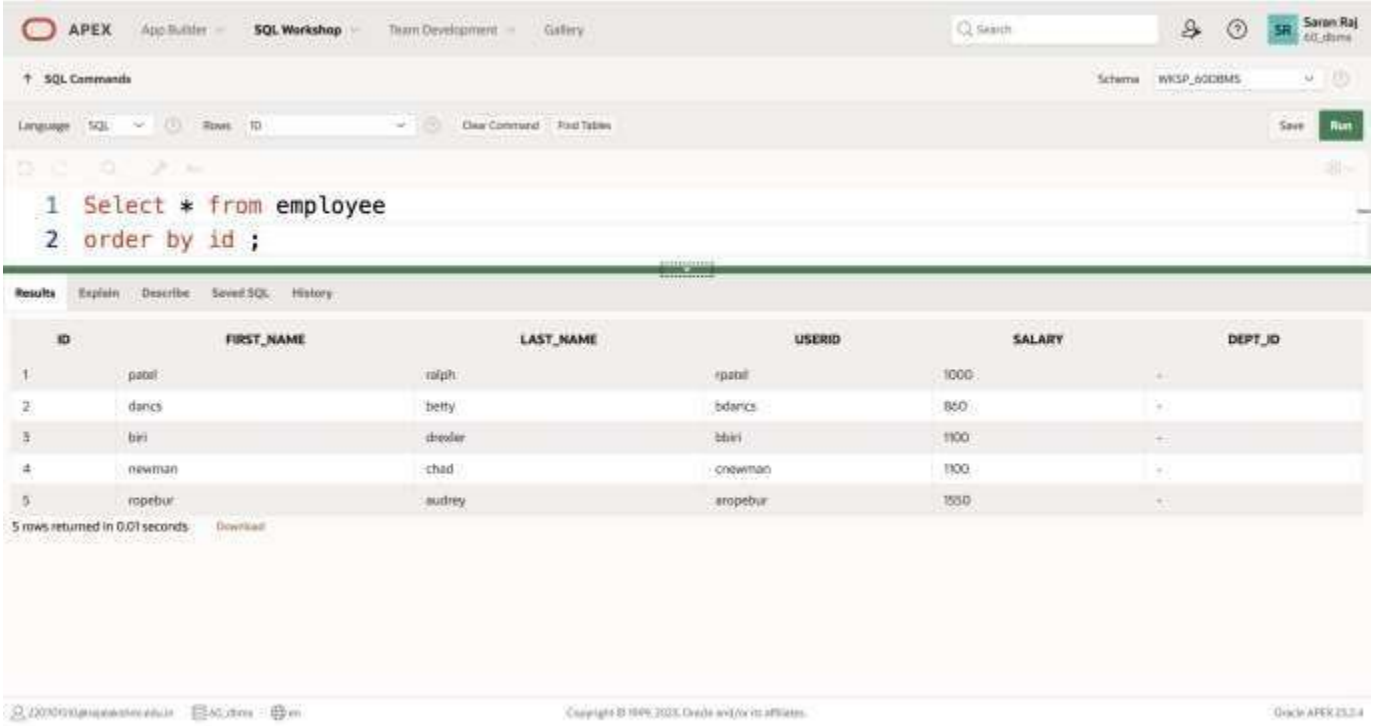

5.Make the data additions permanent.

**QUERY:**

**Select * from employee;**

**OUTPUT:**

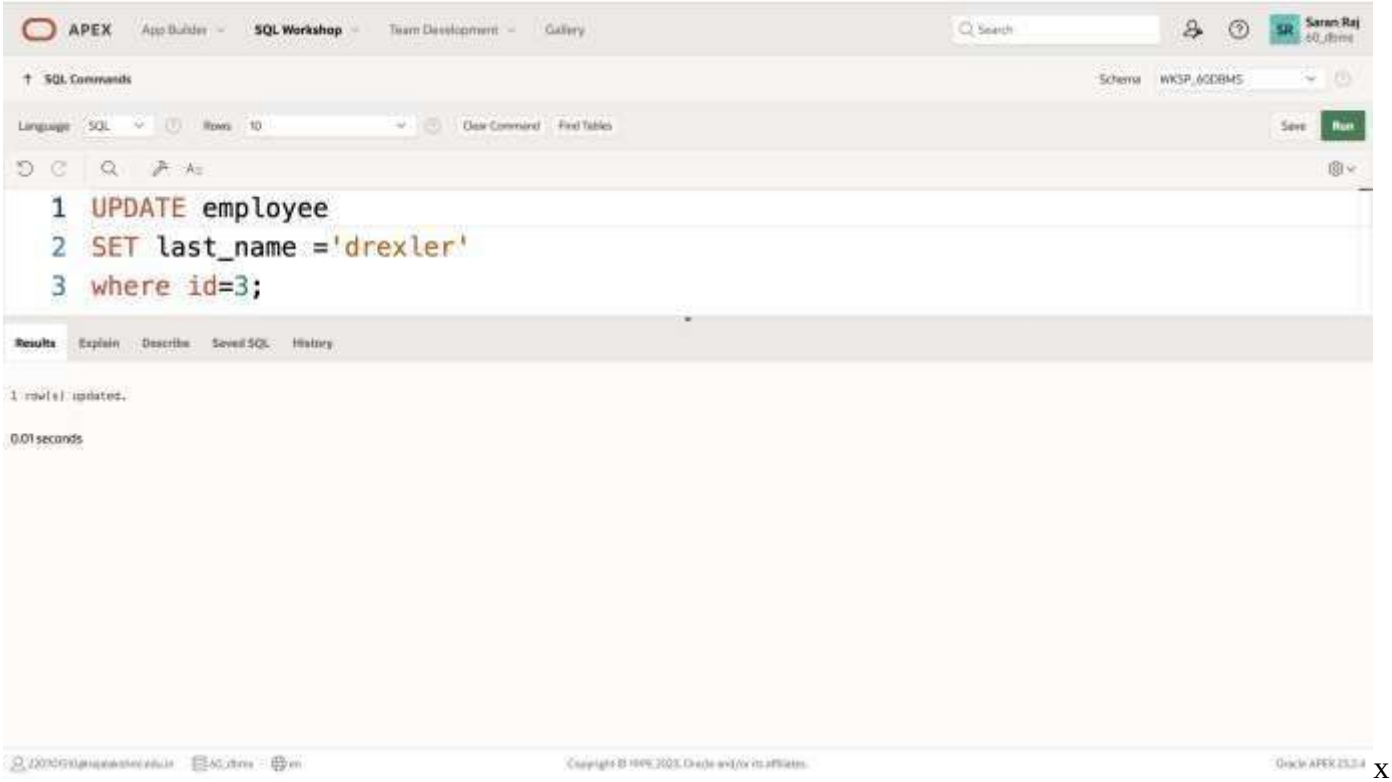
6.Change the last name of employee 3 to Drexler.




**QUERY:**

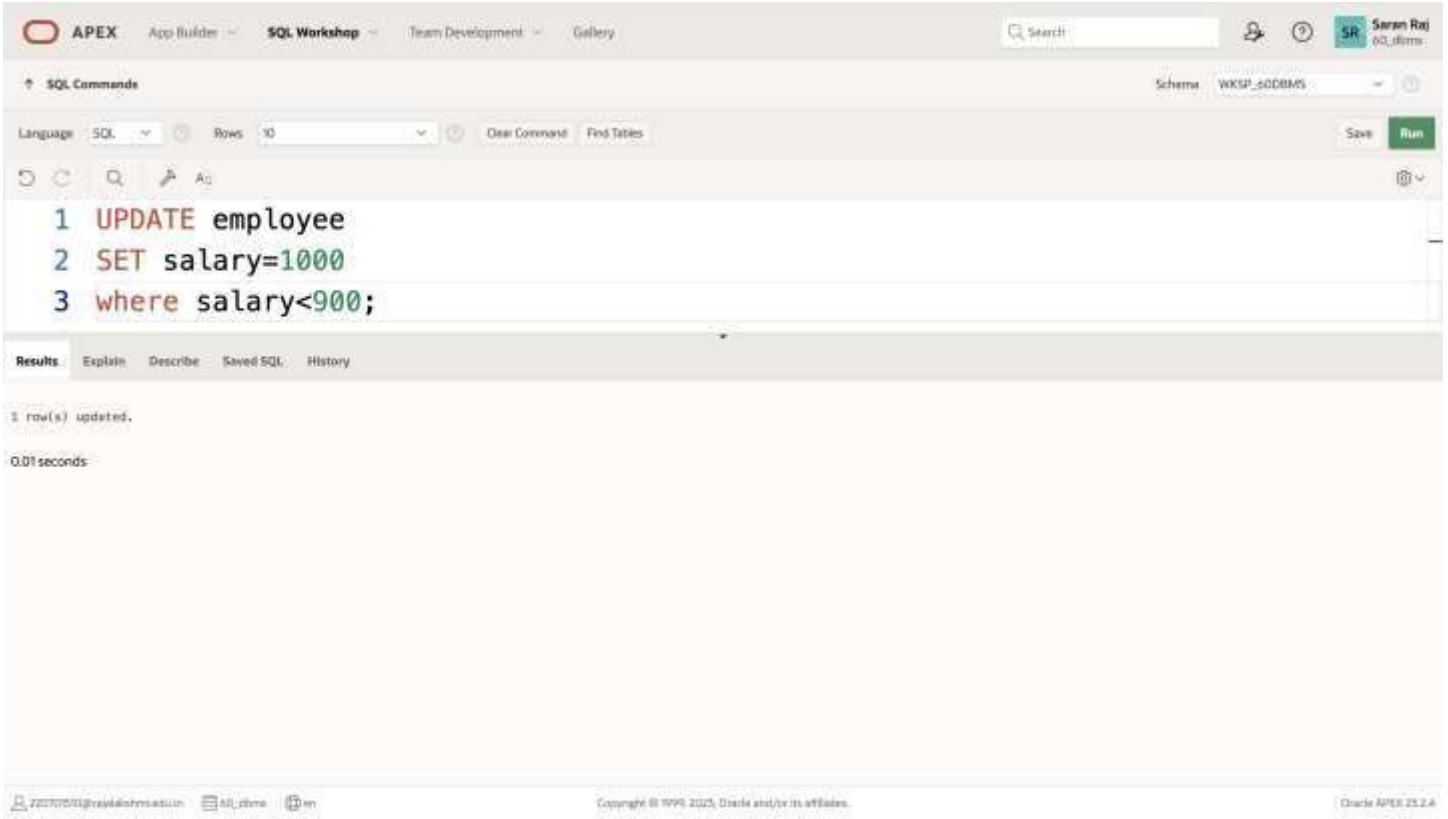
**UPDATE employee SET last_name =’drexler’ where id=3;**

**OUTPUT:**

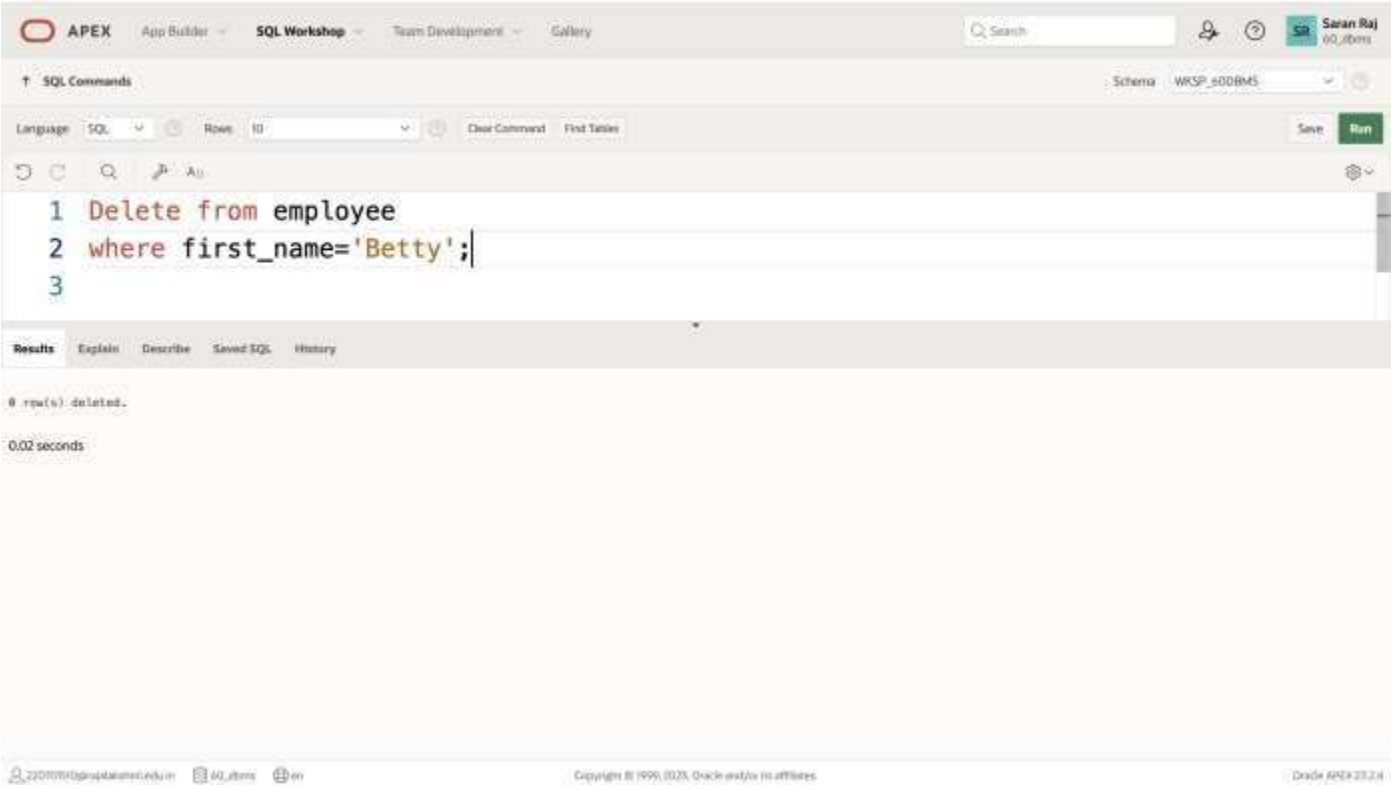



x

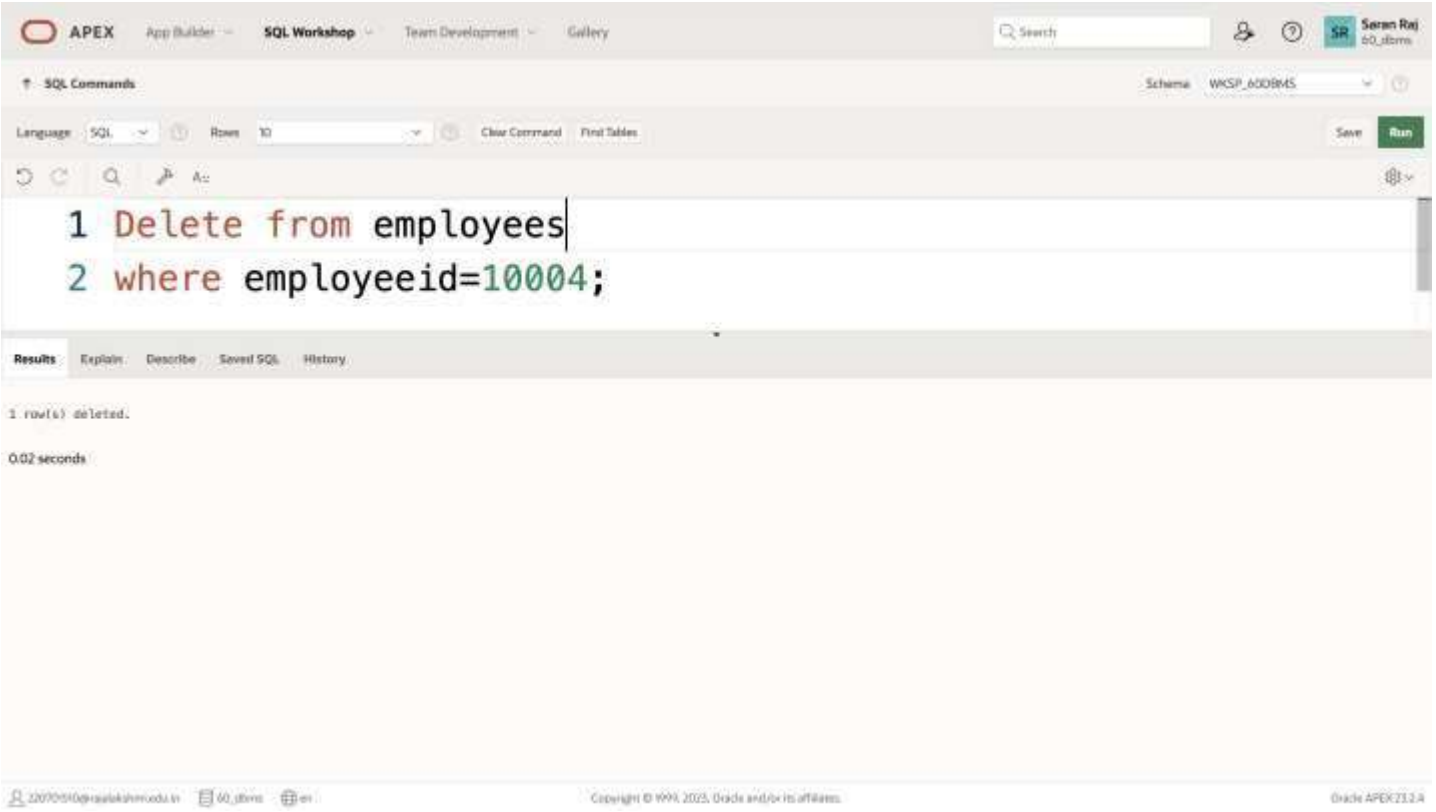
**7. Change 1000 for all the employees with the salary less than 900.**
**QUERY:**
**UPDATE employee SET salary=1000 where salary<900;**
**OUTPUT:**




8.Delete Betty dancs from MY _EMPLOYEE table.
**QUERY:**
**Delete from myemployee where firstname=’Betty’;**
**OUTPUT:**




**9.Empty the fourth row of the emp table.**
**QUERY:**
**Delete from emp where employeeid=10004;**
**OUTPUT:**



| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

# INCLUDING CONSTRAINTS

**EX_NO:3** **DATE:**

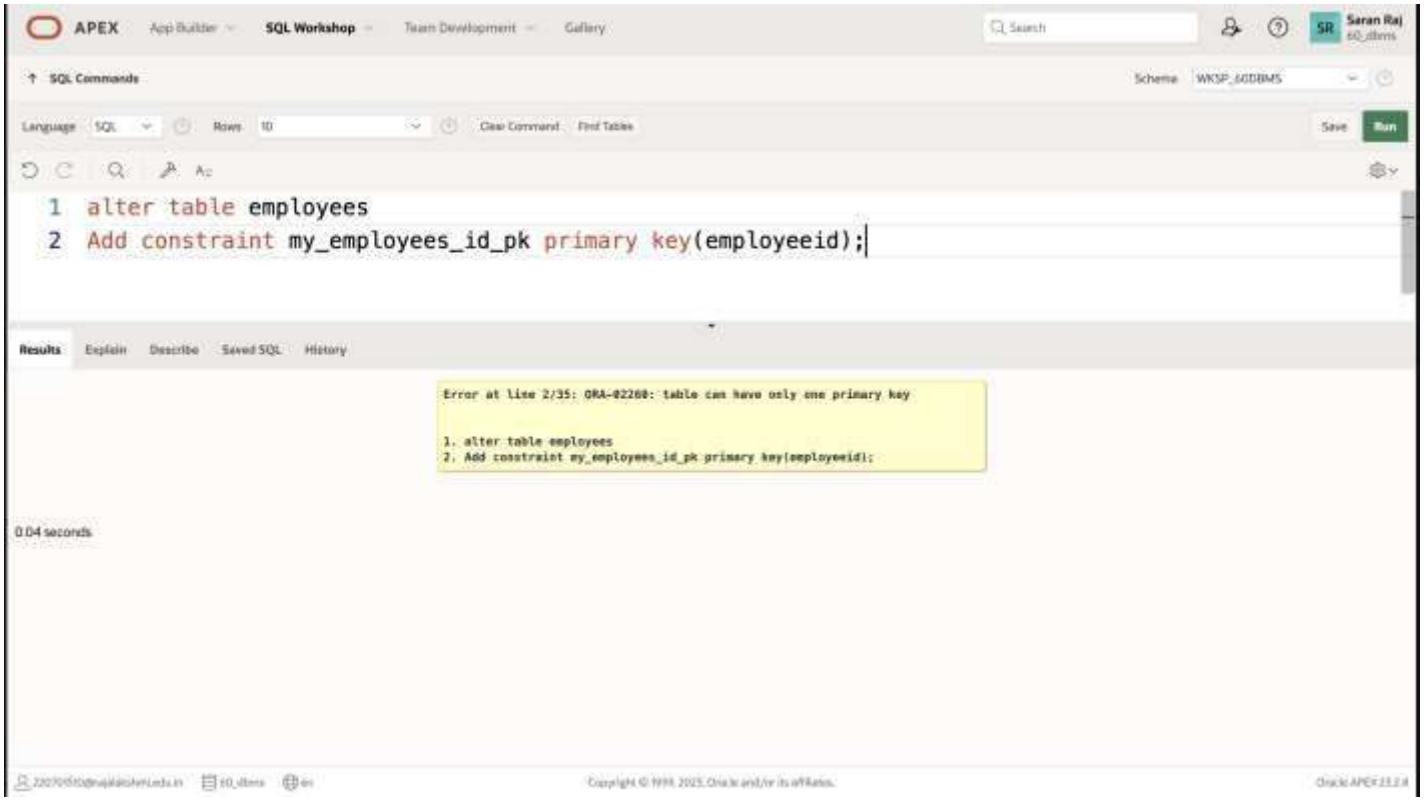
1.Add a table-level PRIMARY KEY constraint to the EMP table on the ID column.The constraint should be named at creation. Name the constraint my_emp_id_pk.

**QUERY:**

**Alter table emp**

**Add constraint my_emp_id_pk primary key(employee id);**

**OUTPUT:**



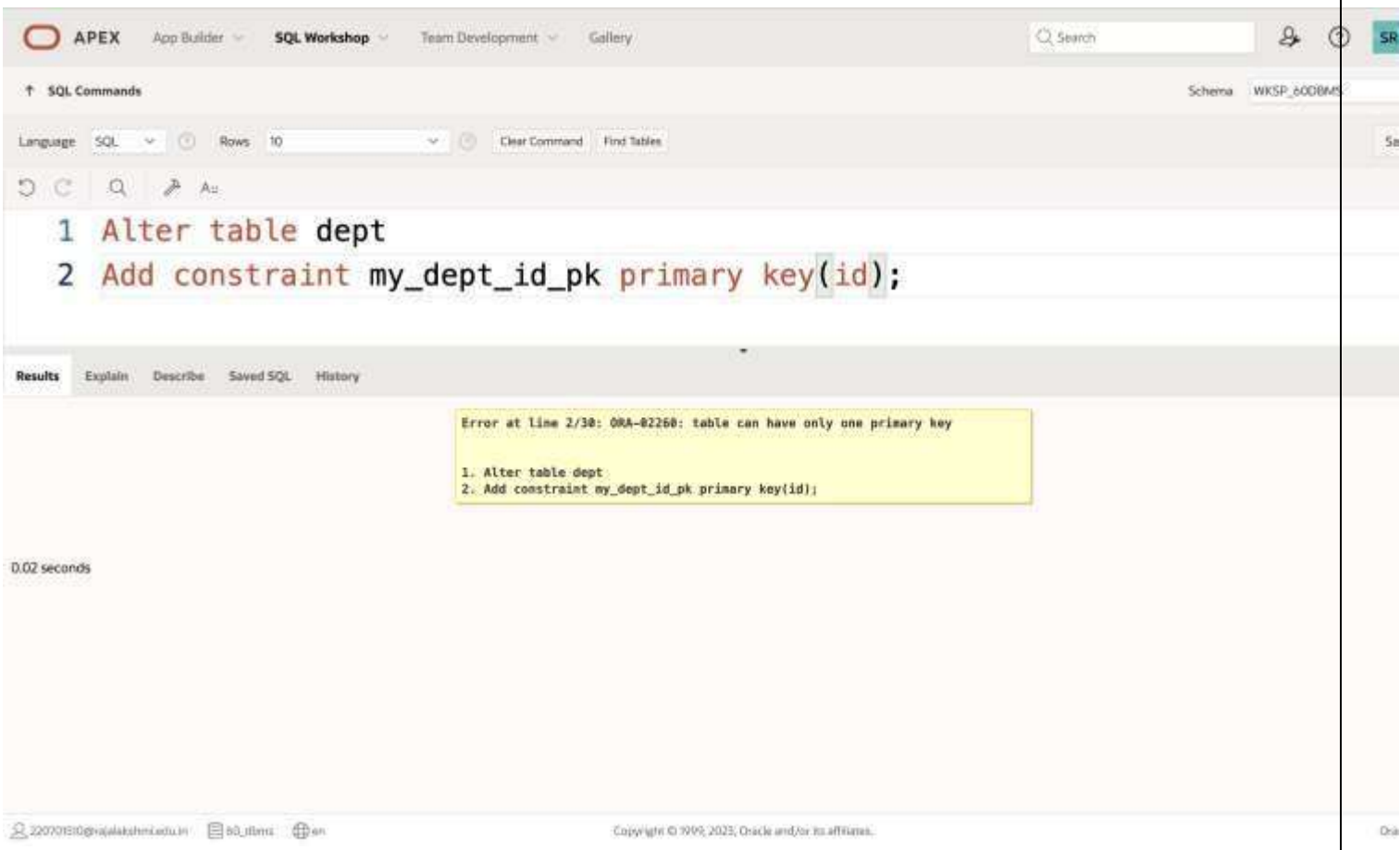

2.Create a PRIMAY KEY constraint to the DEPT table using the ID colum. The constraint should be named at creation. Name the constraint my_dept_id_pk.

**QUERY:**

**Alter table dept**

**Add constraint my_dept_id_pk primary key(deptid);**

**OUTPUT:**




SEP SEP SEP SEP

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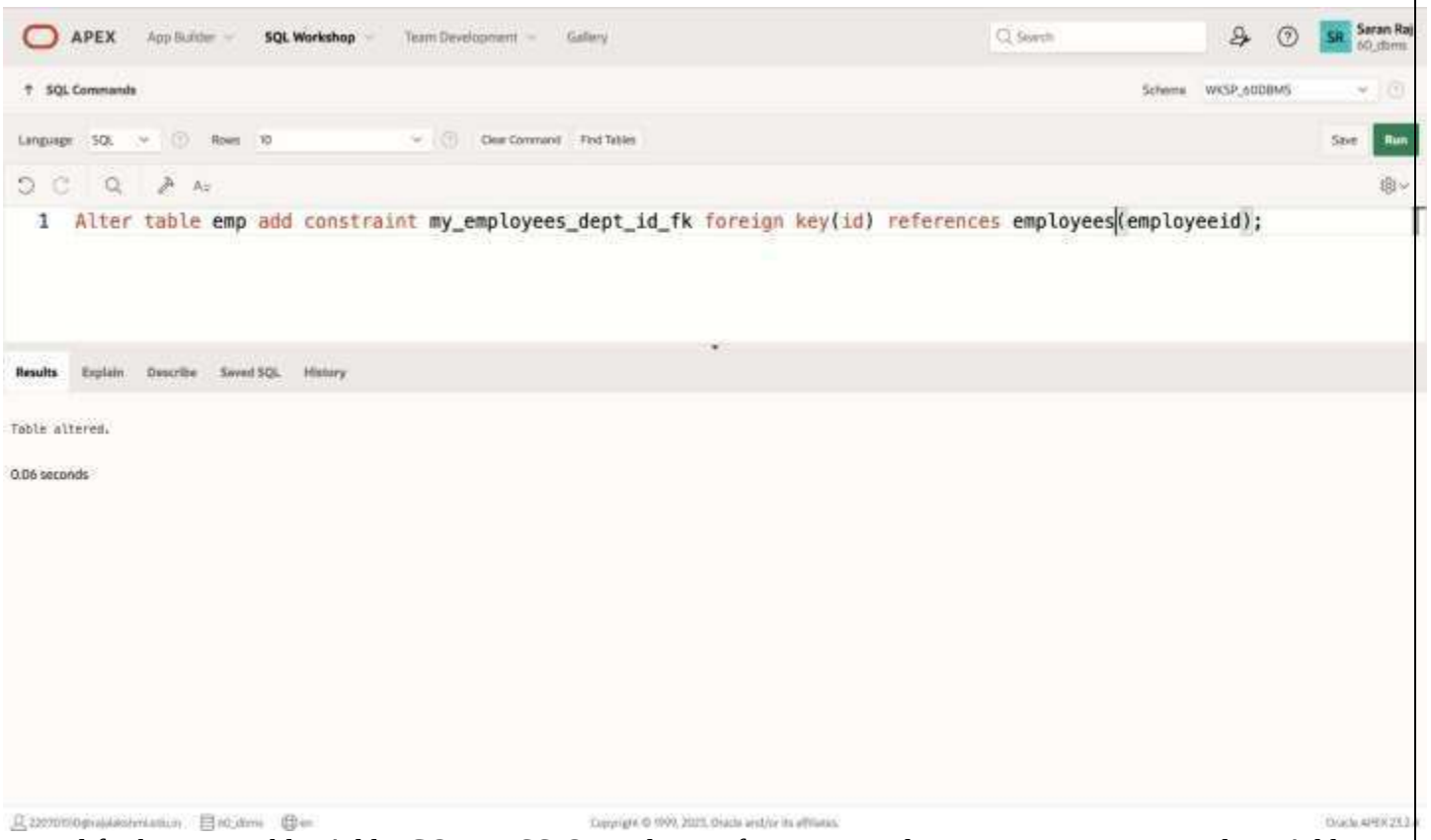
SEP SEP SEP SEP SEP SEP SEP SEP

3. Add a column DEPT_ID to the EMP table. Add a foreign key reference on the EMP table that ensures that the employee is not assigned to nonexistent deparment. Name the constraint my_emp_dept_id_fk.

**QUERY:**
**Alter table emp add constraint my_emp_dept_id_fk foreign key(deptid) references emp(employeeid);**

**OUTPUT:**

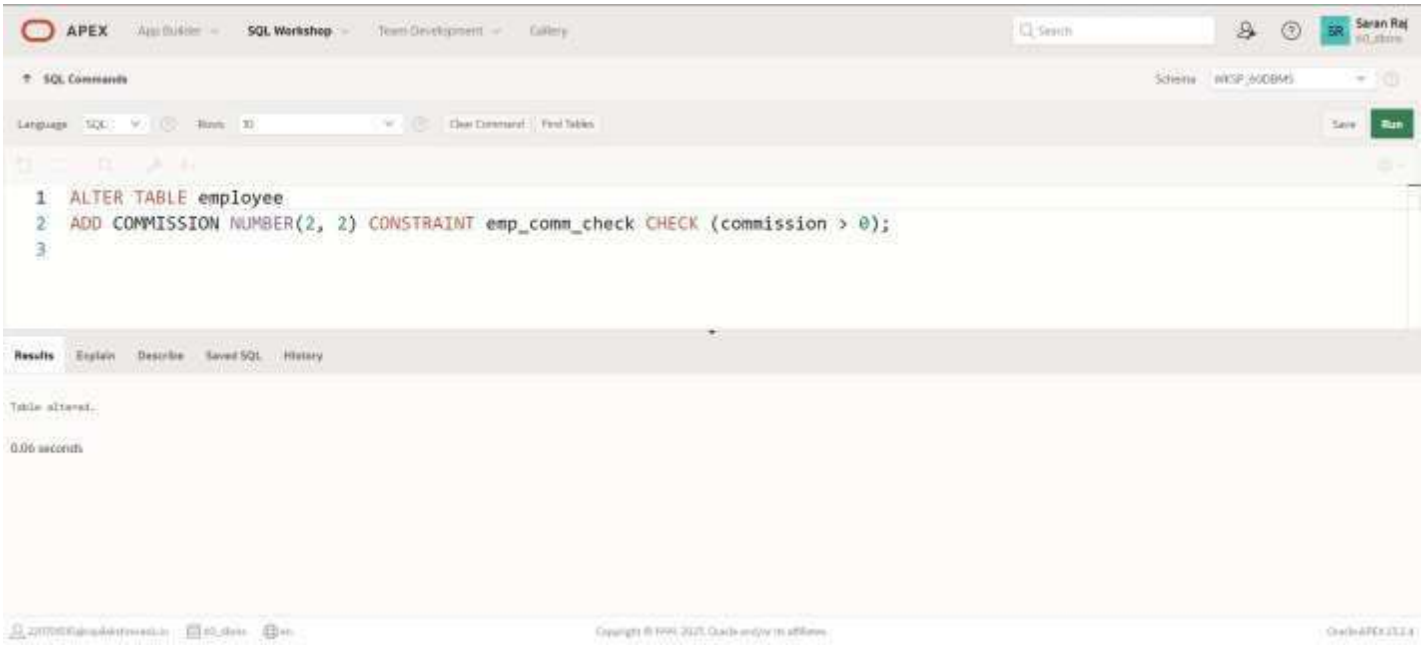



4. Modify the EMP table. Add a COMMISSION column of NUMBER data type, precision 2, scale 2. Add a constraint to the commission column that ensures that a commission value is greater than zero.

**QUERY:**

**ALTER TABLE emp**

**ADD COMMISSION NUMBER(2, 2) CONSTRAINT emp_comm_check CHECK (commission > 0);**
**OUTPUT:**




| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

# Writing Basic SQL SELECT Statements

**EX_NO:4** **DATE:**

1. The following statement executes successfully.

**Identify the Errors**
SELECT employee_id, last_name
sal*12 ANNUAL SALARY
FROM employees;

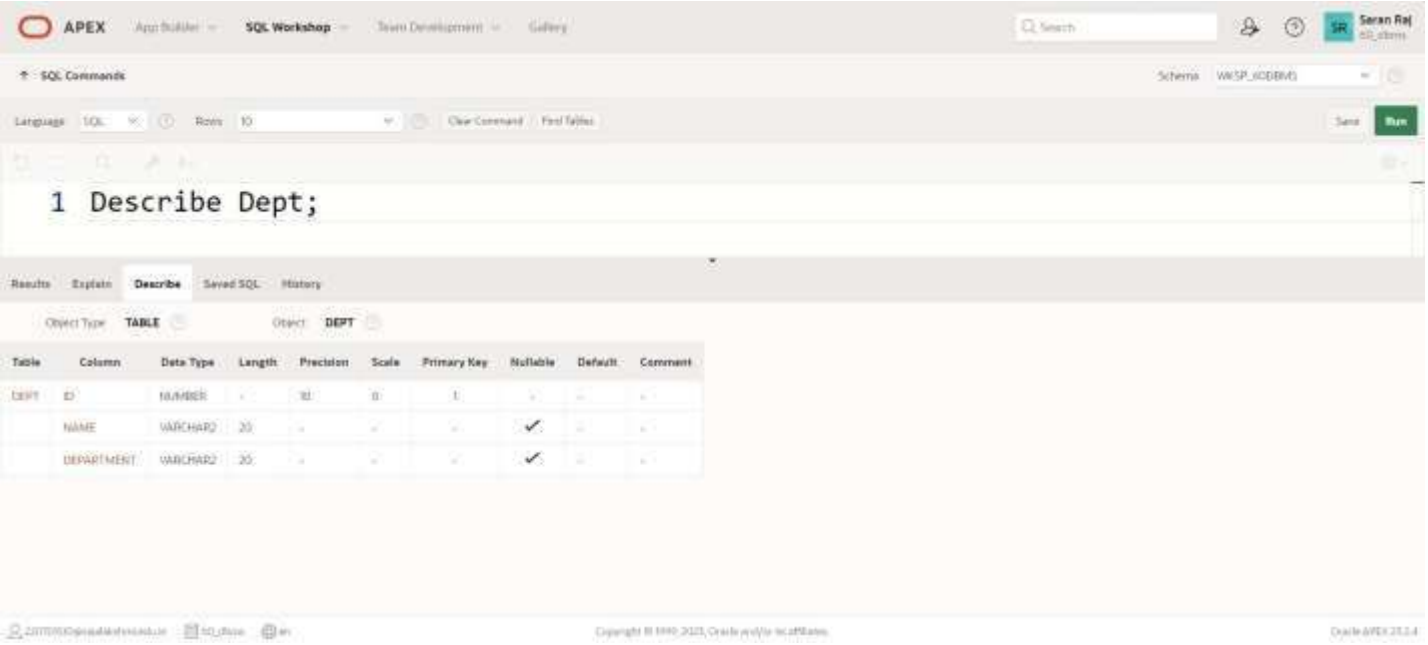
**QUERY:**

**SELECT employeeid, lastname ,Salary*12 as Annual salary**
**From employees;**

2. Show the structure of departments the table. Select all the data from it.

**QUERY:**
**Describe Dept;**

**OUTPUT:**

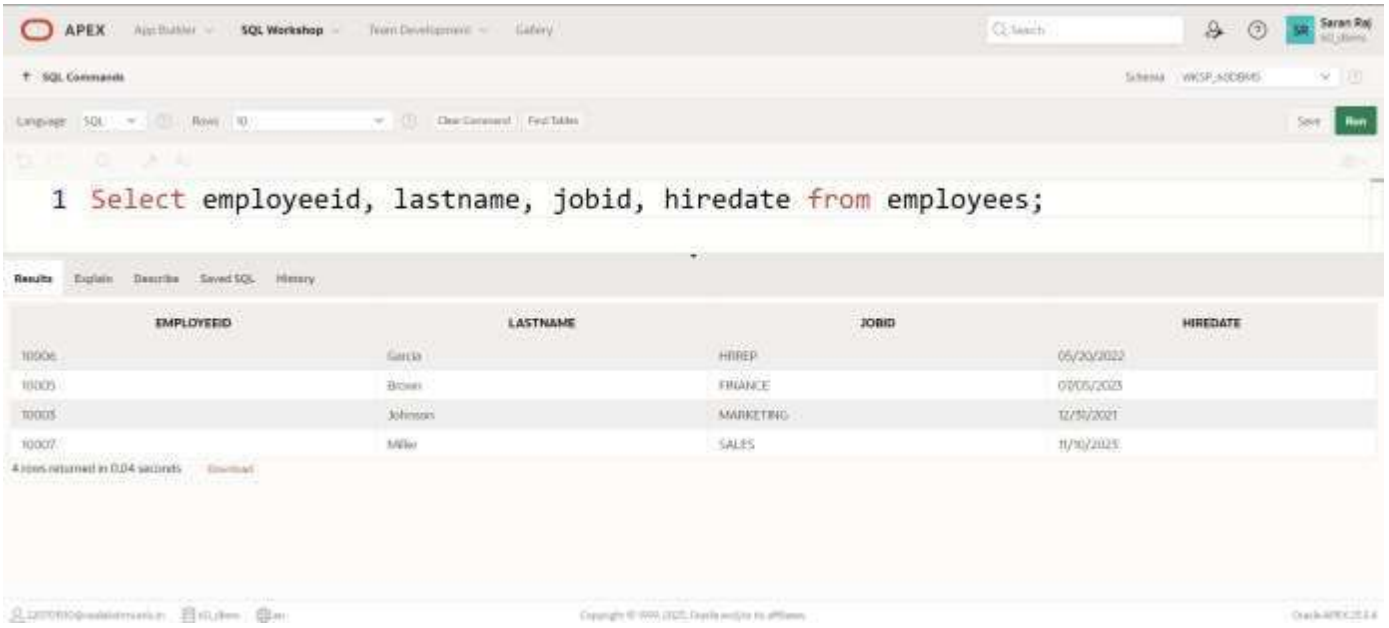



**RESULT:**

3. Create a query to display the last name, job code, hire date, and employee number for each employee, with employee number appearing first.

**QUERY:**
**Select employeeid, lastname, jobid, hiredate from employees;**

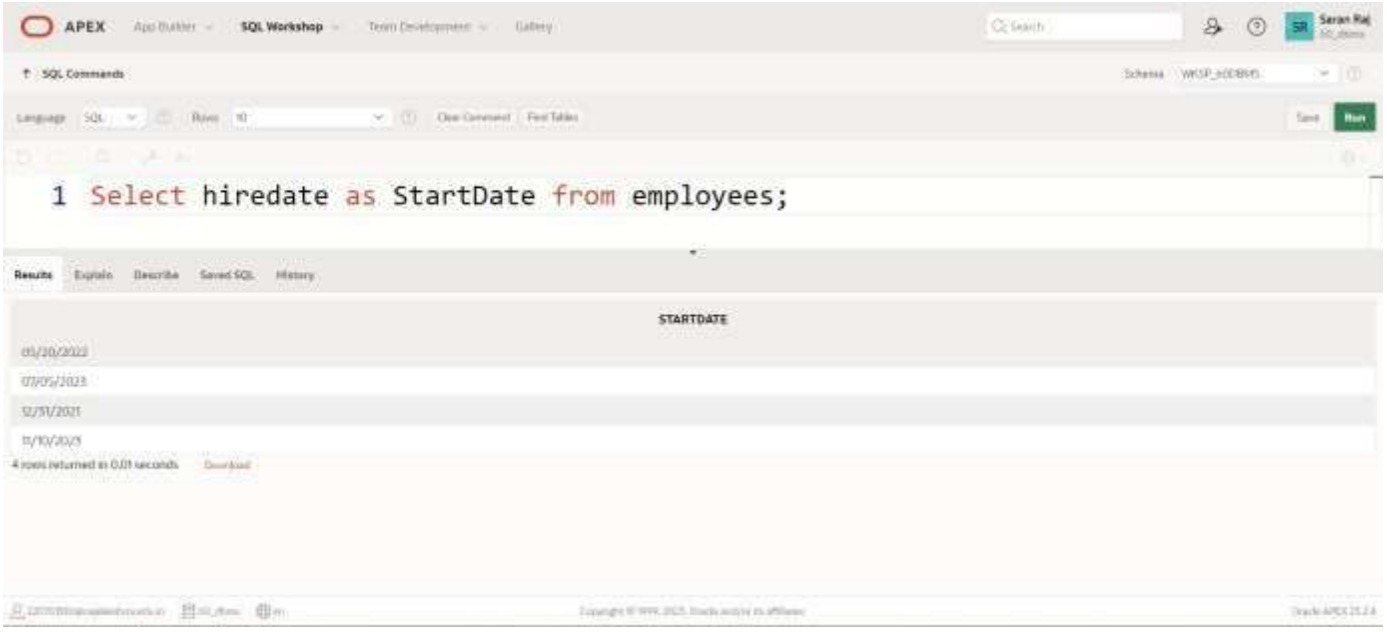
**OUTPUT:**




4. Provide an alias STARTDATE for the hire date.

**QUERY:**
**Select hiredate as StartDate from employees;**

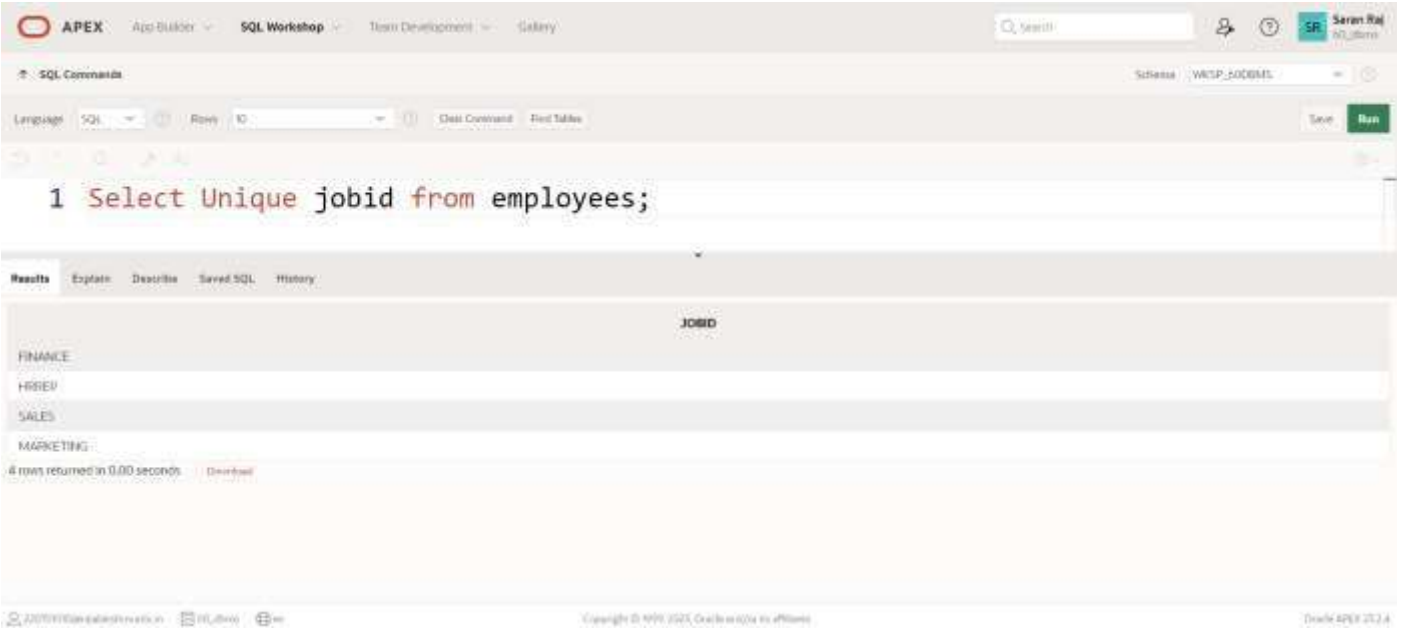
**OUTPUT:**



5. Create a query to display unique job codes from the employee table:

**QUERY:**
**Select Unique jobid from employees;**

**OUTPUT:**




6. Display the last name concatenated with the job ID , separated by a comma and space, and name the column EMPLOYEE and TITLE.

**QUERY:**
**Select lastname || ',' || jobid as Title from employees;**

**OUTPUT:**

7. Create a query to display all the data from the employees table. Separate each column by a comma. Namethe column THE_OUTPUT.

**QUERY:**
**Select employeeid ||','|| lastname ||','|| jobid ||','|| email ||','|| salary ||','|| hiredate as "the_output" from employees;**

**OUTPUT:**


| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |
| | |

**RESULT:**

# RESTRICTING AND SORTING DATA

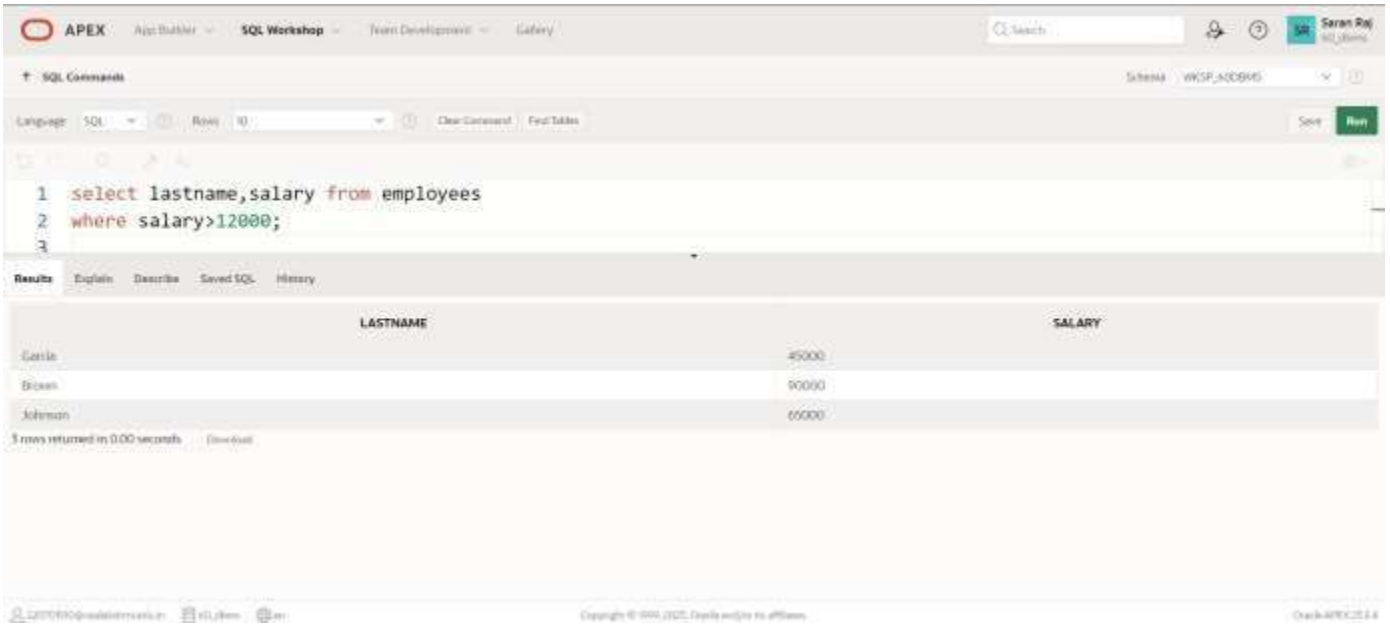
**EX_NO:5** **DATE:**

1. Create a query to display the last name and salary of employees earning more than 12000.

**QUERY:**

```
select lastname,salary from employees
where salary>12000;
```

**OUTPUT:**

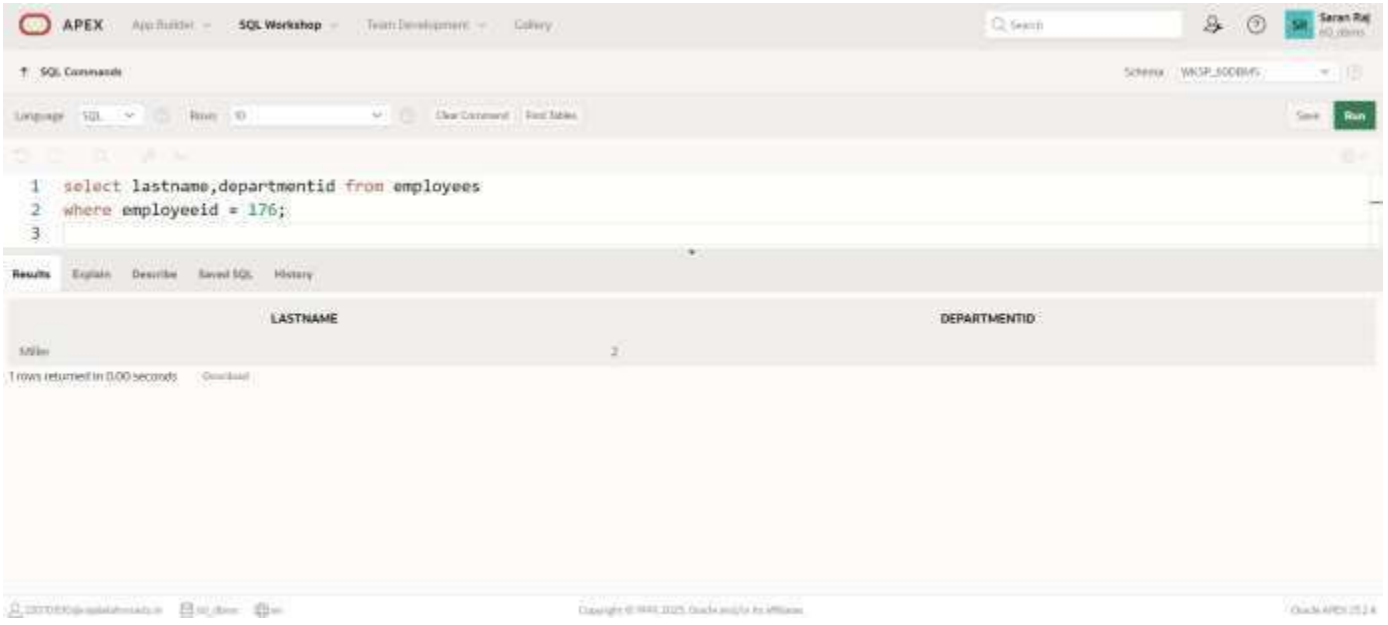



2. Create a query to display the employee last name and department number for employee number 176.

**QUERY:**

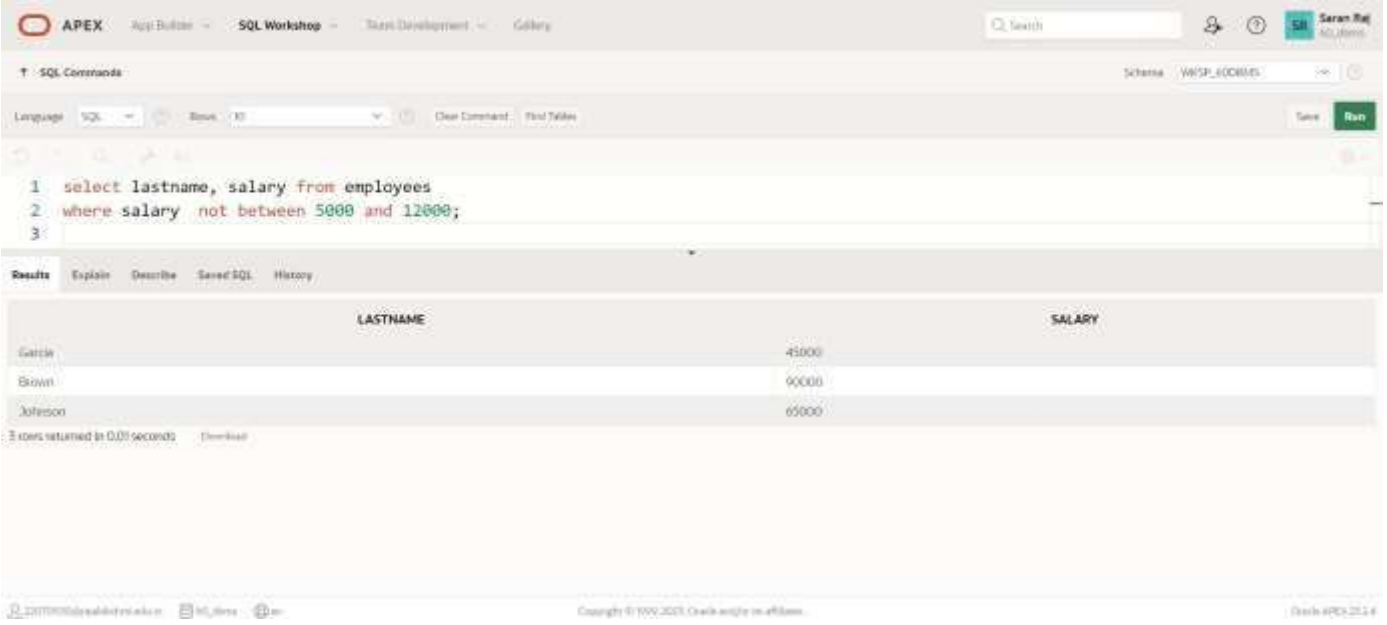
```
select lastname,departmentid from employees
where employeeid = 176;
```

**OUTPUT:**



3. Create a query to display the last name and salary of employees whose salary is not in the range of 5000 and 12000. (hints: not between )

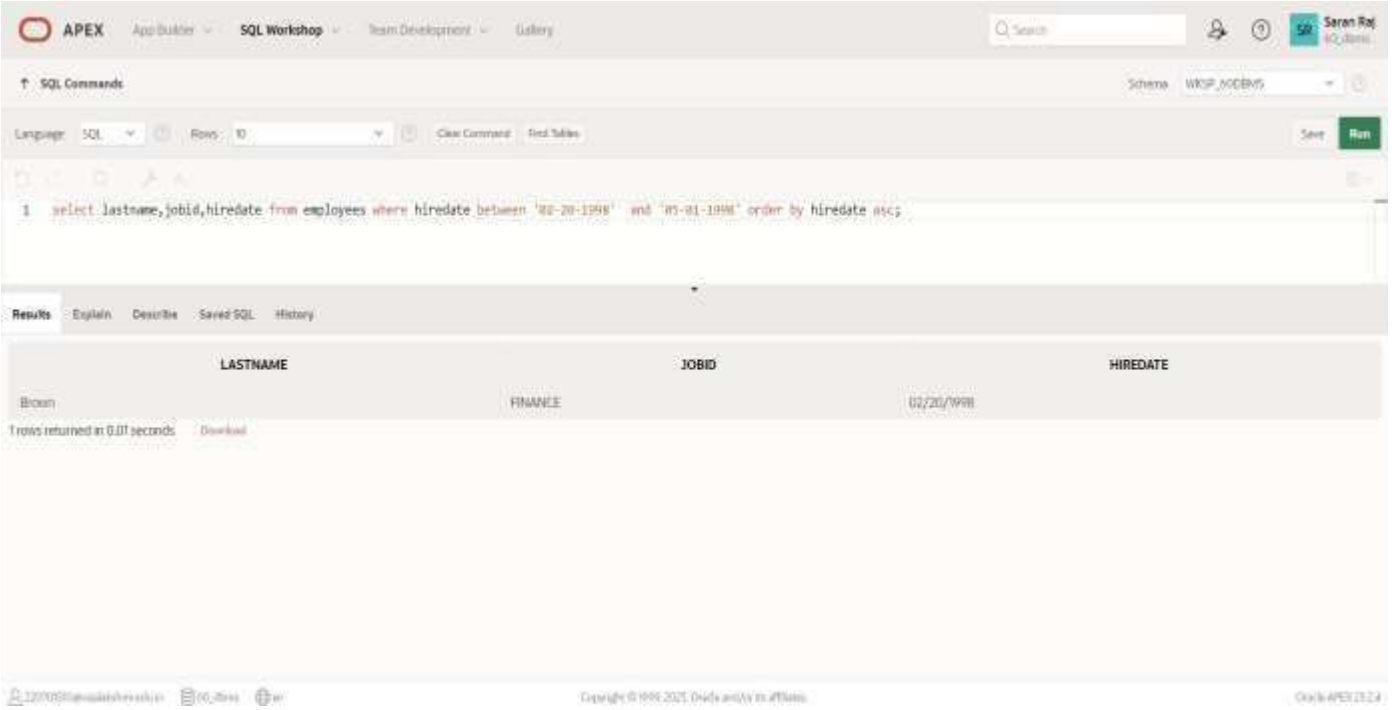
**QUERY:**
select lastname, salary from employees
where salary not between 5000 and 12000;
**OUTPUT:**




4. Display the employee last name, job ID, and start date of employees hired between February 20,1998 and May 1,1998.order the query in ascending order by start date.(hints: between)

**QUERY:**
select lastname,jobid,hiredate from employees where hiredate between '02-20-1998' and '05-01-1998' order by hiredate asc;

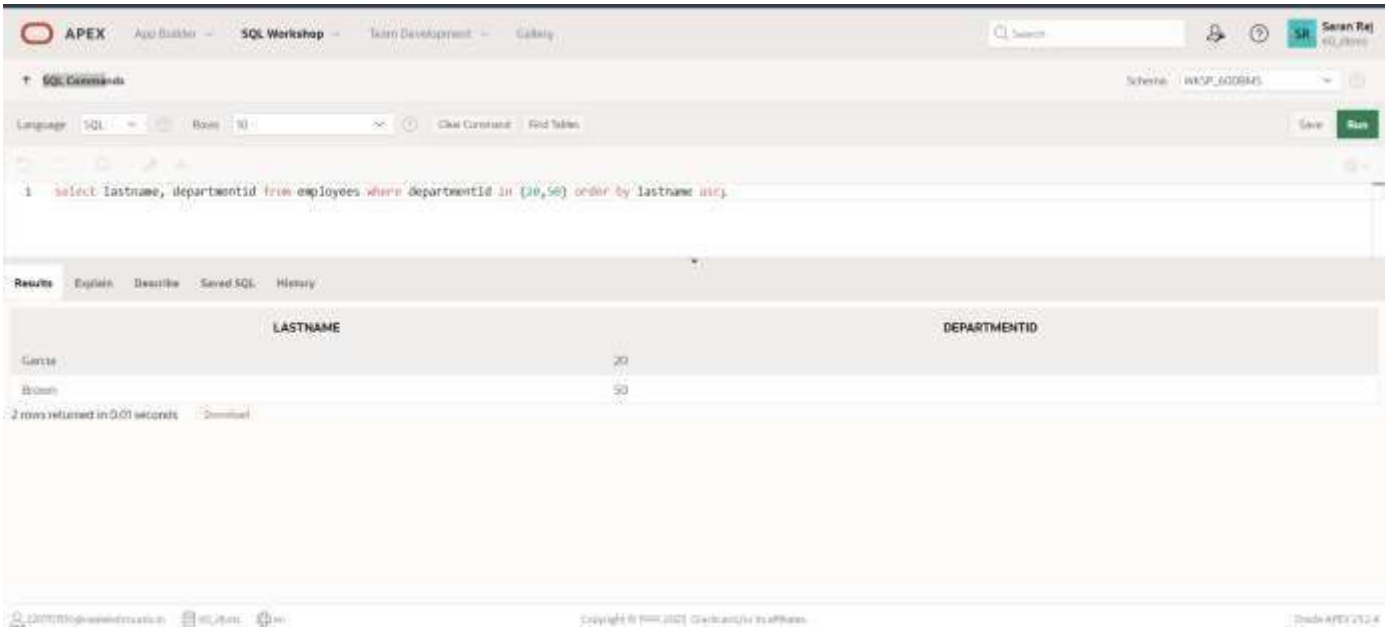
**OUTPUT:**



5. Display the last name and department number of all employees in departments 20 and 50 in alphabetical order by name.(hints: in, orderby)

**QUERY:**
select lastname, departmentid from employees where departmentid in (20,50) order by lastname asc;

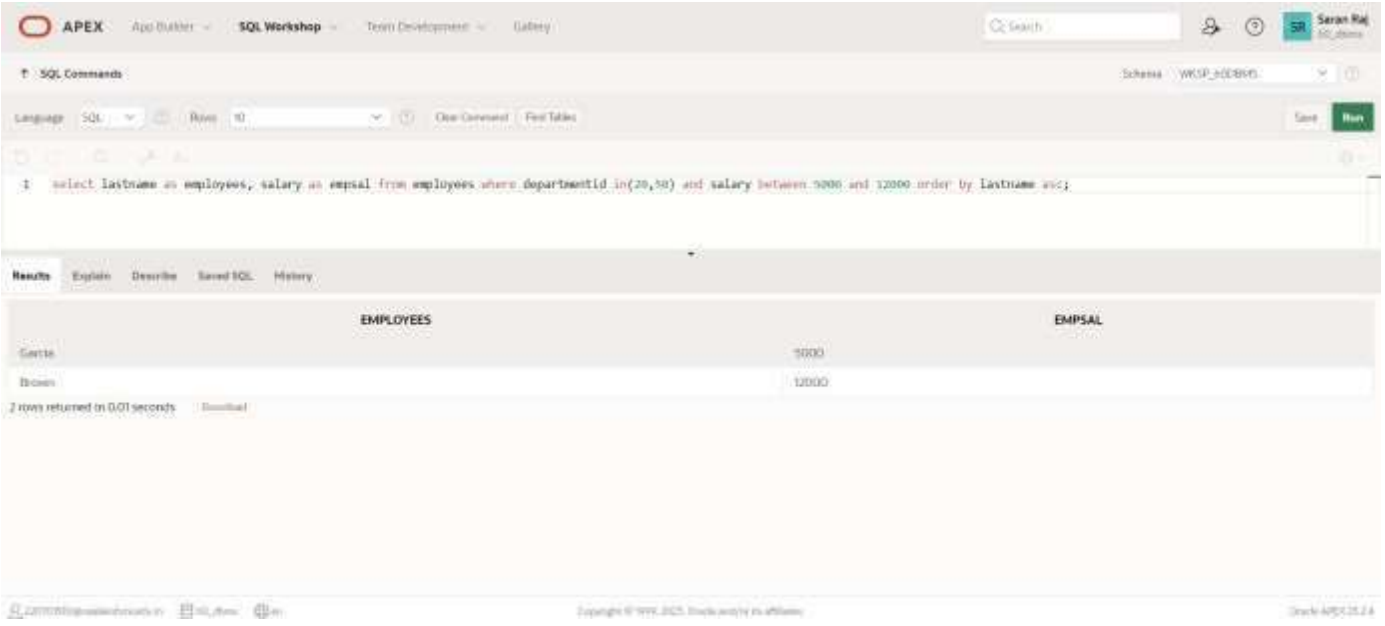
**OUTPUT:**




6. Display the last name and salary of all employees who earn between 5000 and 12000 and are in departments 20 and50 in alphabetical order by name. Label the columns EMPLOYEE, MONTHLY SALARY respectively.(hints:between, in)

**QUERY:**
select lastname as employees, salary as empsal from employees where departmentid in(20,50) and salary between 5000 and 12000 order by lastname asc;

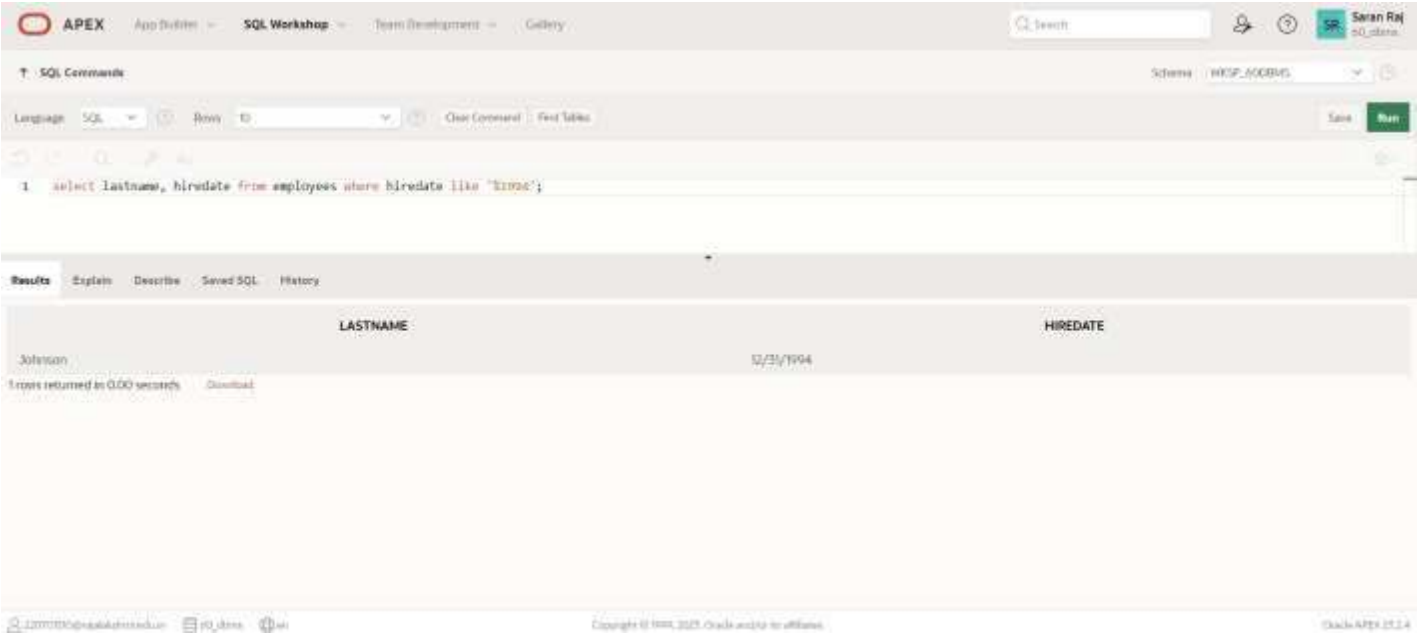
**OUTPUT:**



7. Display the last name and hire date of every employee who was hired in 1994.(hints: like)

**QUERY:**
select lastname, hiredate from employees where hiredate like '%1994';

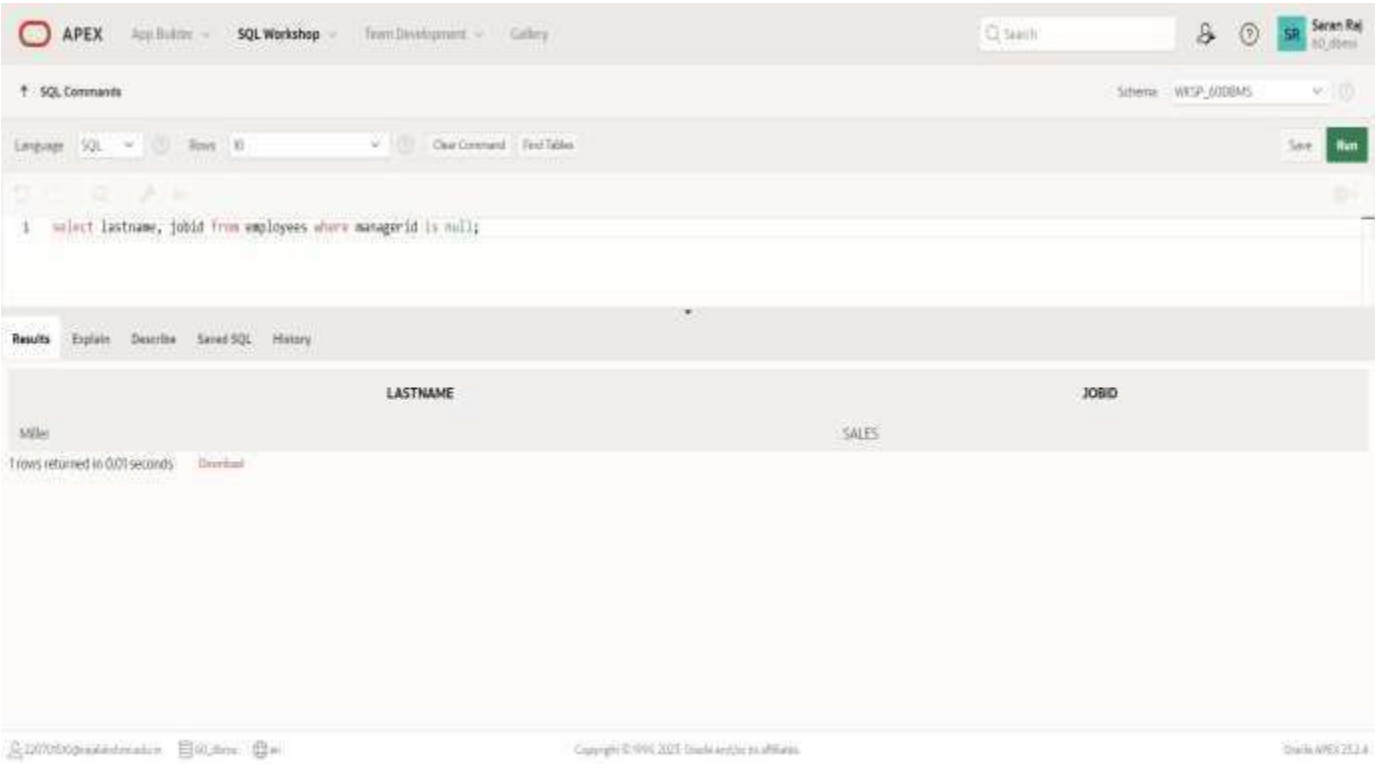
**OUTPUT:**




8. Display the last name and job title of all employees who do not have a manager.(hints: is null)

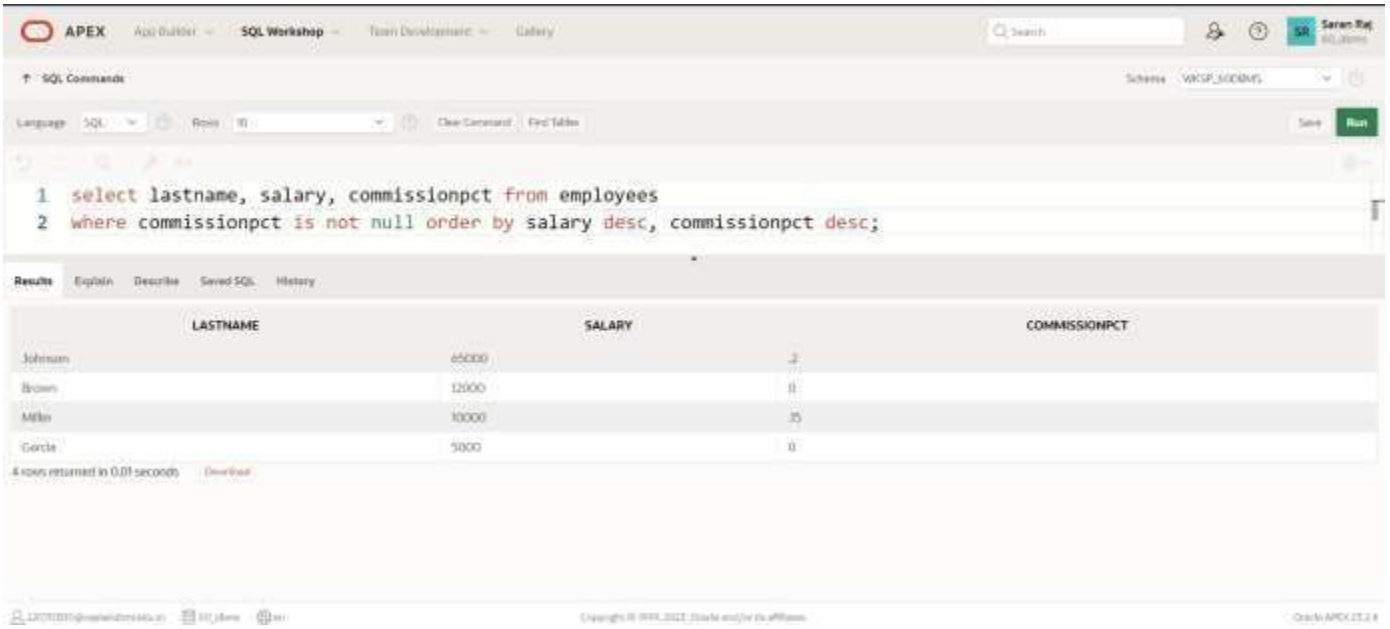
**QUERY:**
select lastname, jobid from employees where managerid is null;

**OUTPUT:**



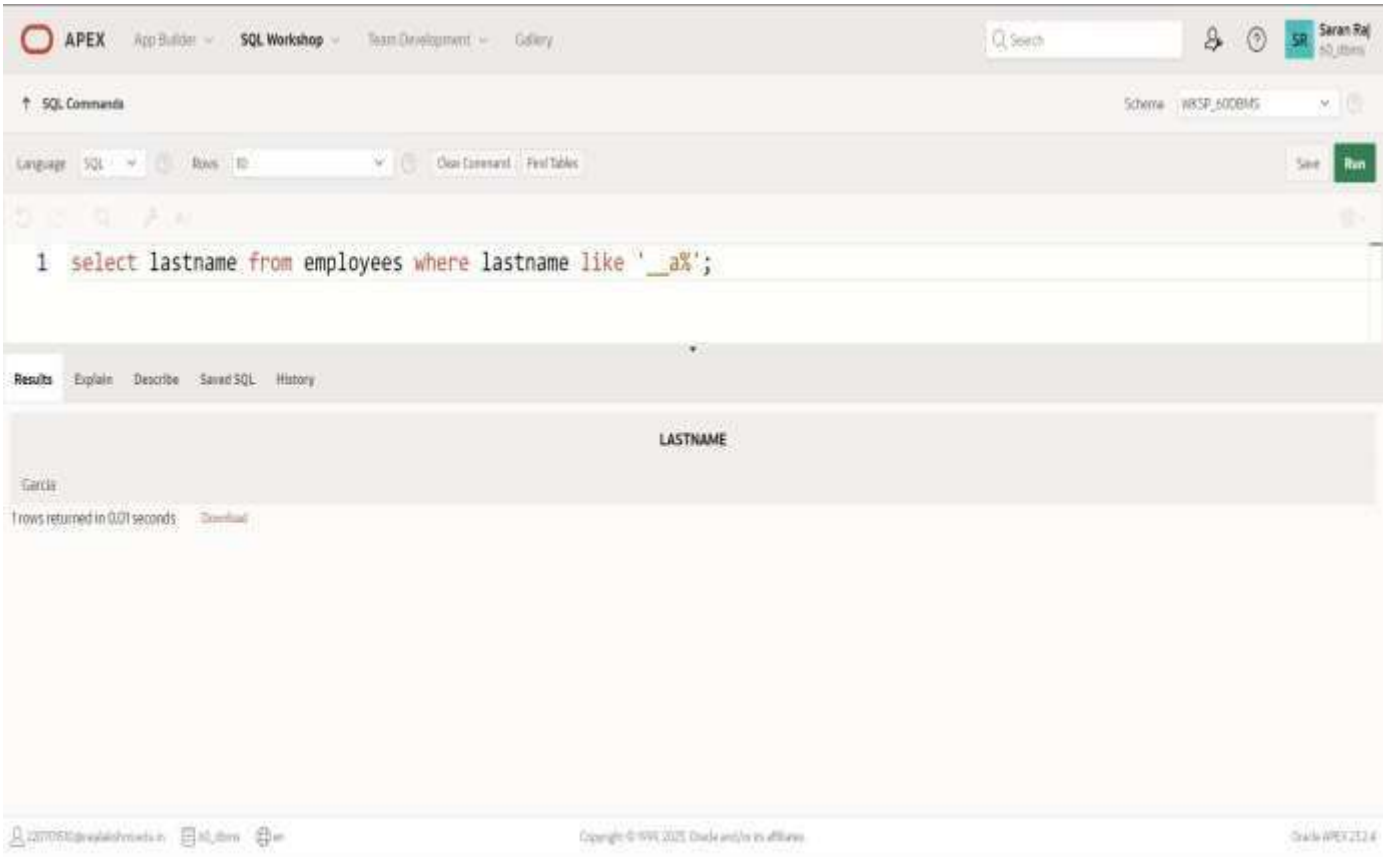
9. Display the last name, salary, and commission for all employees who earn commissions. Sort data in descending order of salary and commissions.(hints: is not nul,orderby)

**QUERY:**
select lastname, salary, commissionpct from employees where commissionpct is not null order by salary desc, commissionpct desc;
**OUTPUT:**




10. Display the last name of all employees where the third letter of the name is a.(hints:like)

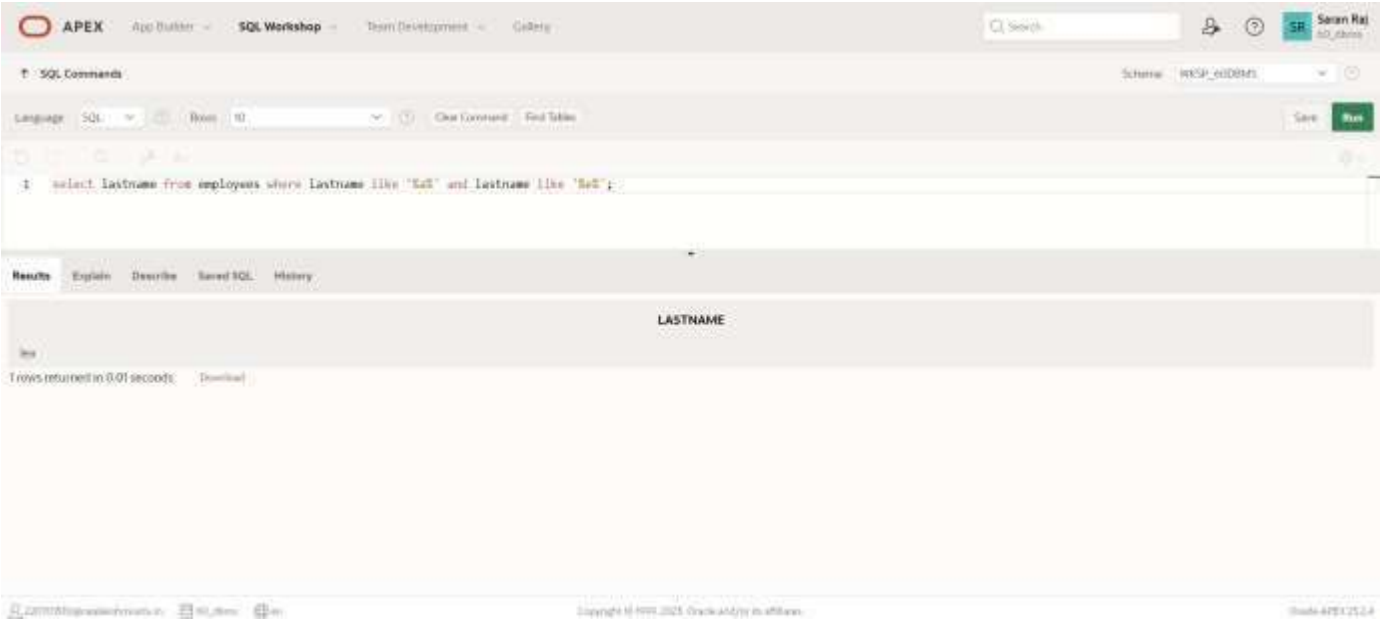
**QUERY:**
select lastname from employees where lastname like '__a%';
**OUTPUT:**



11. Display the last name of all employees who have an a and an e in their last name.(hints: like)

**QUERY:**
select lastname from employees where lastname like '%a%' and lastname like '%e%';

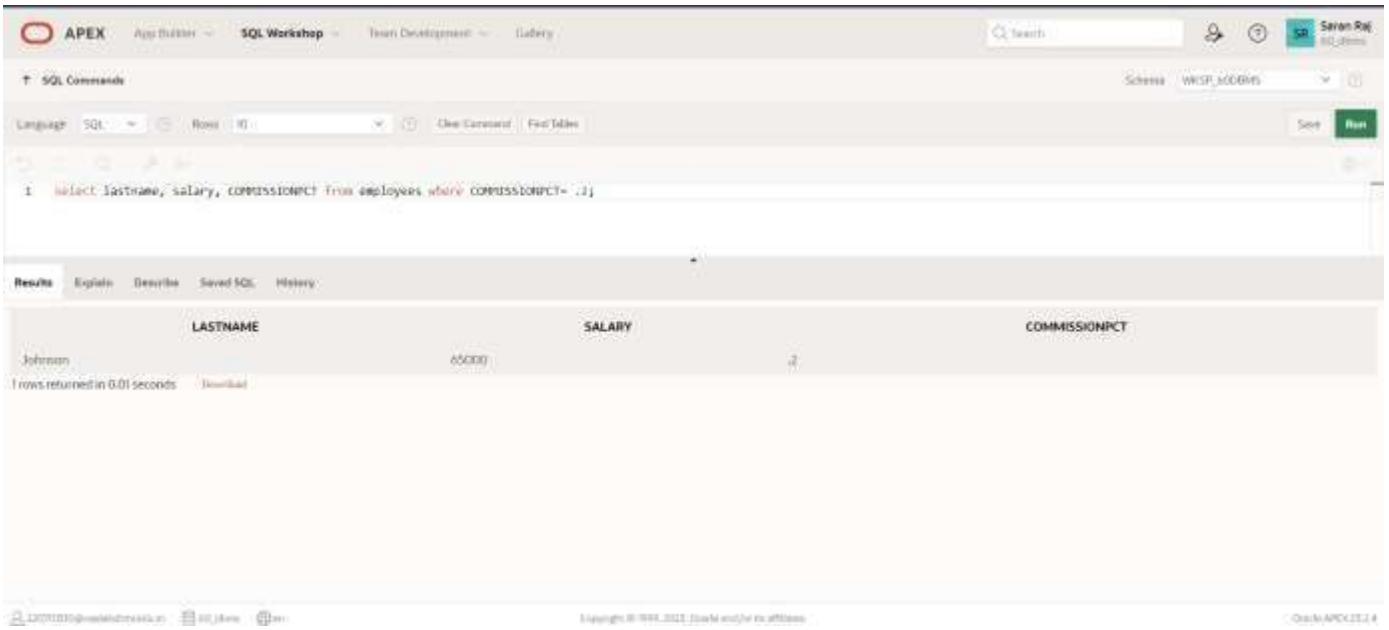
**OUTPUT:**




12. Display the last name and job and salary for all employees whose job is sales representative or stock clerk and whose salary is not equal to 2500 ,3500 or 7000.(hints:in,not in)

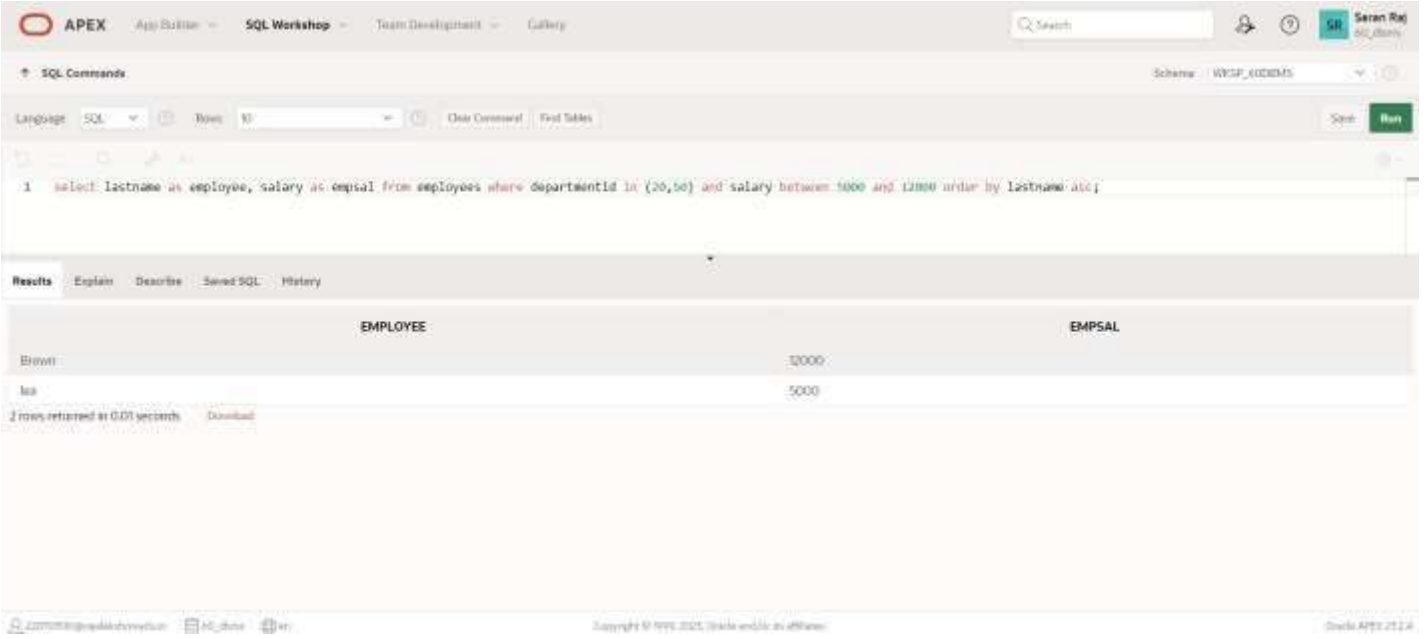
**QUERY:**
select lastname, salary, COMMISSIONPCT from employees where COMMISSIONPCT= .2;

**OUTPUT:**



13. Display the last name, salary, and commission for all employees whose commission amount is20%.(hints:use predicate logic)

**QUERY:**
select lastname as employee, salary as empsal from employees where departmentid in (20,50) and salarybetween 5000 and 12000 order by lastname asc;
**OUTPUT:**




| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

# SINGLE ROW FUNCTIONS

## EX.NO.6 DATE:

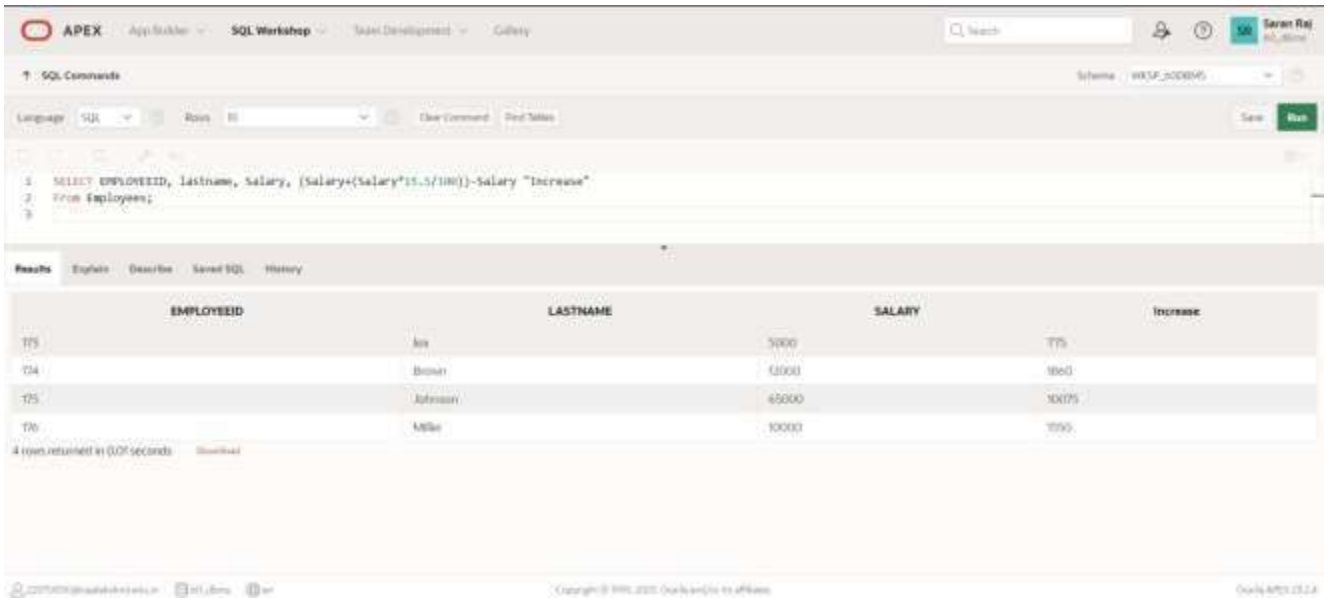
**Find the Solution for the following:**

1. Write a query to display the current date. Label the column Date.

**QUERY:**

**SELECT SYSDATE AS “DATE” FROMDUAL;**

**OUTPUT:**




2. The HR department needs a report to display the employee number, last name, salary,and increased by 15.5% (expressed as a whole number) for each employee. Label the column New Salary.

**QUERY:**

**SELECT EMPLOYEEID, LASTNAME, Salary, Salary+(15.5/100*Salary) "NEW_SALARY"**
**From Employees;**

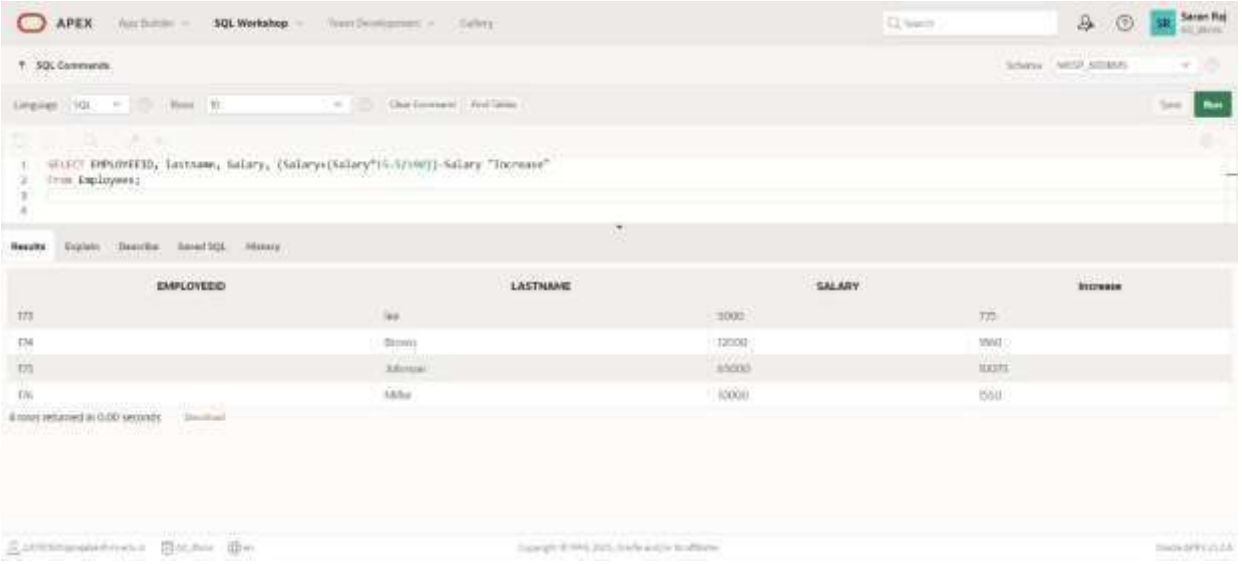
**OUTPUT:**

3. Modify your query lab_03_02.sql to add a column that subtracts the old salary fromthe new salary. Label the column Increase.

**QUERY:**

**SELECT EMPLOYEEID, lastname, Salary, (Salary+(Salary*15.5/100))-Salary "Increase"**
**From Employees;**

**OUTPUT:**




4. Write a query that displays the last name (with the first letter uppercase and all otherletters lowercase) and the length of the last name for all employees whose name starts with the letters J, A, or M. Give each column an appropriate label. Sort the results by the employees' last names.

**QUERY:**
**Select initcap(lastname) "Name", length(lastname) "Length ofName"from Employees where lastname like 'J%' or lastname like 'A%' or lastnamelike'M%'order by lastname;**

**OUTPUT:**

5. Rewrite the query so that the user is prompted to enter a letter that starts the last name.For example, if the user enters H when prompted for a letter, then the output should show all employees whose last name starts with the letter H.

**QUERY:**

**select initcap(lastname) "Name", length(lastname) "Length of Name"from employees where lastname like '&name%'order by lastname;**

**OUTPUT:**

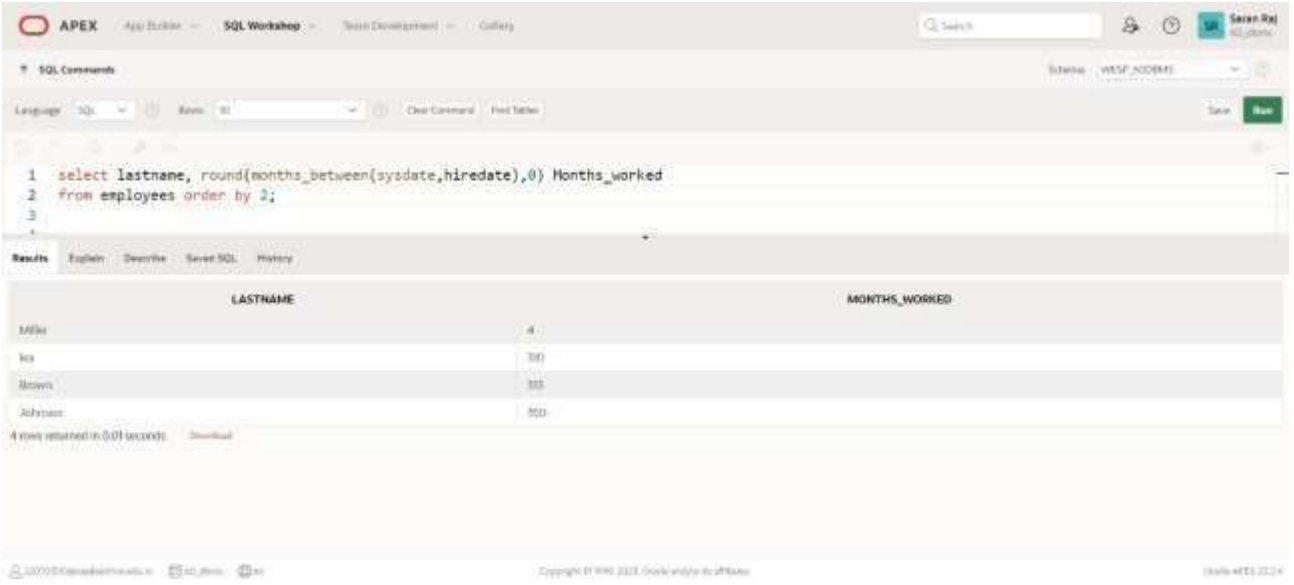

**select initcap(lastname) "Name", length(lastname) "Length of Name"from employees where lastname like 'H%'order by lastname;**

6. The HR department wants to find the length of employment for each employee. For each employee, display the last name and calculate the number of months between today andthe date on which the employee was hired. Label the column MONTHS_WORKED. Order your results by the number of months employed. Round the number of months up to the closest whole number.

**QUERY:**

**select lastname, round(months_between(sysdate,hiredate),0) Months_worked from employees order by 2;**

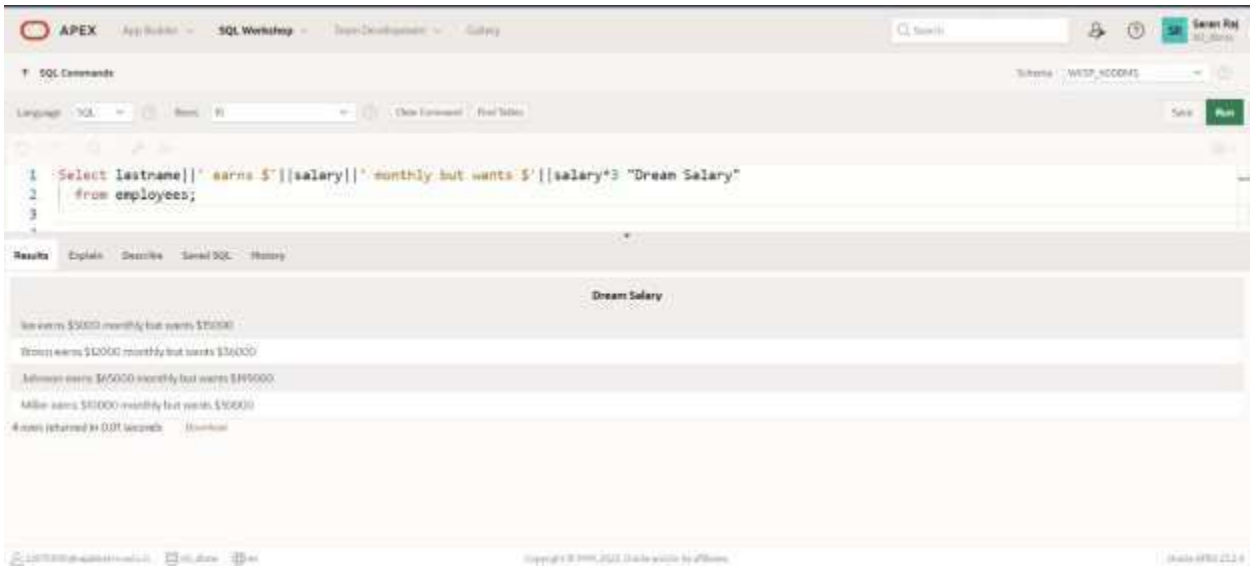
**OUTPUT:**



7. Create a report that produces the following for each employee:
<employee last name> earns <salary> monthly but wants <3 times salary>. Label the column Dream Salaries.

**QUERY:**
**Select lastname||' earns $'||salary||' monthly but wants $'||salary*3 "Dream Salary" from employees;**

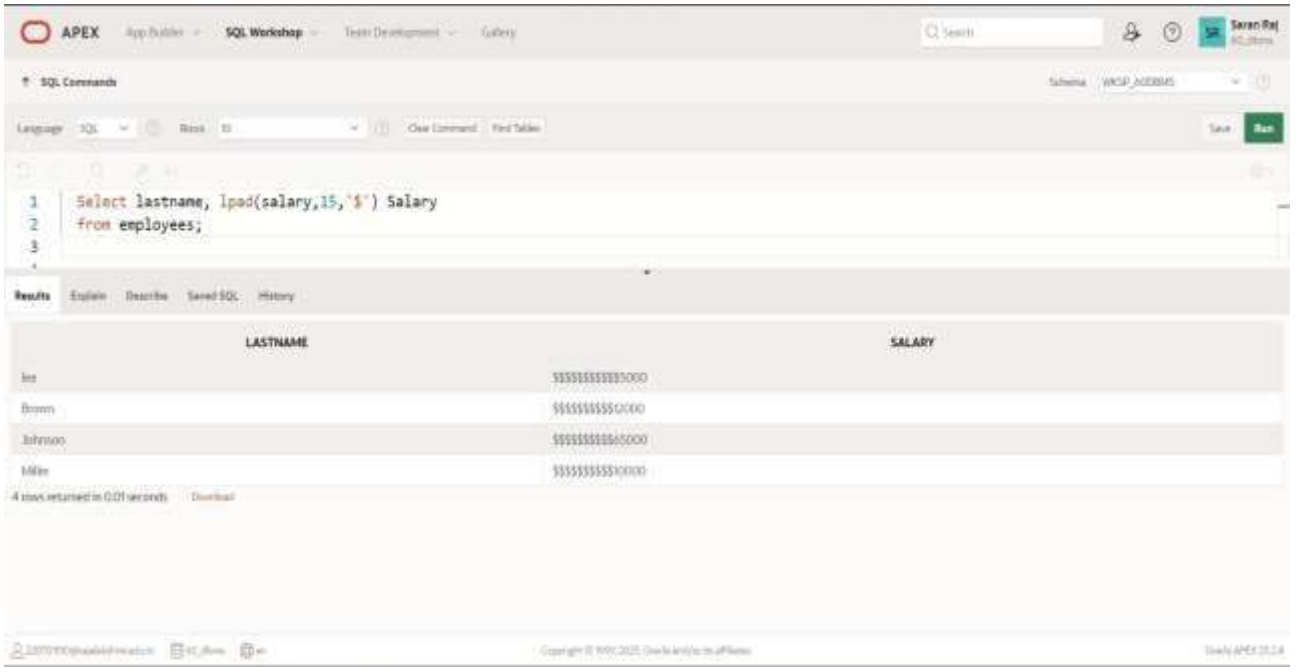
**OUTPUT:**




8. Create a query to display the last name and salary for all employees. Format the salaryto be 15 characters long, left-padded with the $ symbol. Label the column SALARY.

**QUERY:**
**Select lastname, lpad(salary,15,'$') Salary from employees;**

**OUTPUT:**

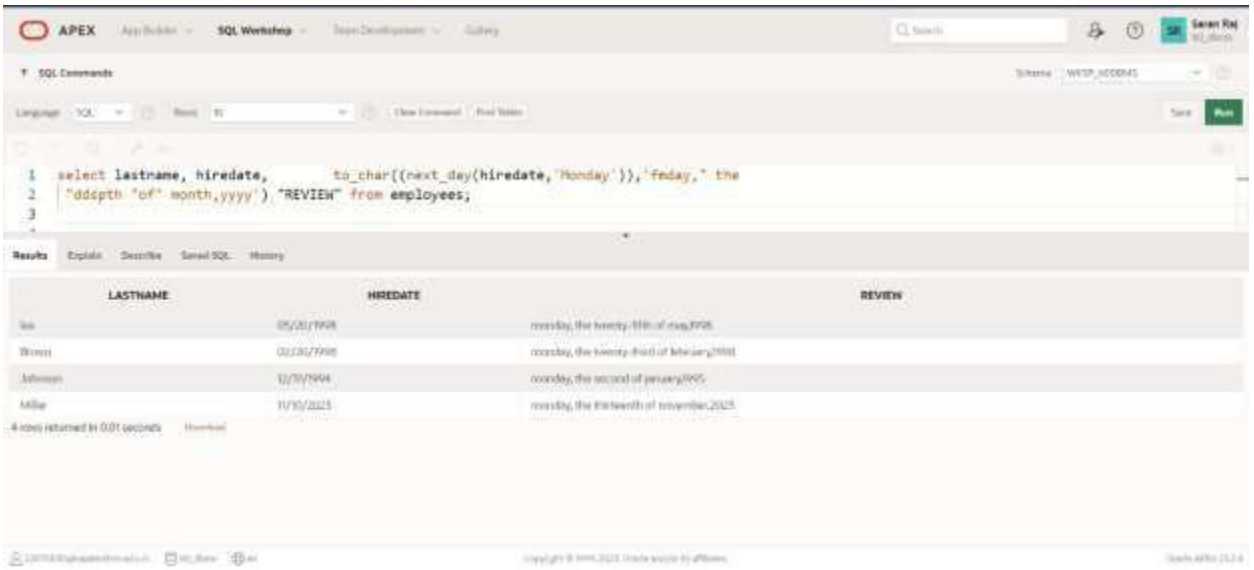


9. Display each employee's last name, hire date, and salary review date, which is the first Monday after six months of service. Label the column REVIEW. Format the dates to appear in the format similar to "Monday, the Thirty-First of July, 2000."

**QUERY:**

**select lastname, hiredate, to_char((next_day(hiredate,'Monday')),'fmday," the "ddspth "of" month,yyyy') "REVIEW" from employees;**

**OUTPUT:**

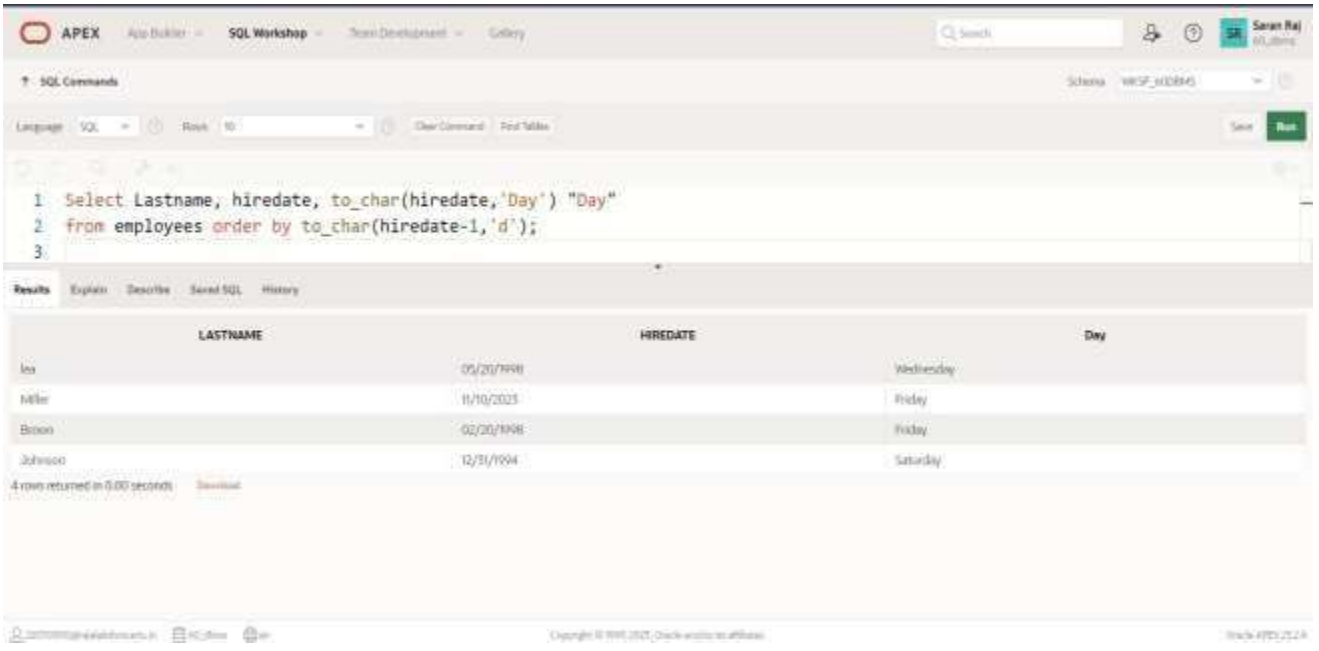



**10.** Display the last name, hire date, and day of the week on which the employee started. Label the column DAY. Order the results by the day of the week, starting with Monday.

**QUERY:**

**Select Lastname, hiredate, to_char(hiredate,'Day') "Day"**
**from employees order by**
**to_char(hiredate-1,'d');**

**OUTPUT:**



| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

# DISPLAYING DATA FROM MULTIPLE TABLES

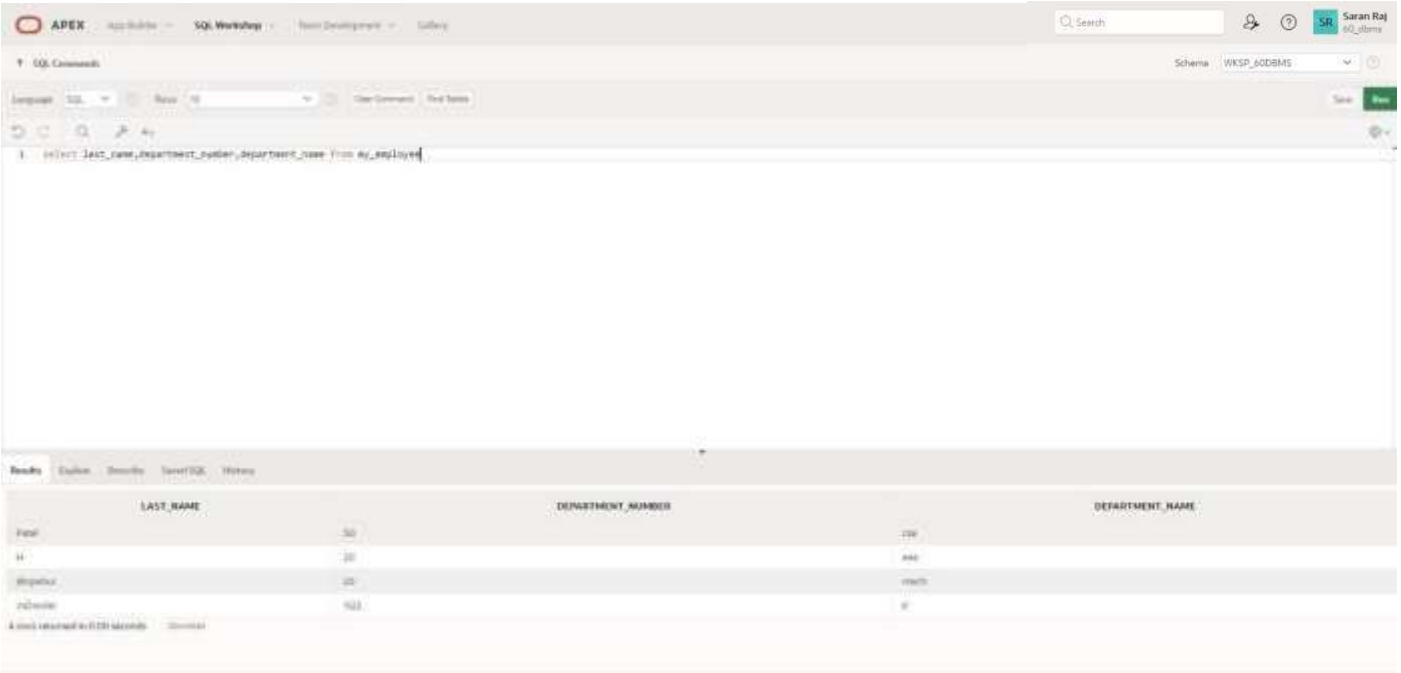
EX_NO:7 DATE:

1. Write a query to display the last name, department number, and department name for all employees.

QUERY:

Select last name,department_name, department_number from my_employee

OUTPUT:

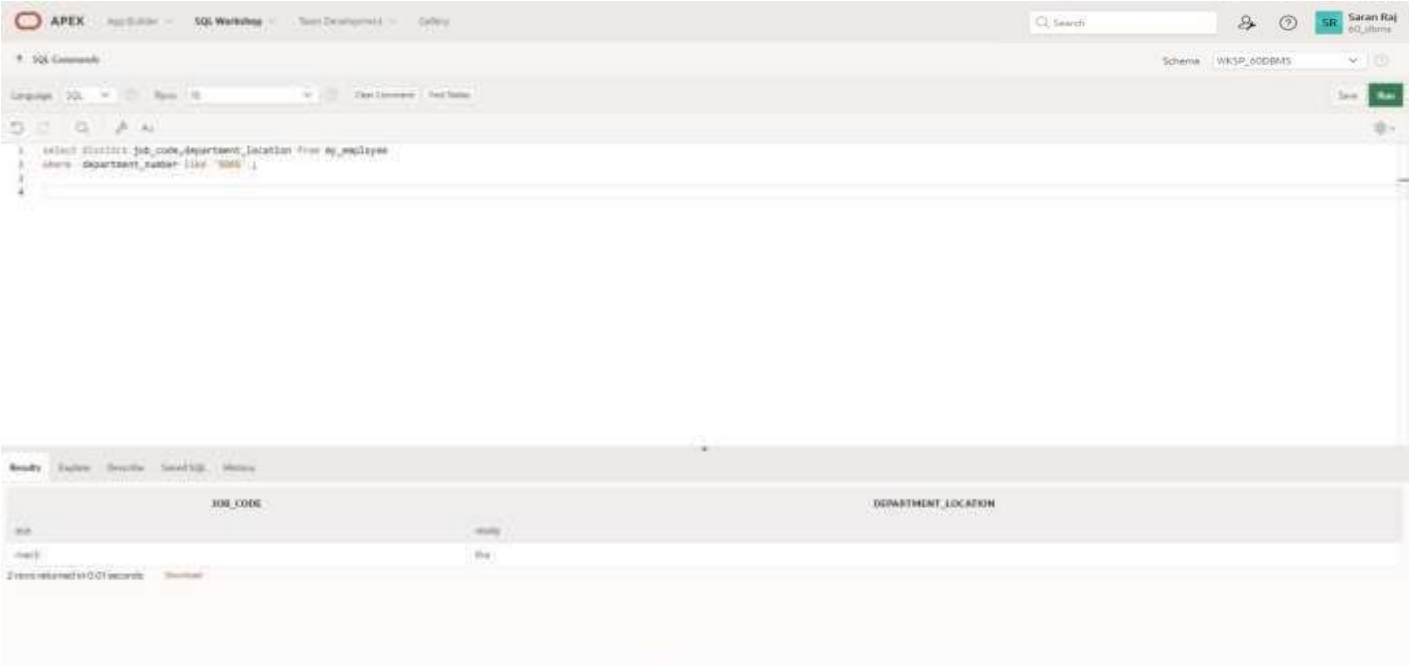



2. Create a unique listing of all jobs that are in department 80. Include the location of the department in the output.

QUERY:

select distinct job_code ,department_location_id from my_employees ,departments d where deptment _ number like '%80%;

OUTPUT:

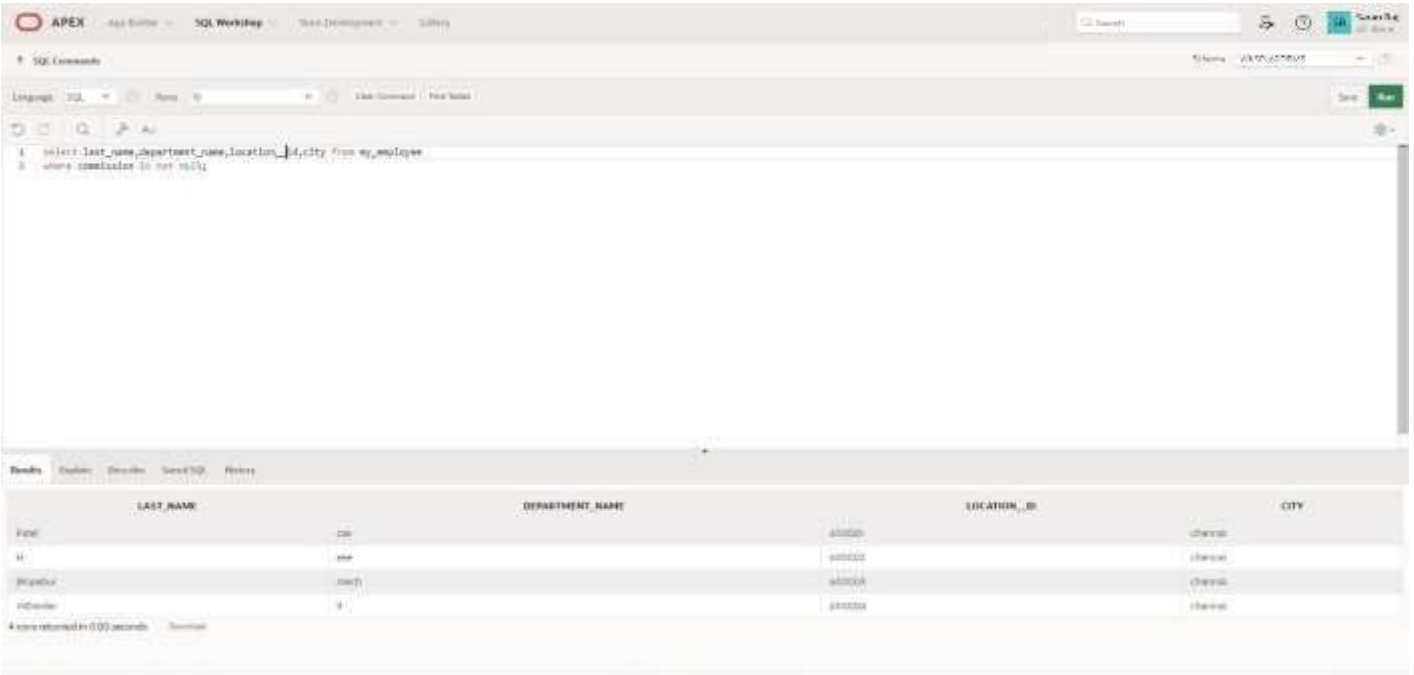


3. Write a query to display the employee last name, department name, location ID, and city of all employees who earn a commission

QUERY:

**Select e.last_name,d.dept_name,d.location_id,l.city from employees e,departments d,locations l where e.dept_id = d.dept_id and d.location_id=location_id and e.commission_pct is not null;**

OUTPUT:



4. Display the employee last name and department name for all employees who have an a(lowercase) in their last names.

QUERY:

Select last_name,dept_namefrom employeees,departments where employeees.dept_id=departmnets.dept_id
And last_name like ‘%a%’;

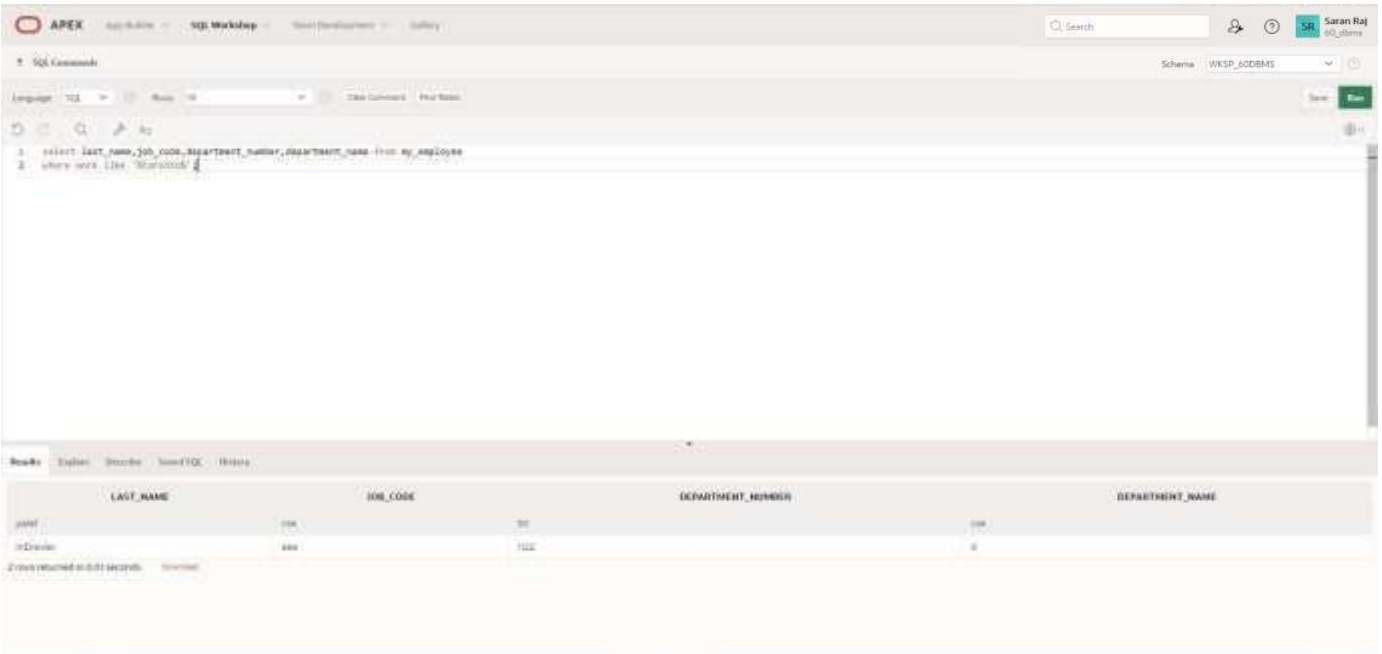
OUTPUT:

5. Write a query to display the last name, job, department number, and department name for all employees who work in Toronto.

QUERY:

Select e.last_name,e.job_id,e.dept-id,d.dept_name from employeees e join departments d on (e.dept_id=d.dept_id) Join locations l on(d.location_id=l.location_id) where lower(l.city)='toronto';

OUTPUT:

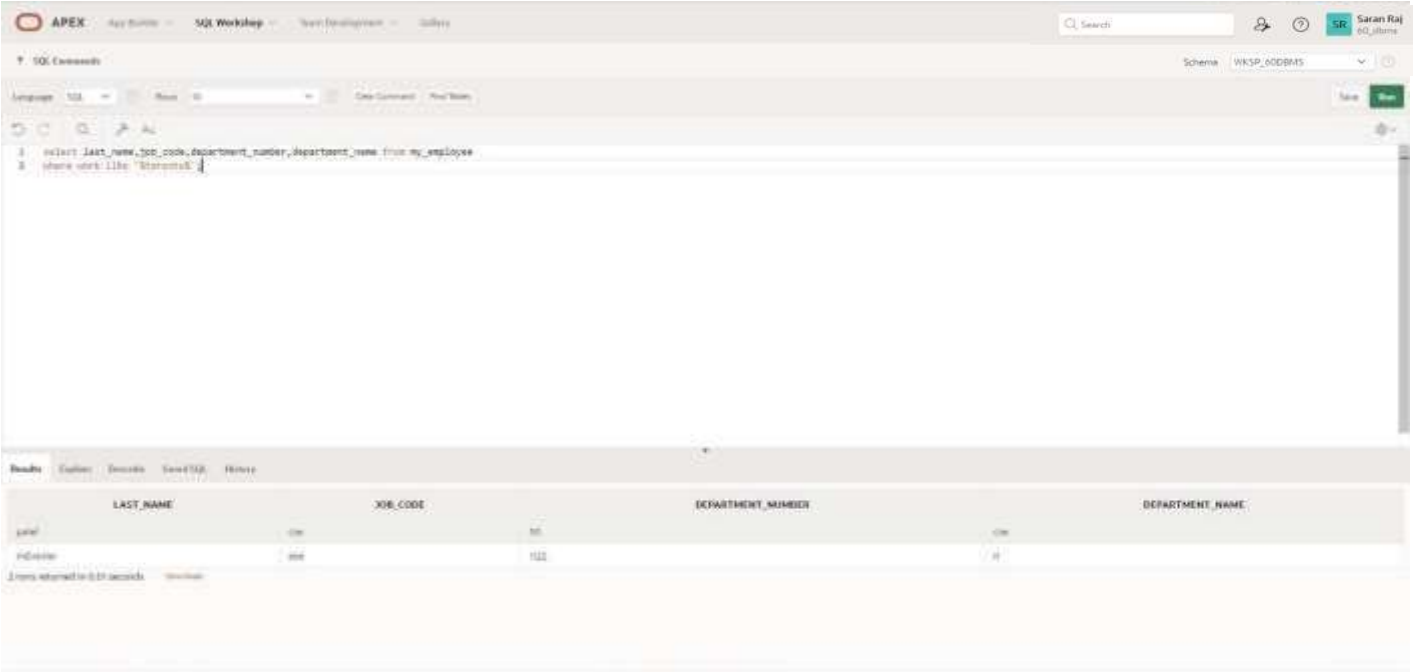


6. Display the employee last name and employee number along with their manager's last name and manager number. Label the columns Employee, Emp#, Manager, and Mgr#, Respectively

QUERY:

Select w.last_name "Employee',w.emp_id "EMP#",m.last_name "Manager",m.emp_id "Mgr#"
From employes w join employes m on (w.manager_id=m.emp_id);

OUTPUT:

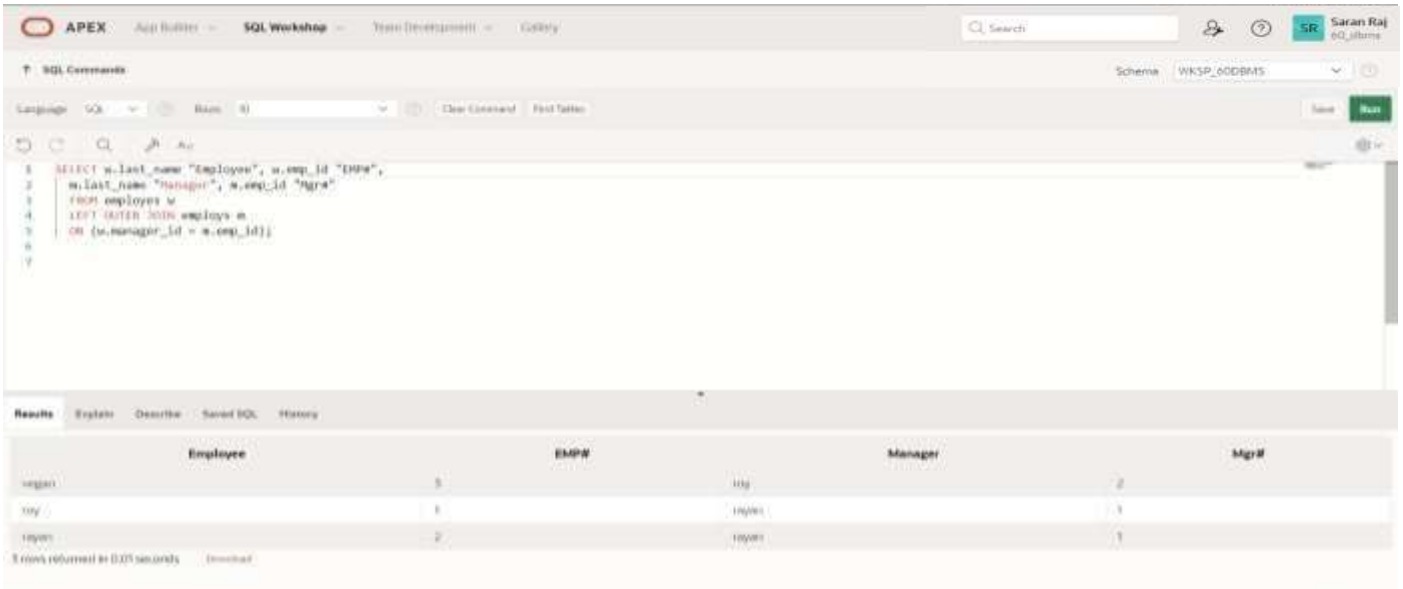



7. Modify lab4_6.sql to display all employees including King, who has no manager. Order the results by the employee number.

QUERY:

Select last_name"Employee",employee-id"EMP#",last_name "Manager",employee_id "Mgr#" from my_employee
Left outer join employes m on(w.manager_id=m.emp_id);

OUTPUT:

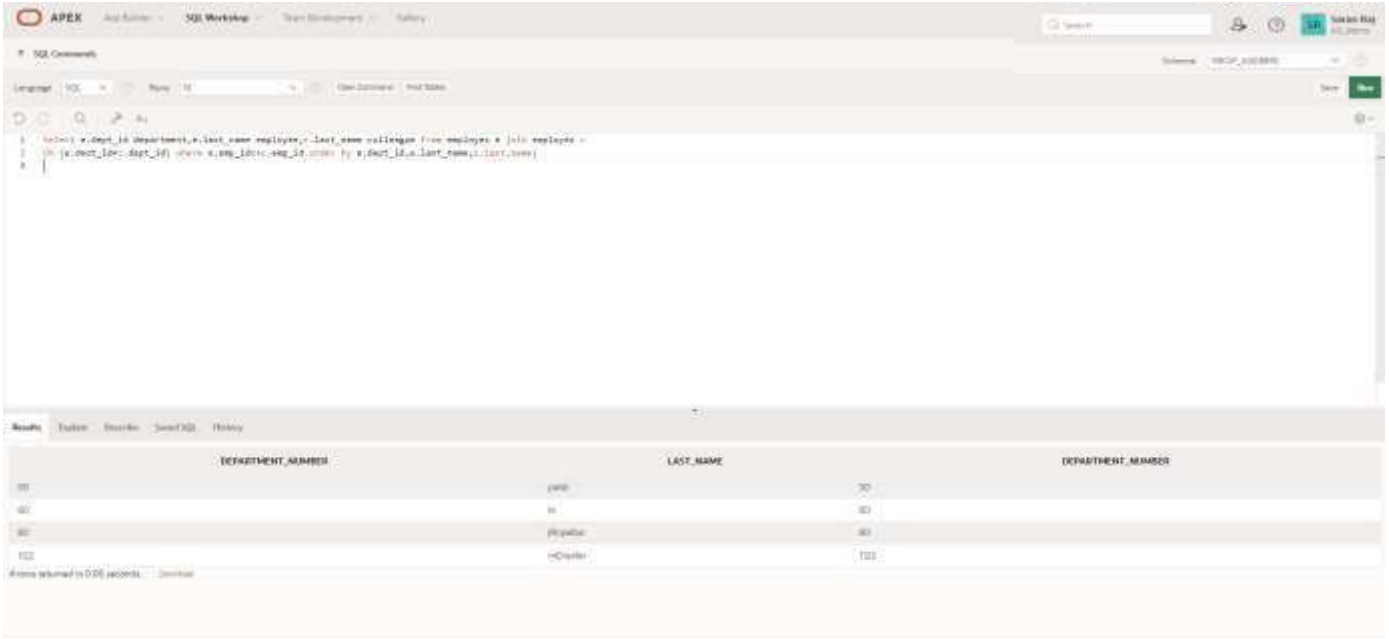



8. Create a query that displays employee last names, department numbers, and all the employees who work in the same department as a given employee. Give each column an appropriate label

QUERY:

Select dept_id department,e.last_name employee,c.last_name colleague from employes e join employes c
On (e.deot_id=c.dept_id) where e.emp_id<>c.emp_id order by e.dept_id,e.last_name,c.last.name;

OUTPUT:

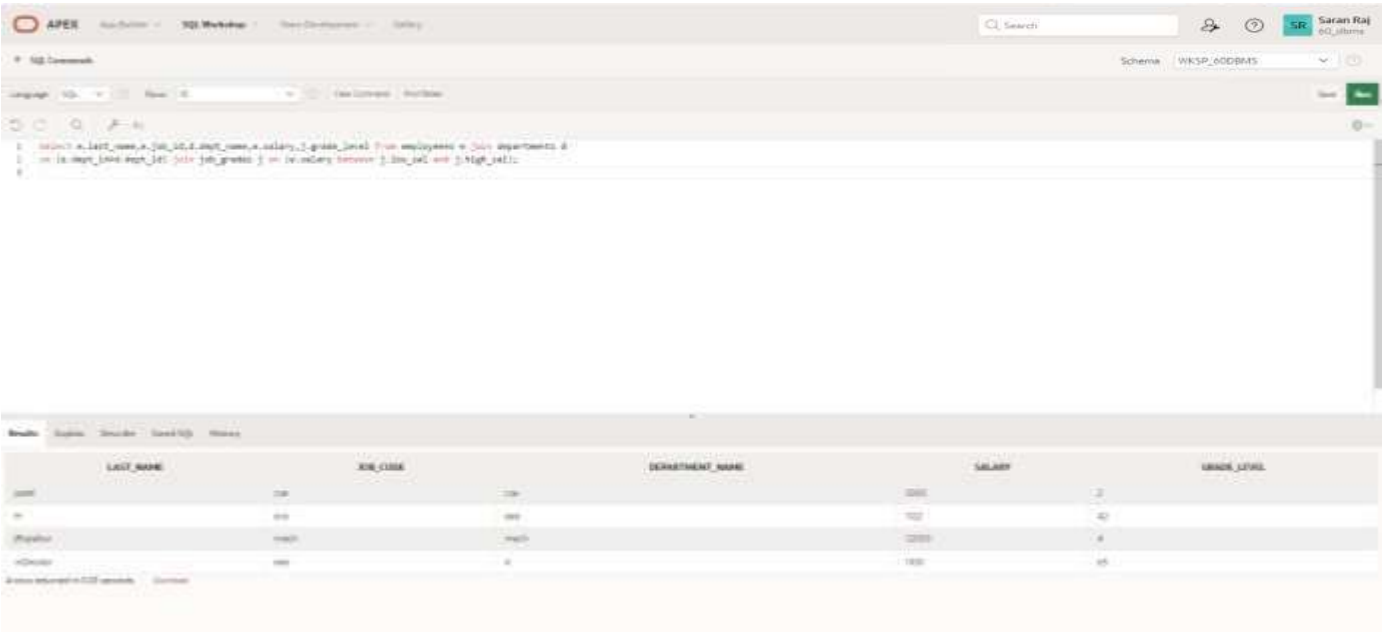


9. Show the structure of the JOB_GRADES table. Create a query that displays the name, job, department name, salary, and grade for all employees

QUERY:

Select e.last_name,e.job_id,d.dept_name,e.salary,j.grade_level from employeees e join departments d on (e.dept_id=d.dept_id) join job_grades j on (e.salary between j.low_sal and j.high_sal);

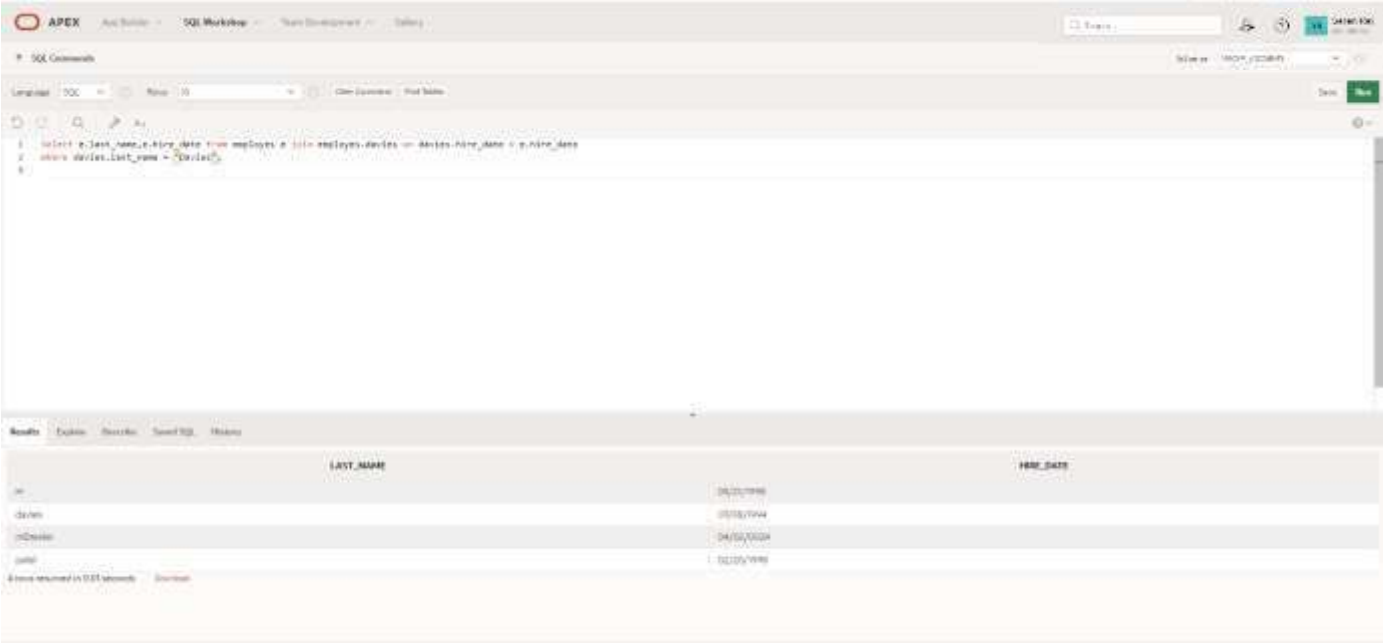
OUTPUT:




10. Create a query to display the name and hire date of any employee hired after employee Davies.

QUERY:

Select e.last_name,e.hire_date from employes e join employes.davies on davies.hire_date < e.hire_date
Where davies.last_name = ‘Davies’;
OUTPUT:




11. Display the names and hire dates for all employees who were hired before their managers, along with their manager’s names and hire dates. Label the columns Employee, Emp Hired, Manager, and Mgr Hired, respectively.

QUERY:
select last-name as Employee,e.hire_date as Emp_hired,e.manager_name as manager,m.hire_date as mgr_hired from my_employee where e.hire_date < m.hire_date;

OUTPUT:


| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

RESULT:

# AGGREGATING DATA USING GROUP FUNCTIONS

EX_NO:8 DATE:

1. Group functions work across many rows to produce one result per group.
True/False

TRUE

2. Group functions include nulls in calculations.
True/False

FALSE

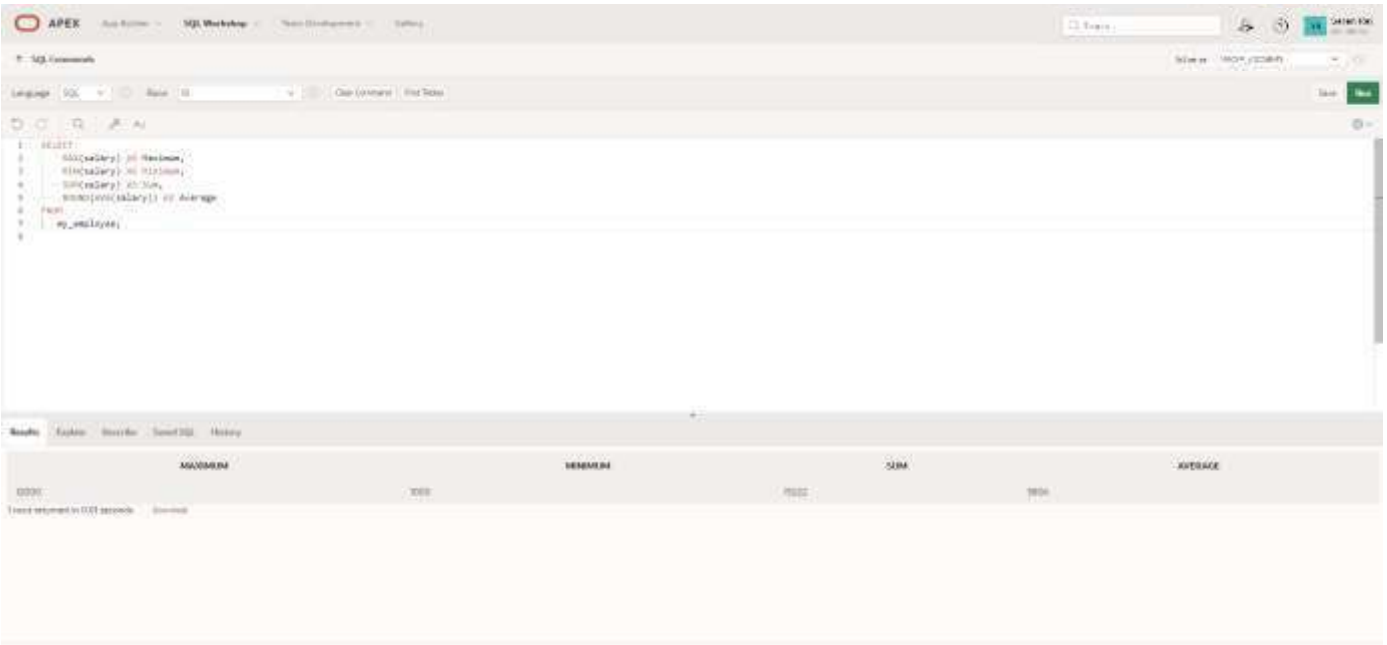
3. The WHERE clause restricts rows prior to inclusion in a group calculation.
True/False

FALSE

4. Find the highest, lowest, sum, and average salary of all employees. Label the columns Maximum, Minimum, Sum, and Average, respectively. Round your results to the nearest whole number
QUERY:

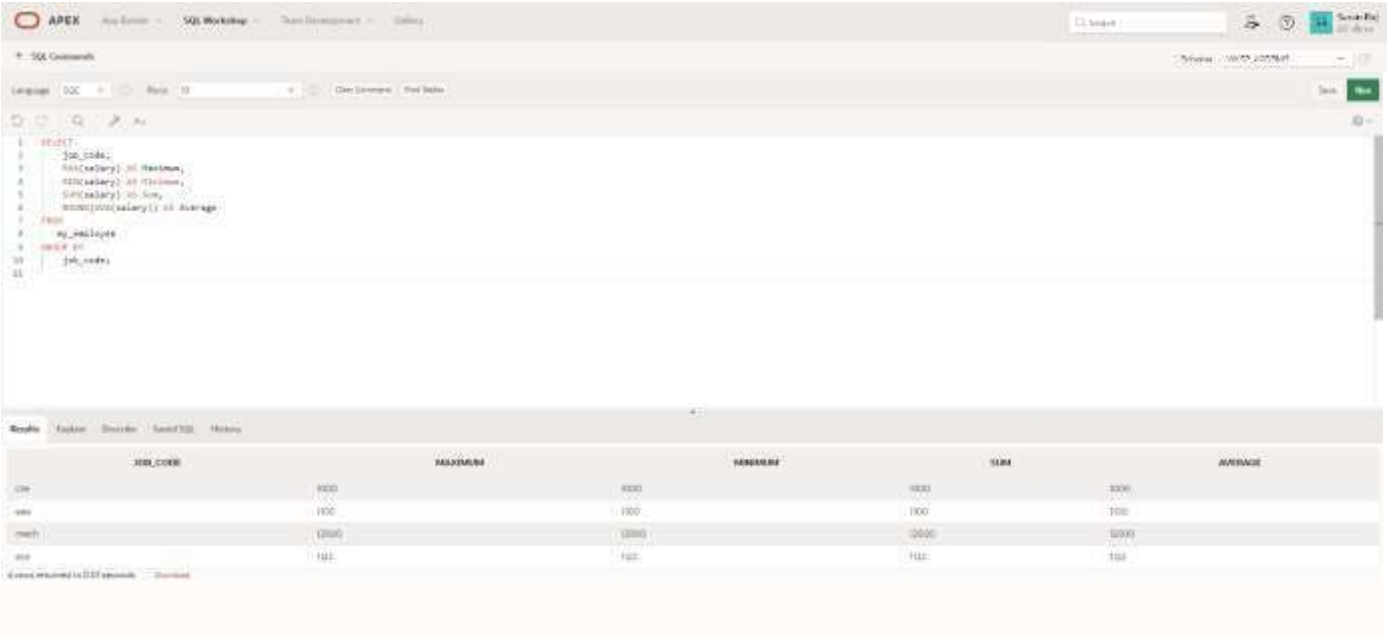
```
SELECT
   MAX(salary) AS Maximum,  MIN(salary) AS Minimum,
   SUM(salary) AS Sum,ROUND(AVG(salary)) AS Average FROM my_employee;
```

OUTPUT:



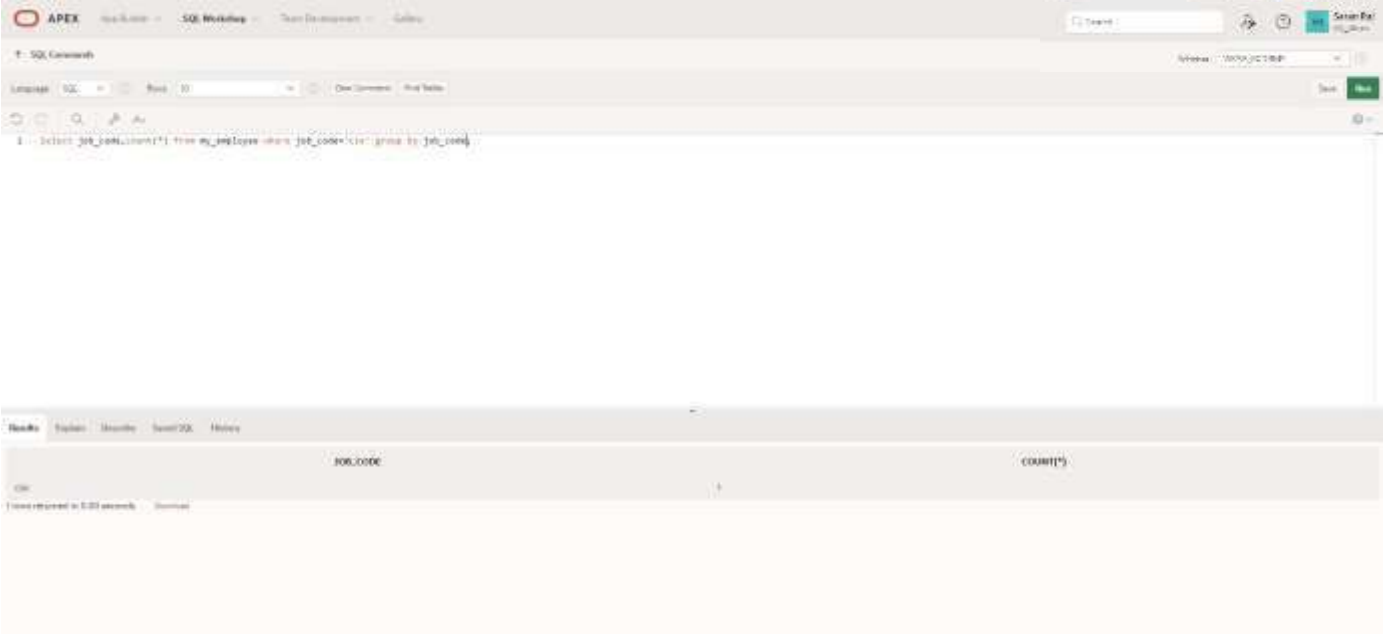
5. Modify the above query to display the minimum, maximum, sum, and average salary for each job type.
QUERY:
SELECT
job_code, MAX(salary) AS Maximum, MIN(salary) AS Minimum,SUM(salary) AS Sum
ROUND(AVG(salary)) AS Average FROM my_employeeGROUP BY job_code;

OUTPUT:




6. Write a query to display the number of people with the same job. Generalize the query so that the user in the HR department is prompted for a job title.
QUERY:
Select job_code,count(*) from my_employee where job_code='cse' group by job_code;

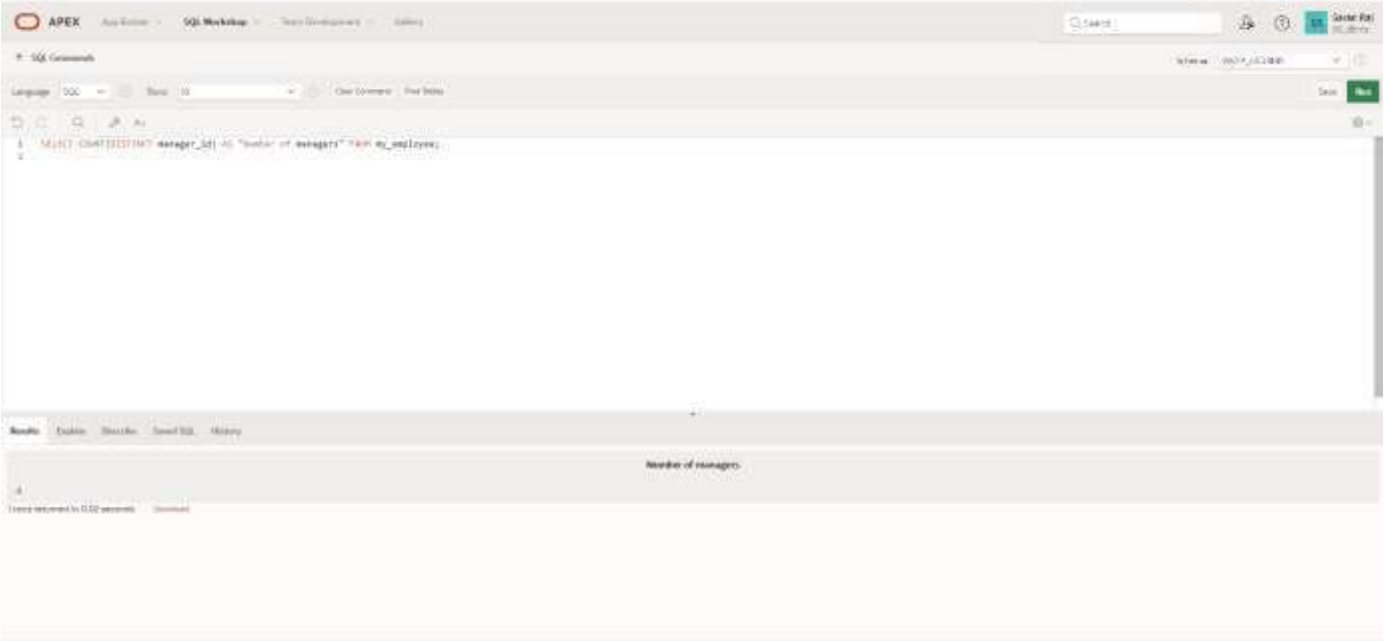
OUTPUT:




7. Determine the number of managers without listing them. Label the column Number of Managers. Hint: Use the MANAGER_ID column to determine the number of managers.

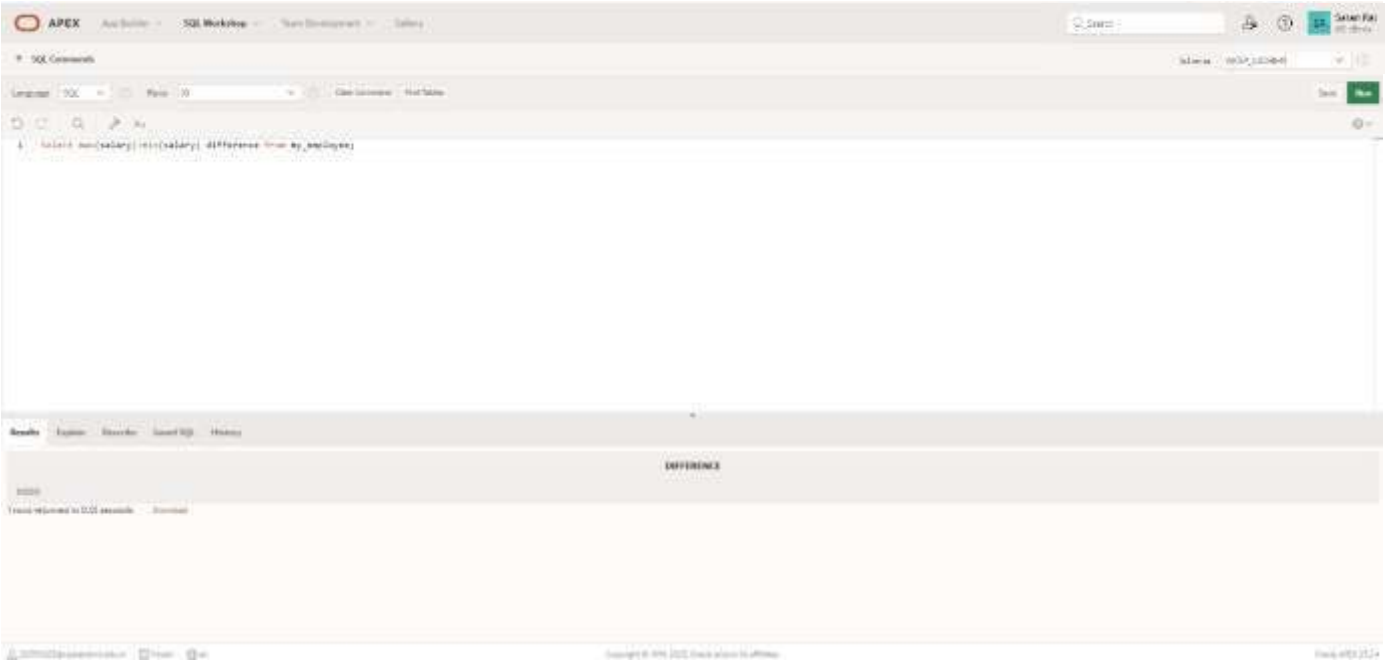
QUERY:
SELECT COUNT(DISTINCT manager_id) AS "Number of managers" FROM my_employee;

OUTPUT:




8. Find the difference between the highest and lowest salaries. Label the column DIFFERENCE
QUERY:
Select max(salary)-min(salary) difference from my_employee;

OUTPUT:



9. Create a report to display the manager number and the salary of the lowest-paid employee for that manager. Exclude anyone whose manager is not known. Exclude any groups where the minimum salary is $6,000 or less. Sort the output in descending order of salary.

QUERY:

Select manager_id,min(salary) from my_employee where manager_id is not null group by manager_id having min(salary)>6000 order by min(salary) desc

OUTPUT:

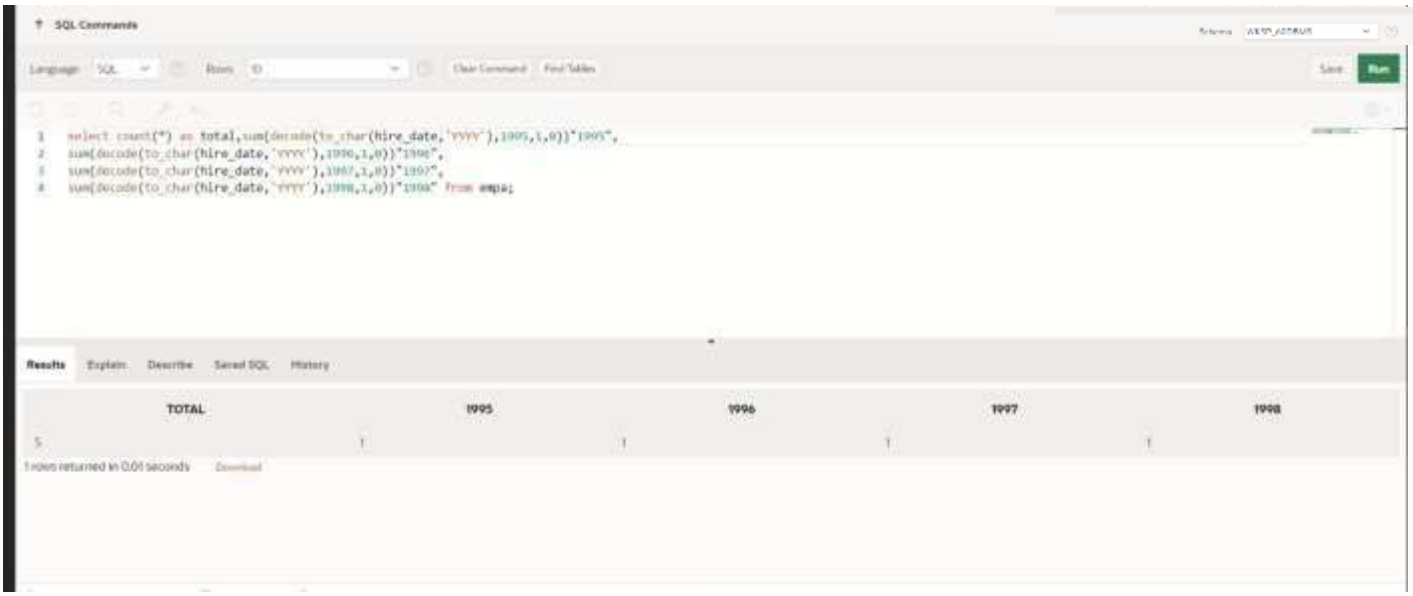
10. Create a query to display the total number of employees and, of that total, the number of employees hired in 1995, 1996, 1997, and 1998. Create appropriate column headings

QUERY:

Select count(*) as total,sum(decode(to_char(hire_date,'YYYY'),1995,1,0))"1995"sum(decode(to_char(hire_date,'YYYY'),1996,1,0))

”1996”sum(decode(to_char (hire_date, ’YYYY’),1997,1,0))”1997” sum(decode(to_char (hire_date, ’YYYY’),1998,1,0))”1998” from empa;

OUTPUT:

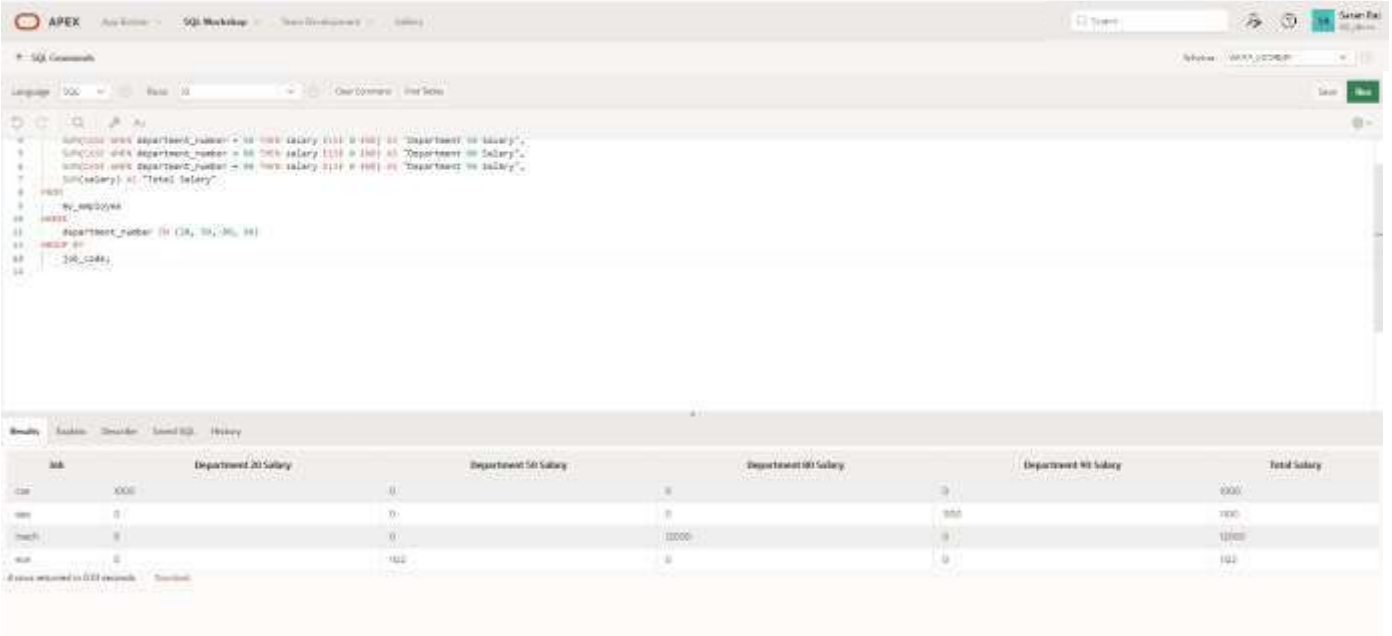



11. Create a matrix query to display the job, the salary for that job based on department number, and the total salary for that job, for departments 20, 50, 80, and 90, giving each column an appropriate heading

QUERY:

Select job_id “job”, sum(decode(dept_id,20,salary))”dept20”, sum(decode(dept_id,50,salary))”dept50”, sum(decode(dept_id,80,salary))”dept80”, sum(decode(dept_id,90,salary))”dept90” from empa;

OUTPUT:

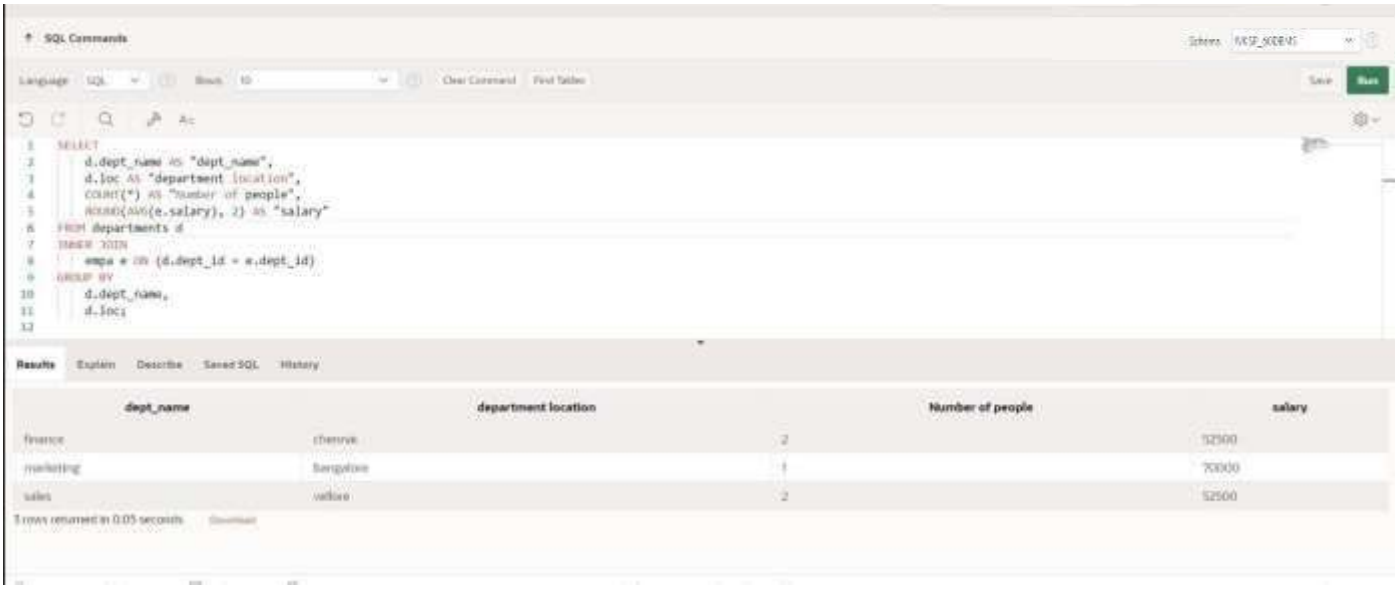


12. Write a query to display each department‘s name, location, number of employees, and the average salary for all the employees in that department. Label the column name-Location, Number of people, and salary respectively. Round the average salary to two decimal places.

QUERY:

Select d.dept_name as “dept_name”,d.loc as “department location”,count(*) as “Number of people”,round(avg(e.salary),2) as “salary” from departments d inner join empa e on (d.dept-id=e.edept_id)
Group by d.dept_name,d.loc;

OUTPUT:



| Evaluation Procedure | Marks awarded |
| --- | --- |
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

RESULT :

# SUB QUERIES

**EX_NO:9** **DATE:**

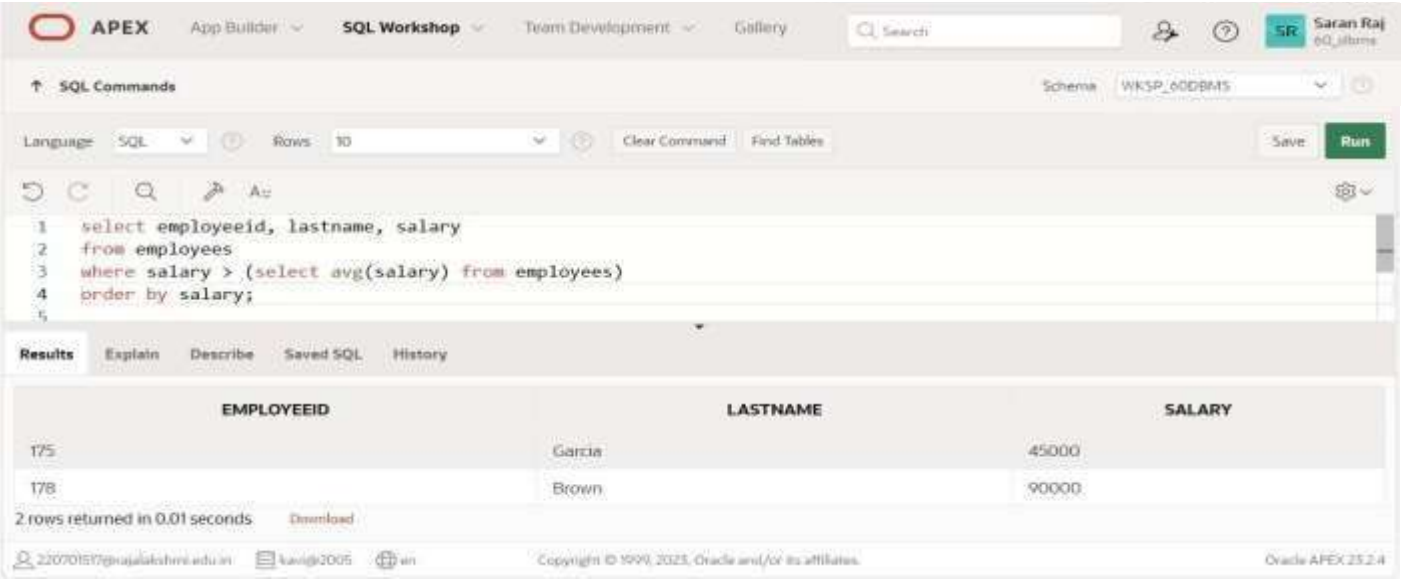
EX_NO:9 DATE:

Create a report that displays the employee number, last name, and salary of all employees who earn more than the average salary. Sort the results in order of ascending salary.

QUERY:

**select employeeid, lastname, salary from employees**

where salary > (select avg(salary) from employees) order by salary;OUTPUT:




1. Write a query that displays the employee number and last name of all employees who work in a department with any employee whose last name contains a u.

QUERY:

**select employeeid, lastname from employees**where deptid in (select deptid from employees where lastname like '%u%');OUTPUT:

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2  from  mploye s
3  wher-e  dept d  in  (lielac  deptid -from  emp, QYee5,  w-heT'e  ,H,tn.ime  I -:I k:e  'Sut.' ):;
4
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cM.PI.OYHID LA5TN'AMI;

173

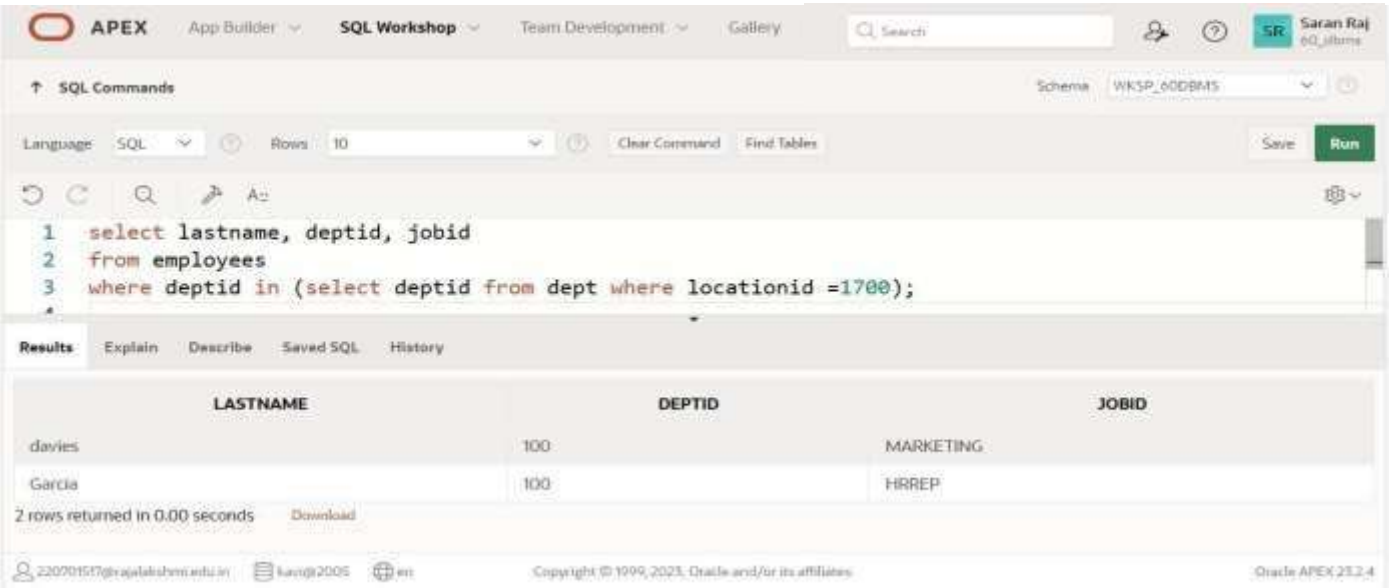
1 rows returned in 0.01 seconds

Ont.I,

2. The HR department needs a report that displays the last name, department number, and job ID of all employees whose department location ID is 1700.

QUERY:

**select lastname, deptid, jobid**
**from employees**
where deptid in (select deptid from dept where locationid =1700);OUTPUT:

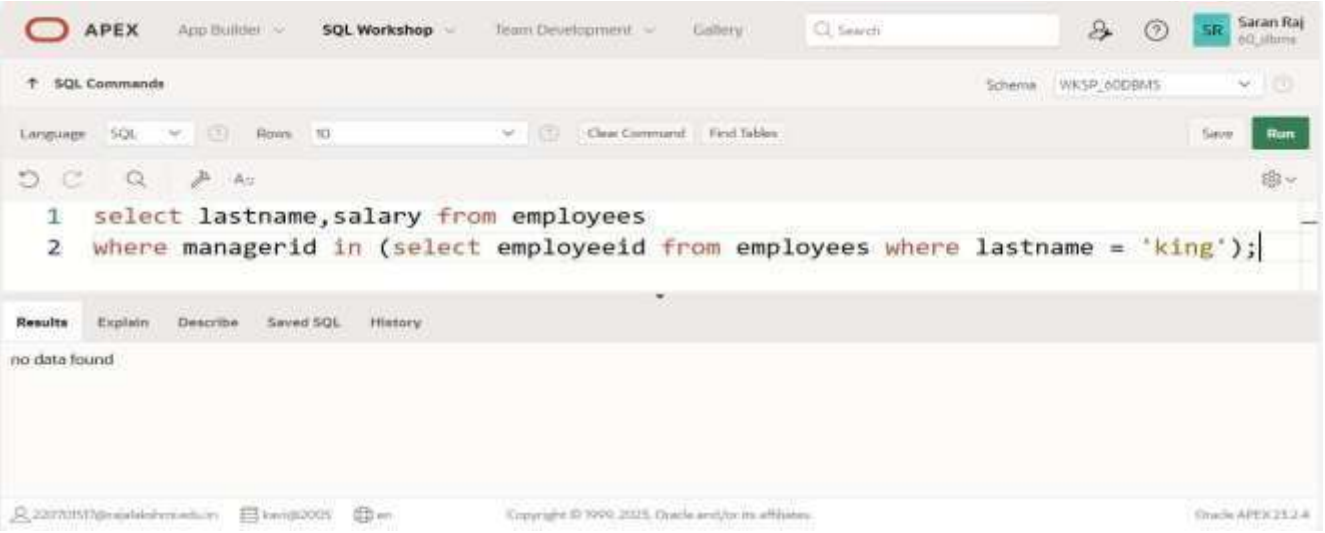



3. Create a report for HR that displays the last name and salary of every employee who reports to King.

QUERY:

**select lastname, salary**
**from employees**
where managerid in (select employeeid from employees where lastname='King');

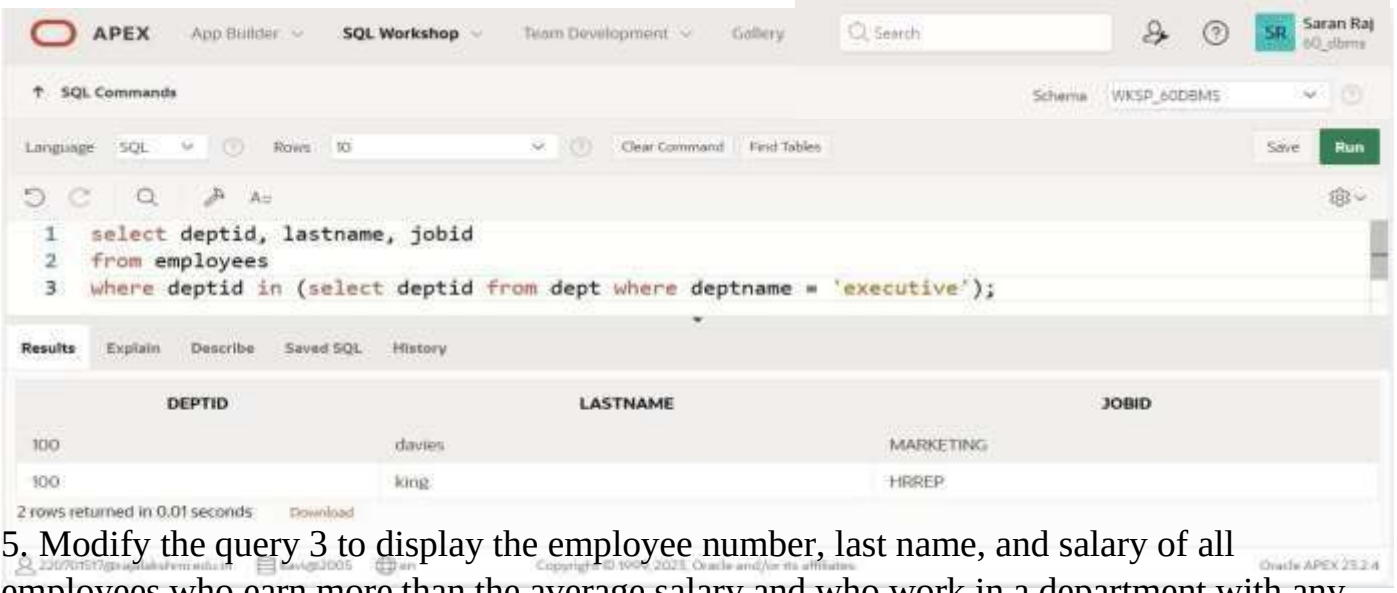
**OUTPUT:**



4. Create a report for HR that displays the department number, last name, and job ID for every employee in the Executive department.

QUERY:

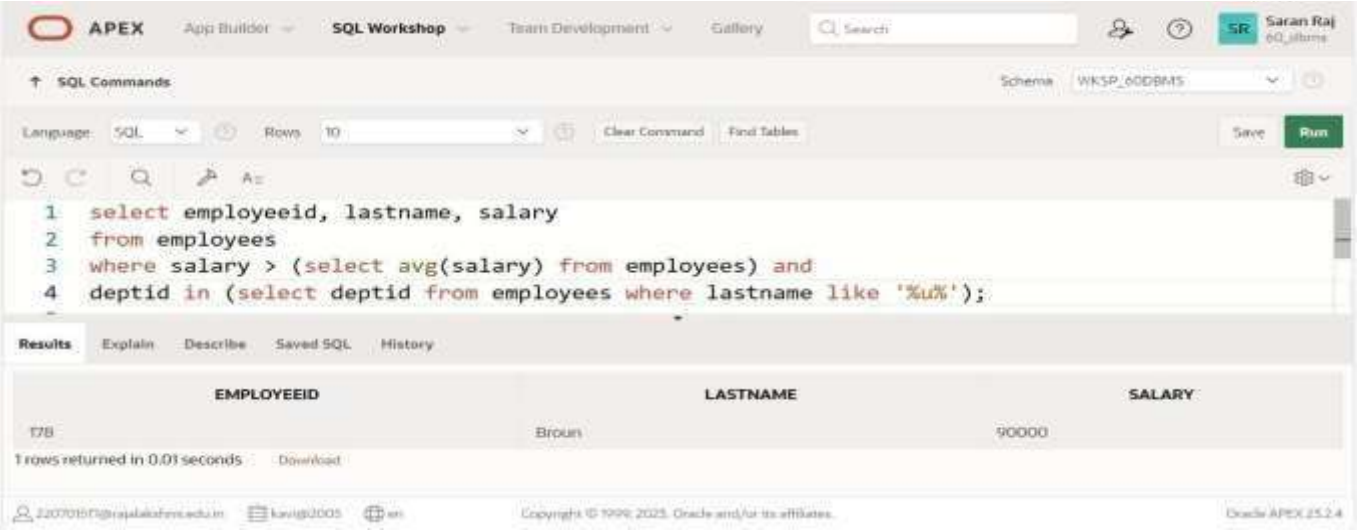
**select deptid, lastname, jobid**
**from employees**
where deptid in (select deptid from dept where deptname = 'executive');OUTPUT:




5. Modify the query 3 to display the employee number, last name, and salary of all employees who earn more than the average salary and who work in a department with any employee whose last name contains a u.

QUERY:

**select employeeid, lastname, salary**
**from employees**
where salary > (select avg(salary) from employees) and
**deptid in (select deptid from employees where lastname like '%u%');**
**OUTPUT:**



| Evaluation Procedure | Marks Awarded |
| --- | --- |
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

# USING THE SET OPERATORS

**EX.NO:10** **DATE:**

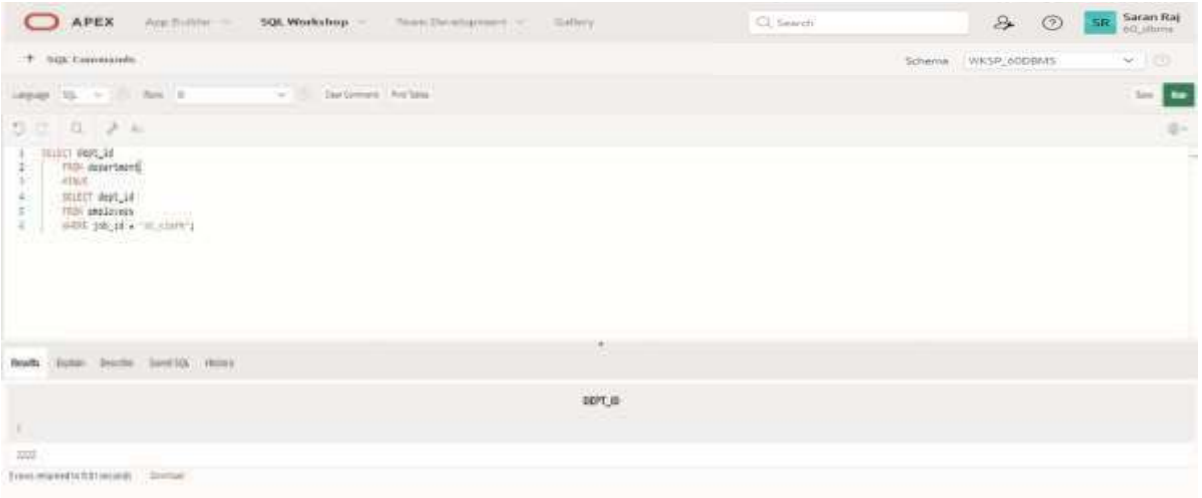
Find the Solution for the following:

1. The HR department needs a list of department IDs for departments that do not contain the job ID ST_CLERK. Use set operators to create this report.

QUERY:

```
SELECT dept_id
FROM department
MINUS
SELECT dept_id
FROM employees
WHERE job_id = 'st_clerk';
```

OUTPUT:

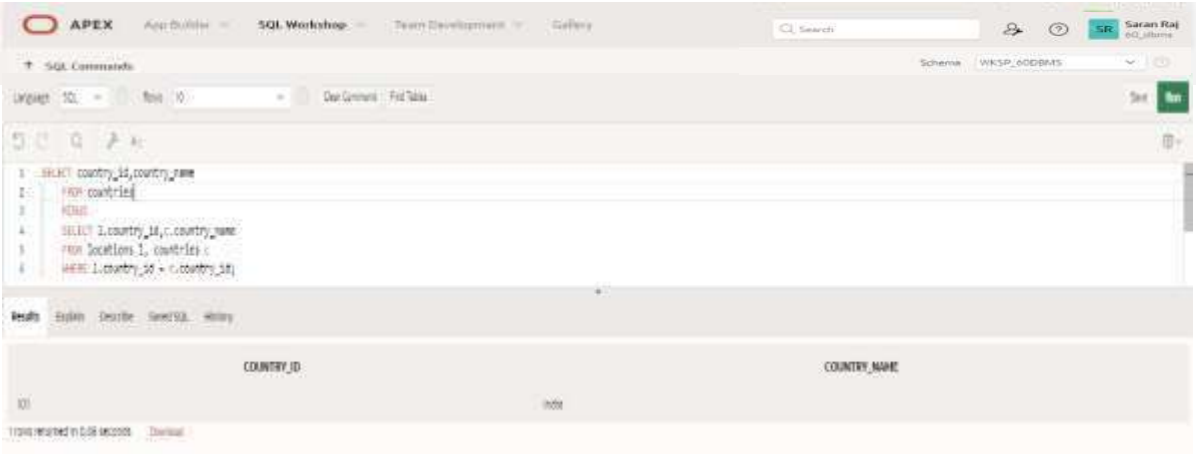


2.The HR department needs a list of countries that have no departments located in them. Display the country ID and the name of the countries. Use set operators to create this report.

QUERY:

```
SELECT country_id,country_name
FROM countries
MINUS
SELECT l.country_id,c.country_name
FROM locations l, countries c
WHERE l.country_id = c.country_id;
```

OUTPUT:

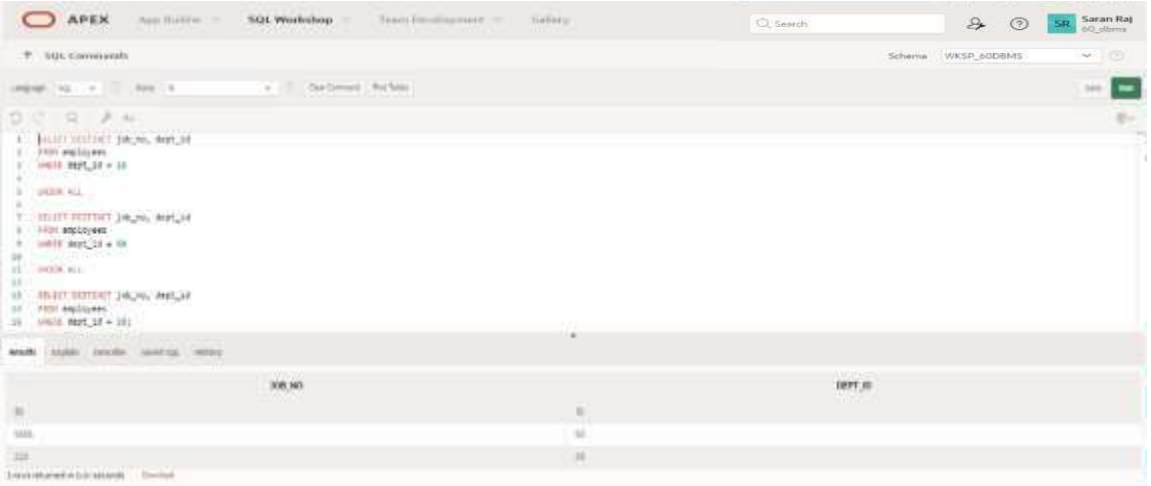


3.Produce a list of jobs for departments 10, 50, and 20, in that order. Display job ID and department ID using set operators.

QUERY:

```
SELECT DISTINCT job_no, dept_id
FROM employees
WHERE dept_id = 10

UNION ALL

SELECT DISTINCT job_no, dept_id
FROM employees
WHERE dept_id = 50

UNION ALL

SELECT DISTINCT job_no, dept_id
FROM employees
WHERE dept_id = 20;
```

OUTPUT:

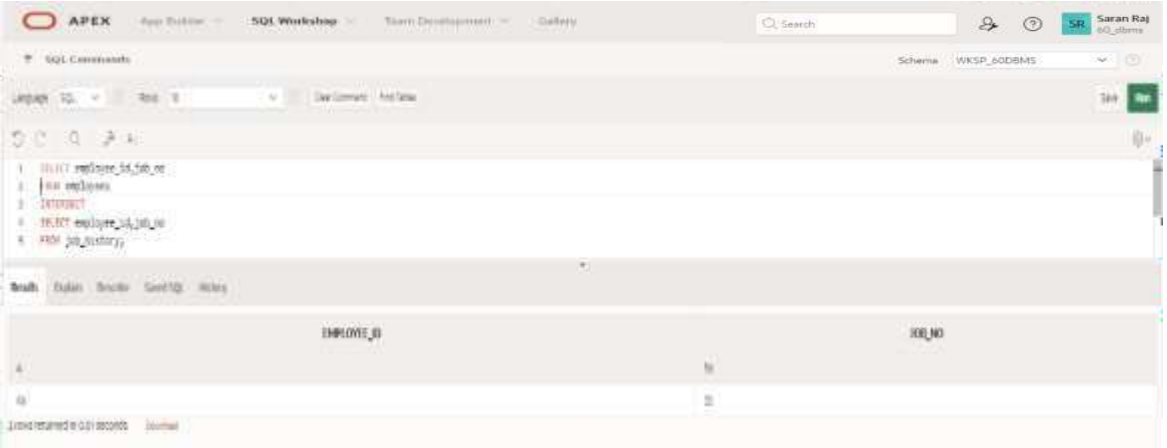


4. Create a report that lists the employee IDs and job IDs of those employees who currently have a job title that is the same as their job title when they were initially hired by the company (that is, they changed jobs but have now gone back to doing their original job).

QUERY:

```
SELECT employee_id,job_no
FROM employees
INTERSECT
SELECT employee_id,job_no
FROM job_history;
```

OUTPUT:



5. The HR department needs a report with the following specifications:

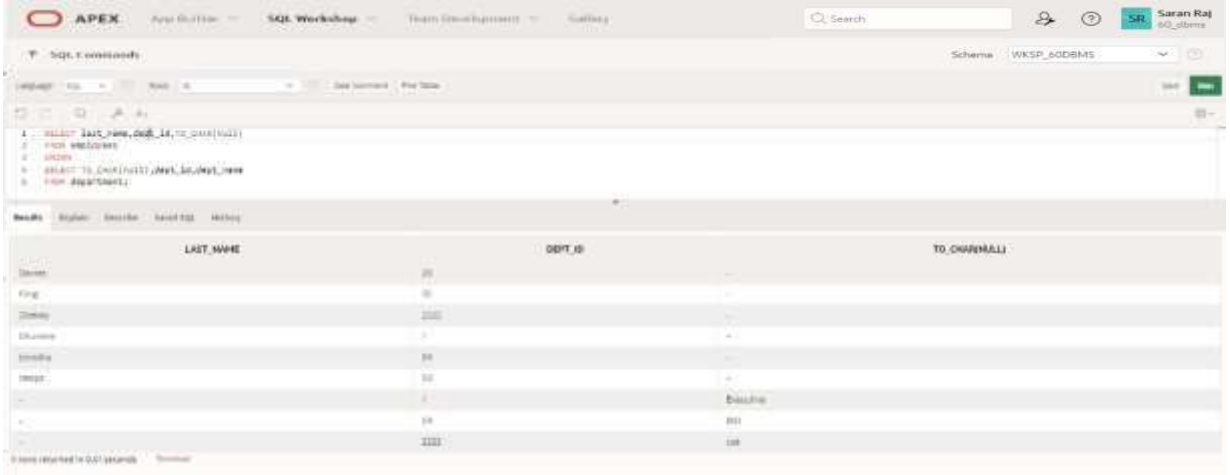
- Last name and department ID of all the employees from the EMPLOYEES table, regardless of whether or not they belong to a department.

- Department ID and department name of all the departments from the DEPARTMENTS table, regardless of whether or not they have employees working in them Write a compound query to accomplish this.

QUERY:

```
SELECT last_name,dept_id,TO_CHAR(null)
FROM employees
UNION
SELECT TO_CHAR(null),dept_id,dept_name
FROM department;
```

OUTPUT:




| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

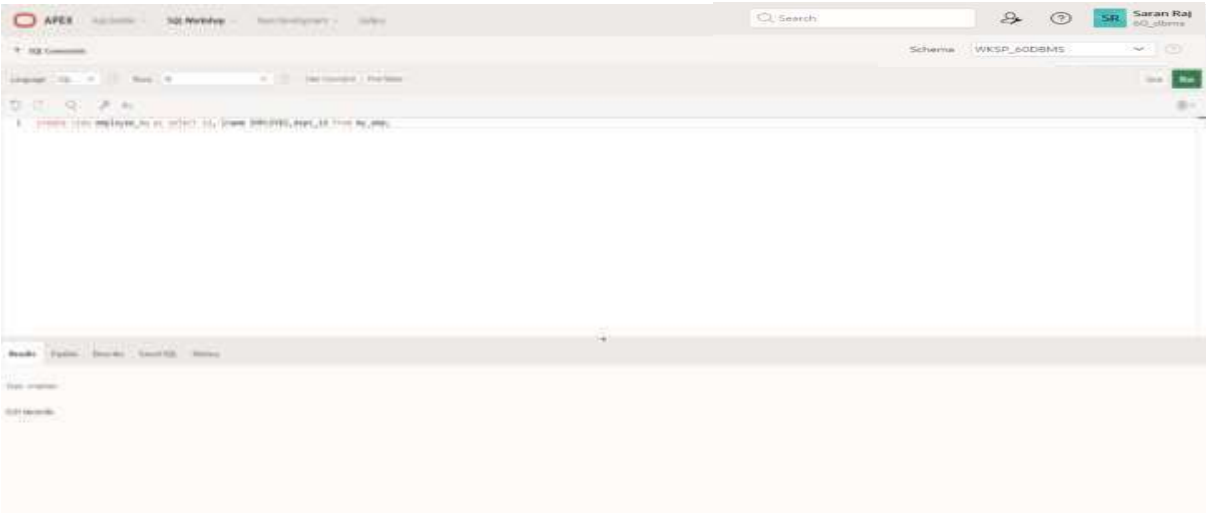
**RESULT:**

**EXNO:11** **CREATING VIEWS** **DATE:**

1. Create a view called EMPLOYEE_VU based on the employee numbers, employeenames and department numbers from the EMPLOYEES table. Change the headingfor the employee name to EMPLOYEE.

**QUERY: create view employee_vu as select id, lname EMPLOYEE,dept_id from my_emp;**

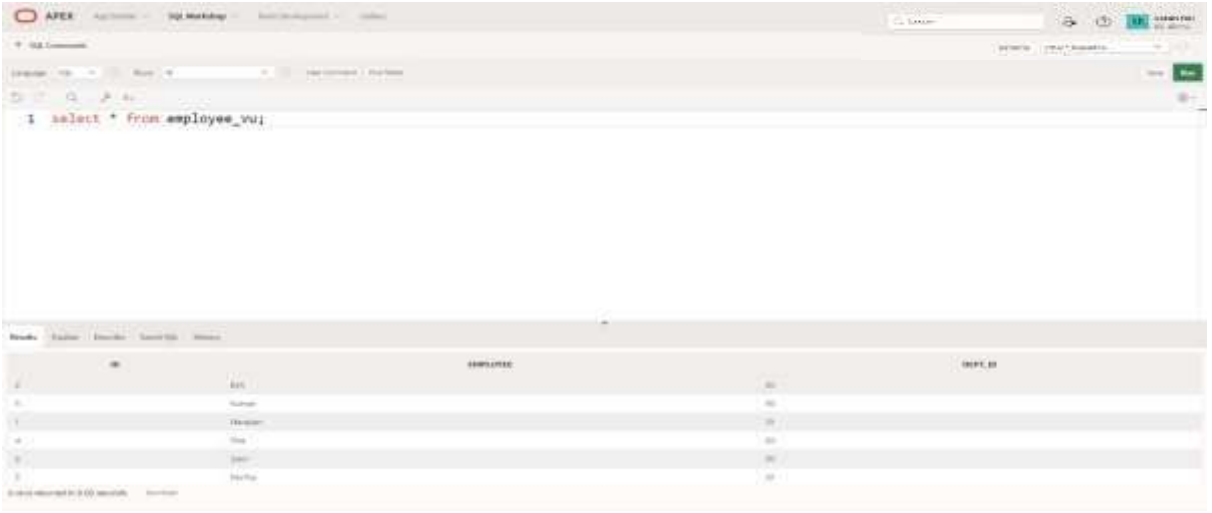
OUTPUT:



2. **Display the contents of the EMPLOYEES_VU view.**

QUERY: select * from employee_vu;

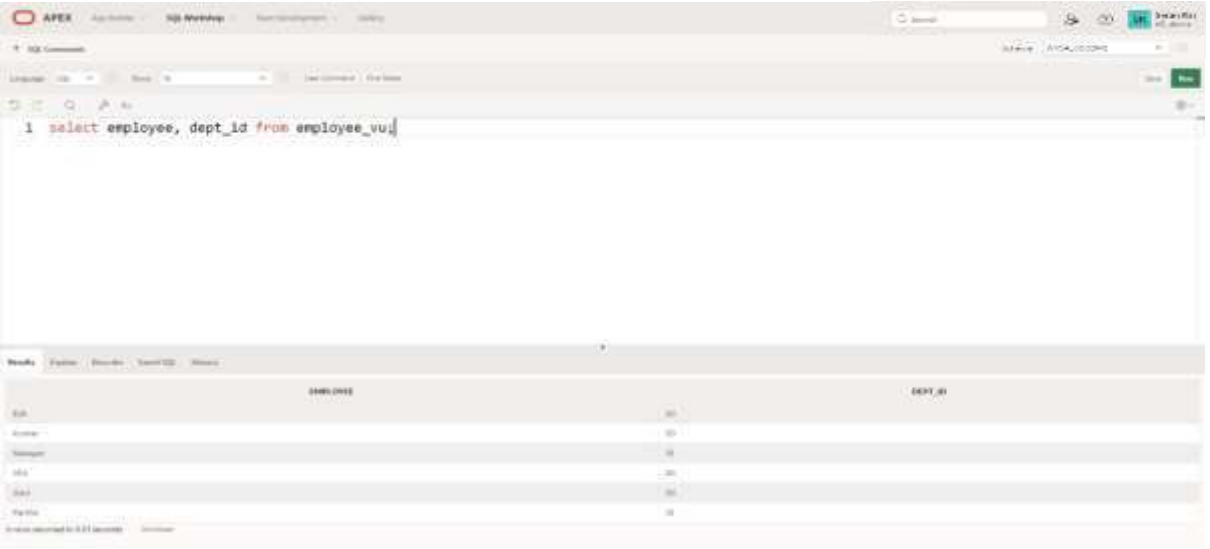
OUTPUT:



**Using your EMPLOYEES_VU view, enter a query to display all employees namesand department.**

QUERY: select employee, dept_id from employee_vu;

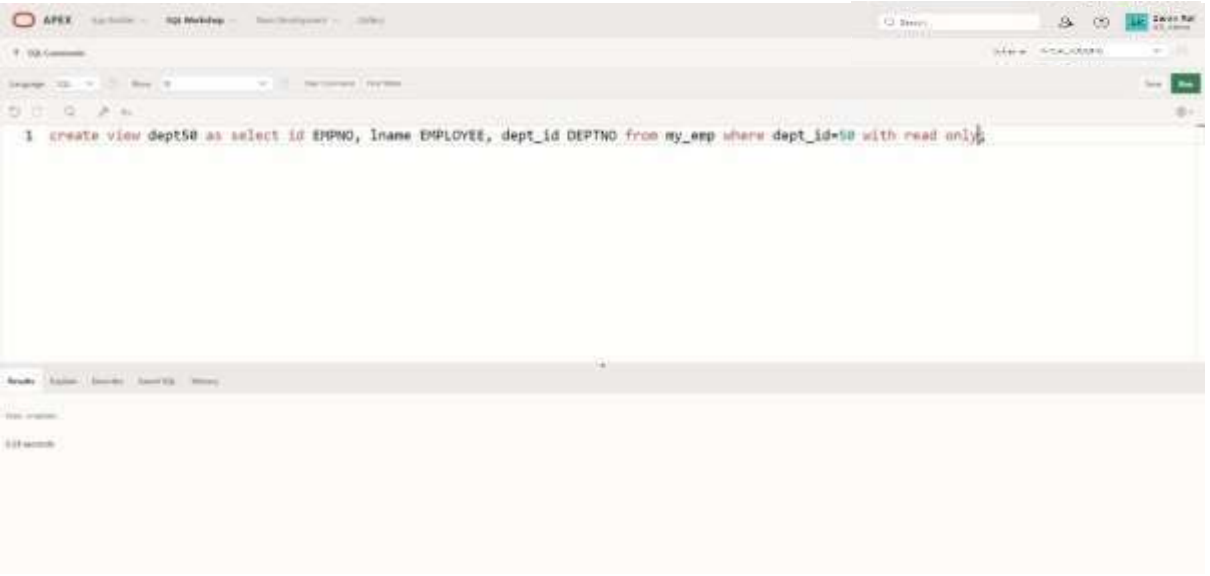
OUTPUT:




**3. Create a view named DEPT50 that contains the employee number, employee last names and department numbers for all employees in department 50.Label the view columns EMPNO, EMPLOYEE and DEPTNO. Do not allow an employee to be reassigned to another department through the view.**

QUERY: create view dept50 as select id EMPNO, lname EMPLOYEE, dept_idDEPTNO
from my_emp where dept_id=50 with read only;

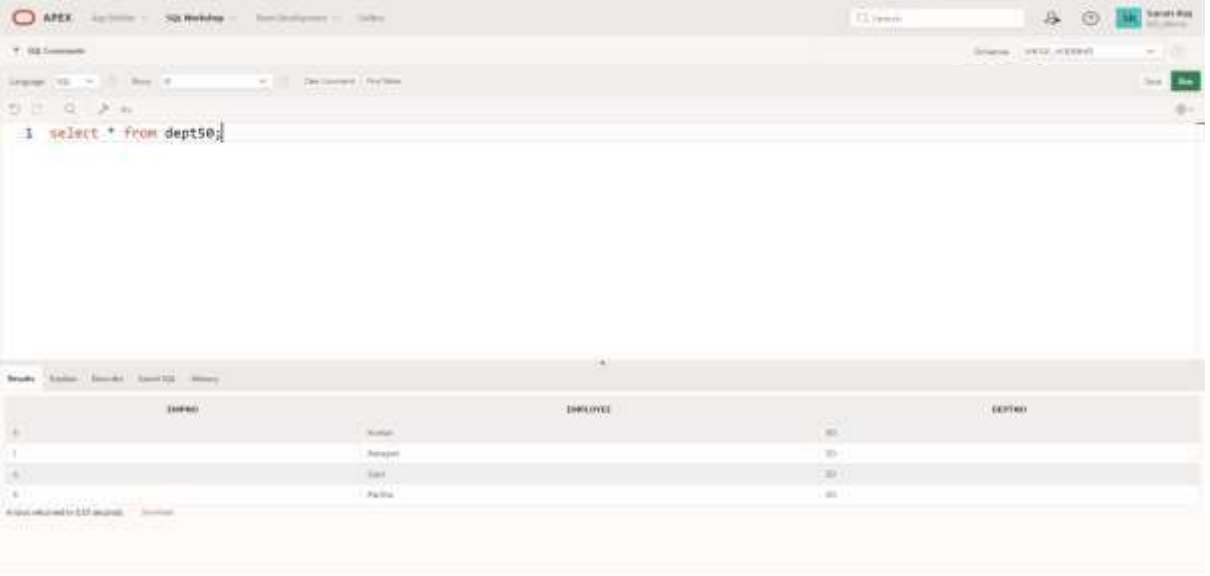
**OUTPUT:**



4. Display the structure and contents of the DEPT50 view.

**QUERY: select * from dept50;**

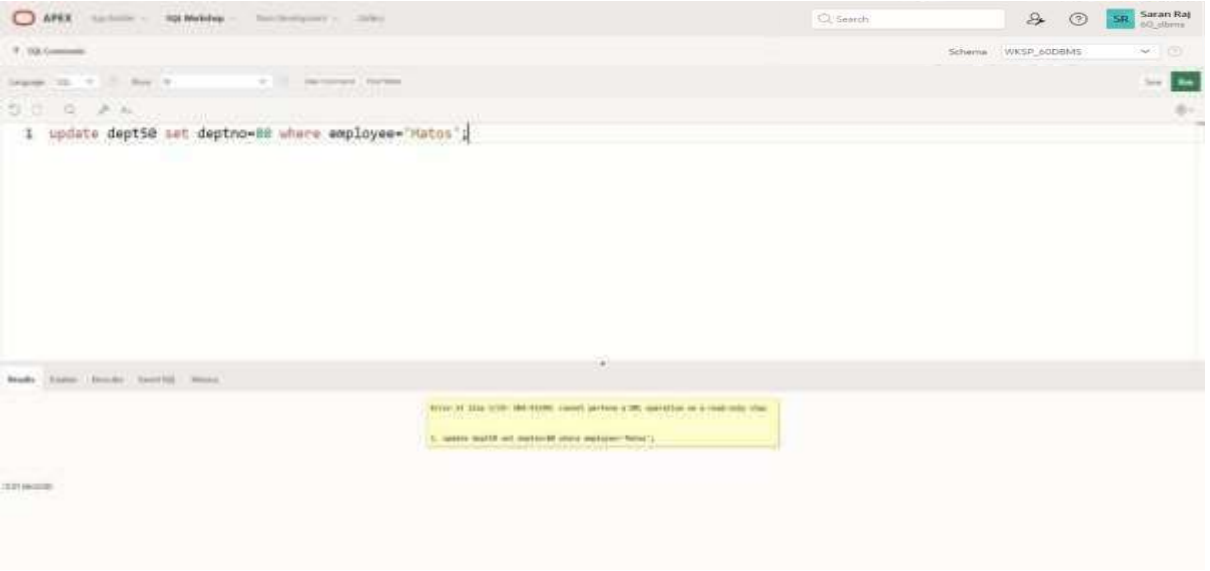
**OUTPUT:**




5. Attempt to reassign Matos to department 80.

**QUERY: update dept50 set deptno=80 where employee='Matos';**

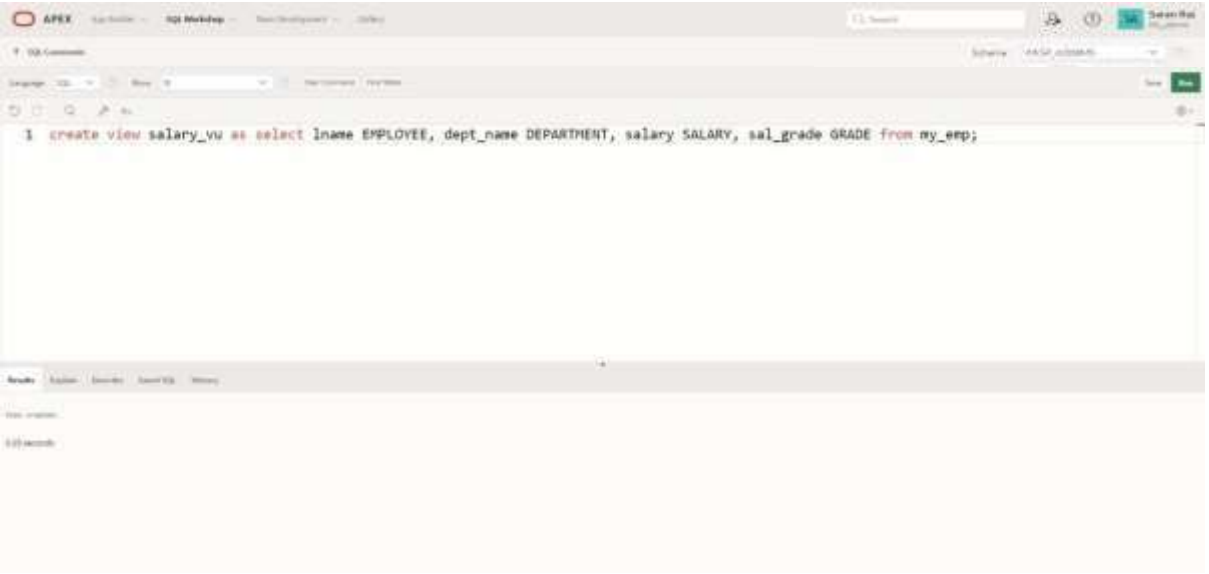
**OUTPUT:**



**6.** Create a view called SALARY_VU based on the employee last names, departmentnames, salaries, and salary grades for all employees. Use the Employees, DEPARTMENTS and JOB_GRADE tables. Label the column Employee, Department, salary, and Grade respectively.

**QUERY: create view salary_vu as select lname EMPLOYEE, dept_name DEPARTMENT, salary SALARY, sal_grade GRADE from my_emp;**

OUTPUT:




| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

# EXNO:12 PRIMARY KEY, FOREIGN KEY AND CHECK CONSTRAINTS

**1.** What is the purpose of a

- **PRIMARY KEY – They provide a unique value that can identify a specific row in a table**
- FOREIGN KEY - to link data between tables
- **CHECK CONSTRAINT - to limit the value range that can be placed in a column**

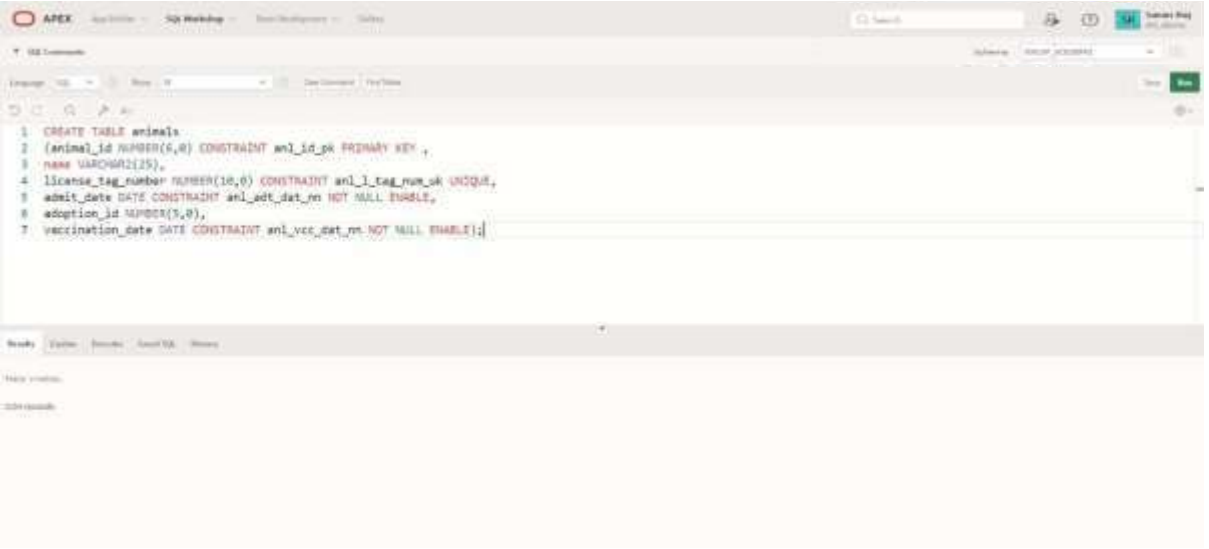
**2.** Using the column information for the animals table below, name constraints where applicable at the table level, otherwise name them at the column level. Define the primary key (animal_id). The license_tag_number must be unique. The admit_date andvaccination_date columns cannot contain null values.

**animal_id NUMBER(6) - PRIMARY KEY**
**name VARCHAR2(25)**
license_tag_number NUMBER(10)- UNIQUE
admit_date DATE- NOT NULL
**adoption_id NUMBER(5),**
**vaccination_date DATE- NOT NULL**

**3.** Create the animals table. Write the syntax you will use to create the table.

**QUERY: CREATE TABLE animals (animal_id NUMBER(6,0) CONSTRAINT** anl_id_pk PRIMARY KEY , name VARCHAR2(25), license_tag_number NUMBER(10,0) CONSTRAINT anl_l_tag_num_uk UNIQUE, admit_date DATE CONSTRAINT anl_adt_dat_nn NOT NULL ENABLE,adoption_id NUMBER(5,0),vaccination_date DATE CONSTRAINT anl_vcc_dat_nn NOT NULL ENABLE);

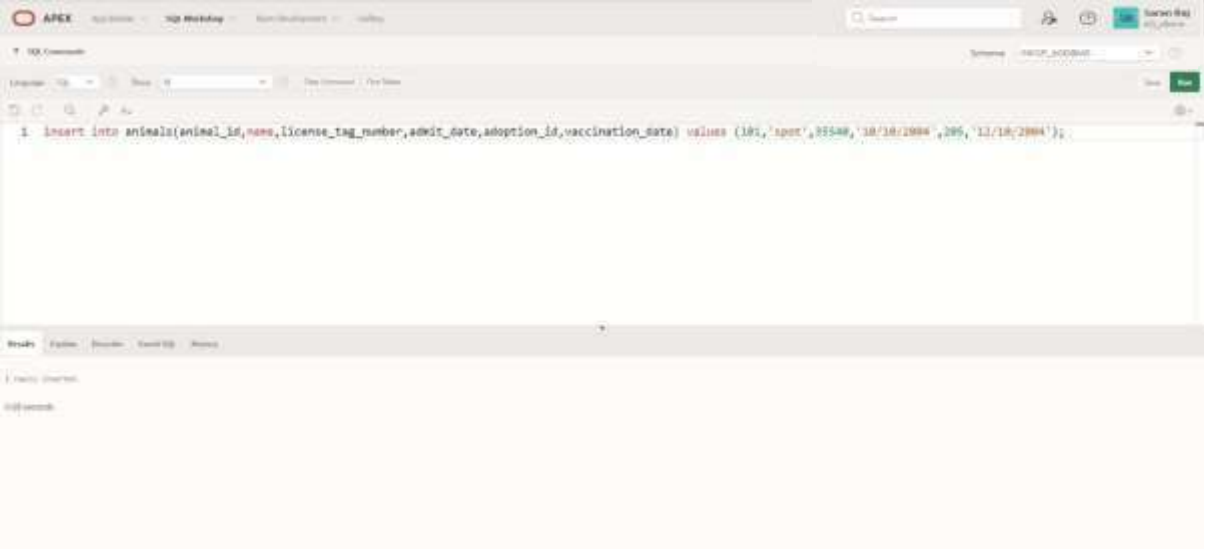
**OUTPUT:**



**4.** Enter one row into the table. Execute a SELECT * statement to verify your input.

**QUERY:insert into animals(animal_id,name,license_tag_number,admit_date,adoption_id, vaccination_date) values (101,'spot',35540,'10/10/2004',205,'12/10/2004');**

OUTPUT:




## 5. What are the restrictions on defining a CHECK constraint?

Ans: If you define a CHECK constraint on a column it will allow only certain values for this column. If you define a CHECK constraint on a table it can limit the values incertain columns based on values in other columns in the row.

| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

# EXERCISE 13

## Creating Views

1. What are three uses for a view from a DBA's perspective?

- Restrict access and display selective columns
- **Reduce complexity of queries from other internal systems. So, providing a way to view same data in a different manner.**
- Let the app code rely on views and allow the internal implementation of tables to be modified later.

2. Create a simple view called view_d_songs that contains the ID, title and artist from the DJs on Demand table for each "New Age" type code. In the subquery, use the alias "Song Title" for the title column.

```
CREATE VIEW view_d_songs AS
SELECT d_songs.id, d_songs.title "Song Title", d_songs.artist
from d_songs INNER JOIN d_types ON d_songs.type_code = d_types.code
where d_types.description = 'New Age';
```

3. SELECT * FROM view_d_songs. What was returned?

Results Explain Describe Saved SQL History

| ID | Song Title | ARTIST |
|---|---|---|
| 47 | Hurrah for Today | The Jubilant Trio |
| 49 | Lets Celebrate | The Celebrants |

2 rows returned in 0.00 seconds Download

4. REPLACE view_d_songs. Add type_code to the column list. Use aliases for all columns.
Or use alias after the CREATE statement as shown.

```
CREATE OR REPLACE VIEW view_d_songs AS
SELECT d_songs.id, d_songs.title "Song Title", d_songs.artist, d_songs.type_code
from d_songs INNER JOIN d_types ON d_songs.type_code = d_types.code
where d_types.description = 'New Age';
```

5. Jason Tsang, the disk jockey for DJs on Demand, needs a list of the past events and those planned for the coming months so he can make arrangements for each event's equipment setup. As the company manager, you do not want him to have access to the price that clients paid for their events. Create a view for Jason to use that displays the name of the event, the event date, and the theme description. Use aliases for each column name.

```
CREATE OR REPLACE VIEW view_d_events_pkgs AS
SELECT evt.name "Name of Event", TO_CHAR(evt.event_date, 'dd-Month-yyyy') "Event date",
thm.description "Theme description"
FROM d_events evt INNER JOIN d_themes thm ON evt.theme_code = thm.code
WHERE evt.event_date <= ADD_MONTHS(SYSDATE,1);
```

6. It is company policy that only upper-level management be allowed access to individual employee salaries. The department managers, however, need to know the minimum, maximum, and averagesalaries, grouped by department. Use the Oracle database to prepare a view that displays the needed information for department managers.

```
CREATE OR REPLACE VIEW view_min_max_avg_dpt_salary ("Department Id", "Department Name",
"Max Salary", "Min Salary", "Average Salary") AS
SELECT dpt.department_id, dpt.department_name, MAX(NVL(emp.salary,0)),
MIN(NVL(emp.salary,0)), ROUND(AVG(NVL(emp.salary,0)),2)
FROM departments dpt LEFT OUTER JOIN employees emp ON dpt.department_id =
emp.department_id
GROUP BY (dpt.department_id, dpt.department_name);
```

# DML Operations and Views

Use the DESCRIBE statement to verify that you have tables named copy_d_songs, copy_d_events, copy_d_cds, and copy_d_clients in your schema. If you don't, write a query to create a copy of each.

**1.** Query the data dictionary USER_UPDATABLE_COLUMNS to make sure the columns in the base tables will allow UPDATE, INSERT, or DELETE. All table names in the data dictionary are stored in uppercase.

SELECT owner, table_name, column_name, updatable,insertable, deletable FROM user_updatable_columns WHERE LOWER(table_name) = 'copy_d_songs';

**SELECT owner, table_name, column_name, updatable,insertable, deletable FROM user_updatable_columns WHERE LOWER(table_name) = 'copy_d_events';**

SELECT owner, table_name, column_name, updatable,insertable, deletable FROM user_updatable_columns WHERE LOWER(table_name) = 'copy_d_cds';

**2.** Use the CREATE or REPLACE option to create a view of *all* the columns in the copy_d_songs table called view_copy_d_songs.

**CREATE OR REPLACE VIEW view_copy_d_songs AS**
**SELECT ***
**FROM copy_d_songs;**

**SELECT * FROM view_copy_d_songs;**

**3.** Use view_copy_d_songs to INSERT the following data into the underlying copy_d_songs table. Execute a SELECT * from copy_d_songs to verify your DML command. See the graphic.

| ID | TITLE | DURATION | ARTIST | TYPE_CODE |
|---|---|---|---|---|
| 88 | Mello Jello | 2 | The What | 4 |

**INSERT INTO view_copy_d_songs(id,title,duration,artist,type_code)**
**VALUES(88,'Mello Jello','2 min','The What',4);**

**4.** Create a view based on the DJs on Demand COPY_D_CDS table. Name the view read_copy_d_cds. Select all columns to be included in the view. Add a WHERE clause to restrict the year to 2000. Add the WITH READ ONLY option.

CREATE OR REPLACE VIEW read_copy_d_cds ASSELECT *
**FROM copy_d_cds**
**WHERE year = '2000'**
**WITH READ ONLY ;**

SELECT * FROM read_copy_d_cds;

**5.** Using the read_copy_d_cds view, execute a DELETE FROM read_copy_d_cds WHERE cd_number = 90;

ORA-42399: cannot perform a DML operation on a read-only view

**6.** Use REPLACE to modify read_copy_d_cds. Replace the READ ONLY option with WITH CHECK

OPTION CONSTRAINT ck_read_copy_d_cds. Execute a SELECT * statement to verify that the view exists.

CREATE OR REPLACE VIEW read_copy_d_cds ASSELECT *
**FROM copy_d_cds**
**WHERE year = '2000'**
WITH CHECK OPTION CONSTRAINT ck_read_copy_d_cds;

**7.** Use the read_copy_d_cds view to delete any CD of year 2000 from the underlying copy_d_cds.

**DELETE FROM read_copy_d_cds**
**WHERE year = '2000';**

**8.** Use the read_copy_d_cds view to delete cd_number 90 from the underlying copy_d_cds table.

**DELETE FROM read_copy_d_cds**
**WHERE cd_number = 90;**

**9.** Use the read_copy_d_cds view to delete year 2001 records.

**DELETE FROM read_copy_d_cds**
**WHERE year = '2001';**

**10.** Execute a SELECT * statement for the base table copy_d_cds. What rows were deleted?

Only the one in problem 7 above, not the one in 8 and 9

**11.** What are the restrictions on modifying data through a view?

DELETE.INSERT,MODIFY restricted if it contains:Group

functions
**GROUP BY CLAUSE**
**DISTINCT**
pseudocolumn ROWNUM Keyword

**12.** What is Moore's Law? Do you consider that it will continue to apply indefinitely? Support your opinion with research from the internet.

It roughly predicted that computing power nearly doubles every year. But Moore also said in 2005 that as per nature of exponential functions, this trend may not continue forever.

**13.** What is the "singularity" in terms of computing?

**Singularity is the hypothesis that the invention of artificial superintelligence will abruptly trigger runaway technological growth, resulting in unfathomable changes to human civilization**

# Managing Views

1. Create a view from the copy_d_songs table called view_copy_d_songs that includes only the title and artist. Execute a SELECT * statement to verify that the view exists.

```
CREATE OR REPLACE VIEW view_copy_d_songs AS
SELECT title, artist
FROM copy_d_songs;

SELECT * FROM view_copy_d_songs;
```

2. Issue a DROP view_copy_d_songs. Execute a SELECT * statement to verify that the view has been deleted.

```
DROP VIEW view_copy_d_songs;
SELECT * FROM view_copy_d_songs;

ORA-00942: table or view does not exist
```

3. Create a query that selects the last name and salary from the Oracle database. Rank the salaries from highest to lowest for the top three employees.

```
SELECT * FROM
(SELECT last_name, salary FROM employees ORDER BY salary DESC)
WHERE ROWNUM <= 3;
```

4. Construct an inline view from the Oracle database that lists the last name, salary, department ID, and maximum salary for each department. Hint: One query will need to calculate maximum salary by department ID.

```
SELECT empm.last_name, empm.salary, dptmx.department_id
FROM
(SELECT dpt.department_id, MAX(NVL(emp.salary,0)) max_dpt_sal
FROM departments dpt LEFT OUTER JOIN employees emp ON dpt.department_id =
emp.department_id
GROUP BY dpt.department_id) dptmx LEFT OUTER JOIN employees empm ON
dptmx.department_id = empm.department_id
WHERE NVL(empm.salary,0) = dptmx.max_dpt_sal;
```

5. Create a query that will return the staff members of Global Fast Foods ranked by salary from lowest to highest.

```
SELECT ROWNUM,last_name, salaryFROM
(SELECT * FROM f_staffs ORDER BY SALARY);
```

# Indexes and Synonyms

1. What is an index and what is it used for?

**Definition**: These are schema objects which make retrieval of rows from table faster.

**Purpose**: An index provides direct and fast access to row in table. They provide indexed path to locate data quickly, so hereby reduce necessity of heavy disk input/output operations.

2. What is a ROWID, and how is it used?

**Indexes use ROWID's (base 64 string representation of the row address containing block identifier, row location in the block and the database file identifier) which is the fastest way to access any particular row.**

3. When will an index be created automatically?

**Primary key/unique key use already existing unique index but if index is not present already, it is created while applying unique/primary key constraint.**

4. Create a nonunique index (foreign key) for the DJs on Demand column (cd_number) in the D_TRACK_LISTINGS table. Use the Oracle Application Express SQL Workshop Data Browser to confirm that the index was created.

```
CREATE INDEX d_tlg_cd_number_fk_ion
 d_track_listings (cd_number);
```

5. Use the join statement to display the indexes and uniqueness that exist in the data dictionary for the DJs on Demand D_SONGS table.

```
SELECT ucm.index_name, ucm.column_name, ucm.column_position, uix.uniqueness
FROM user_indexes uix INNER JOIN user_ind_columns ucm ON uix.index_name = ucm.index_name
WHERE ucm.table_name = 'D_SONGS';
```

6. Use a SELECT statement to display the index_name, table_name, and uniqueness from the data dictionary USER_INDEXES for the DJs on Demand D_EVENTS table.

```
SELECT index_name, table_name,uniqueness FROM user_indexes where table_name ='D_EVENTS';
```

7. Write a query to create a synonym called dj_tracks for the DJs on Demand d_track_listings table.

```
CREATE SYNONYM dj_tracks FOR d_track_listings;
```

8. Create a function-based index for the last_name column in DJs on Demand D_PARTNERS table that makes it possible not to have to capitalize the table name for searches. Write a SELECT statement that would use this index.

```
CREATE INDEX d_ptr_last_name_idx
ON d_partners(LOWER(last_name));
```

9. Create a synonym for the D_TRACK_LISTINGS table. Confirm that it has been created by querying the data dictionary.

```
CREATE SYNONYM dj_tracks2 FOR d_track_listings;


SELECT * FROM user_synonyms WHERE table_NAME = UPPER('d_track_listings');
```

10. Drop the synonym that you created in question

```
DROP SYNONYM dj_tracks2;
```

| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

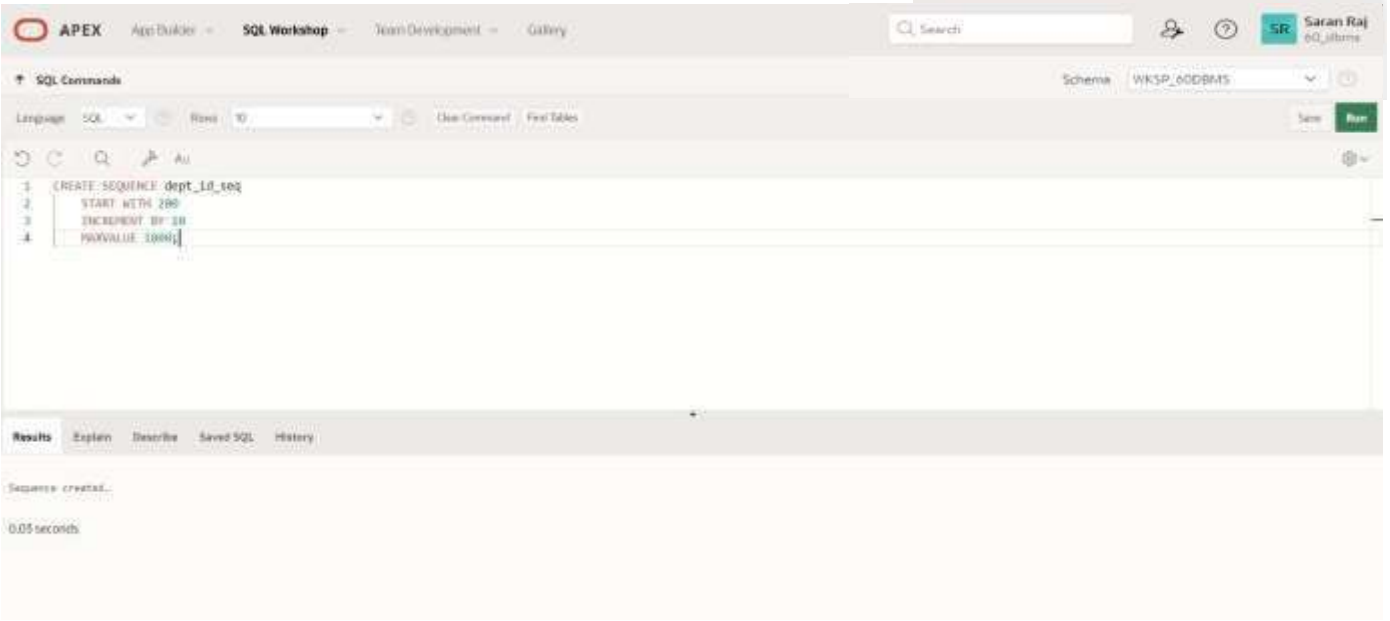
## OTHER DATABASE OBJECTS

EX_NO:14 DATE:

1.) Create a sequence to be used with the primary key column of the DEPT table. The sequence should start at 200 and have a maximum value of 1000. Have your sequence increment by ten numbers. Name the sequence DEPT_ID_SEQ

QUERY:

CREATE SEQUENCE dept_id_seq START WITH 200 INCREMENT BY 10 MAXVALUE 1000;



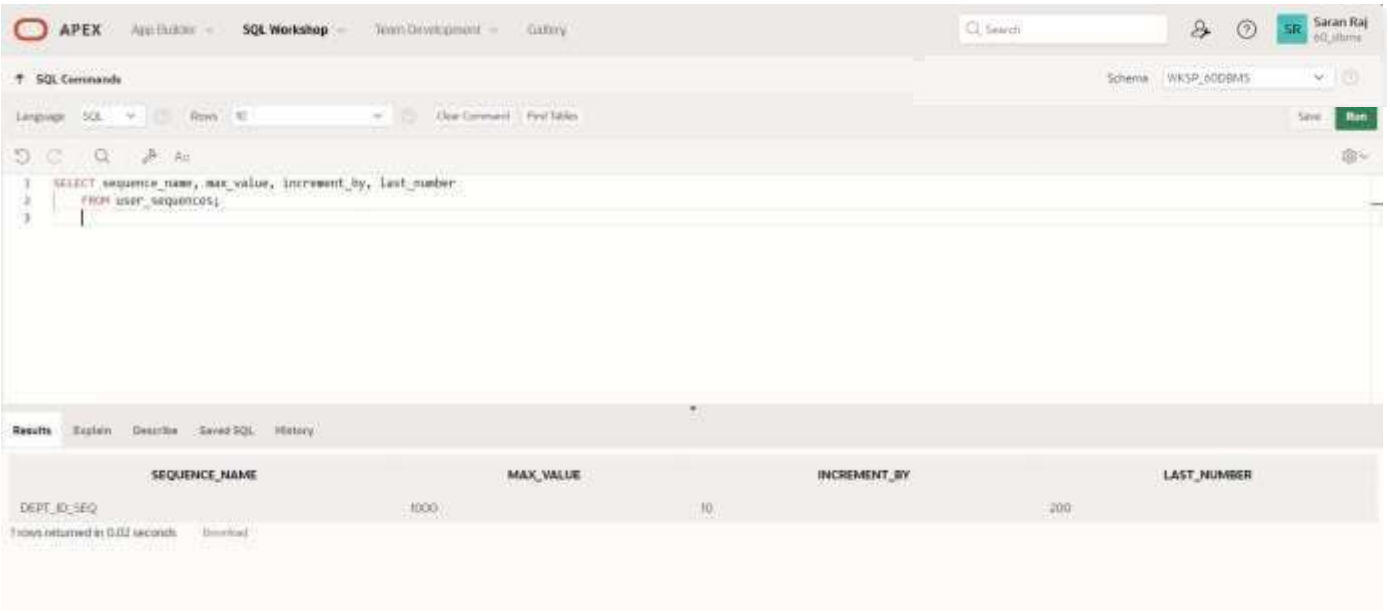

OUTPUT:

2.) Write a query in a script to display the following information about your sequences: sequence name, maximum value, increment size, and last number

QUERY:

SELECT sequence_name, max_value, increment_by, last_number FROM user_sequences;

OUTPUT:

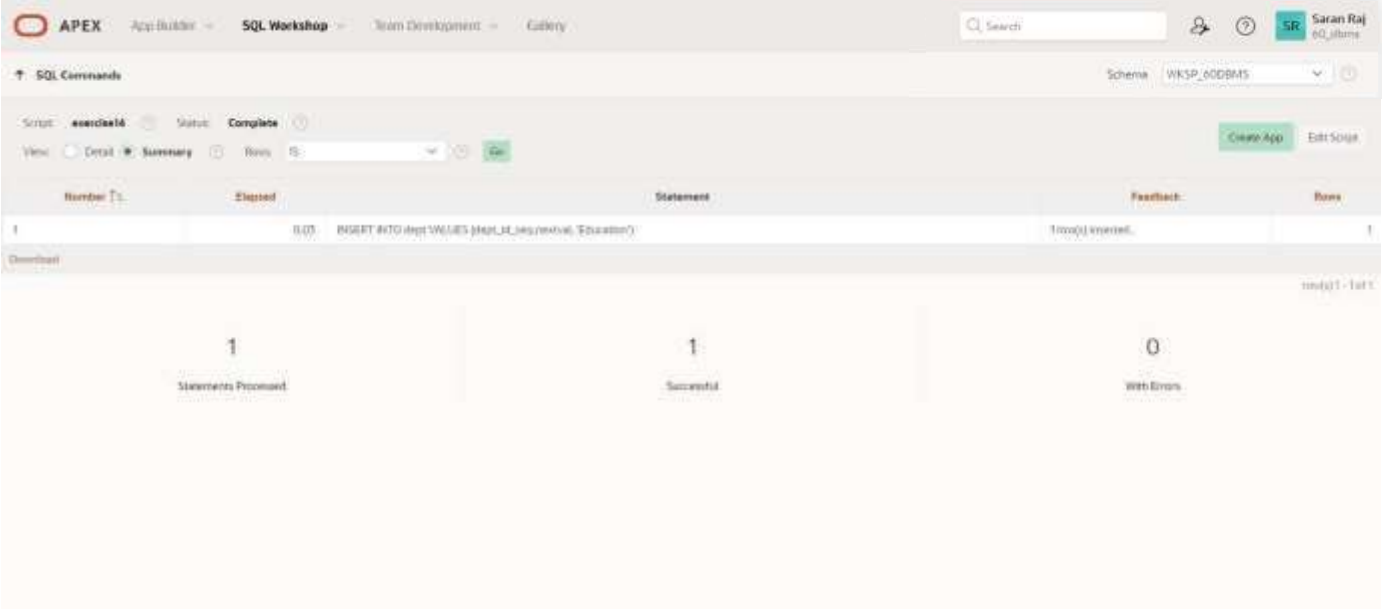


3.) Write a script to insert two rows into the DEPT table. Name your script lab12_3.sql. Be sure to use the sequence that you created for the ID column. Add two departments named Education and Administration. Confirm your additions. Run the commands in your script.

QUERY:

INSERT INTO dept VALUES (dept_id_seq.nextval, 'Education');

**OUTPUT:**

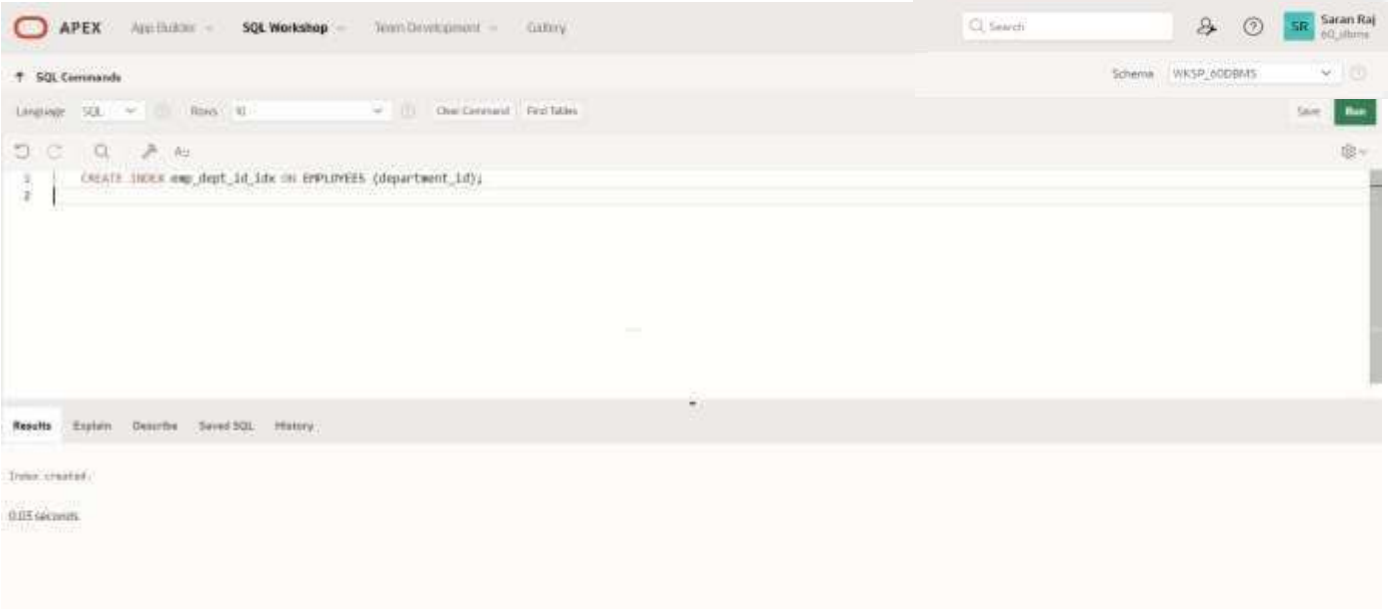



4.) Create a nonunique index on the foreign key column (DEPT_ID) in the EMP table.

QUERY:

CREATE INDEX emp_dept_id_idx ON EMPLOYEES (department_id);

**OUTPUT:**

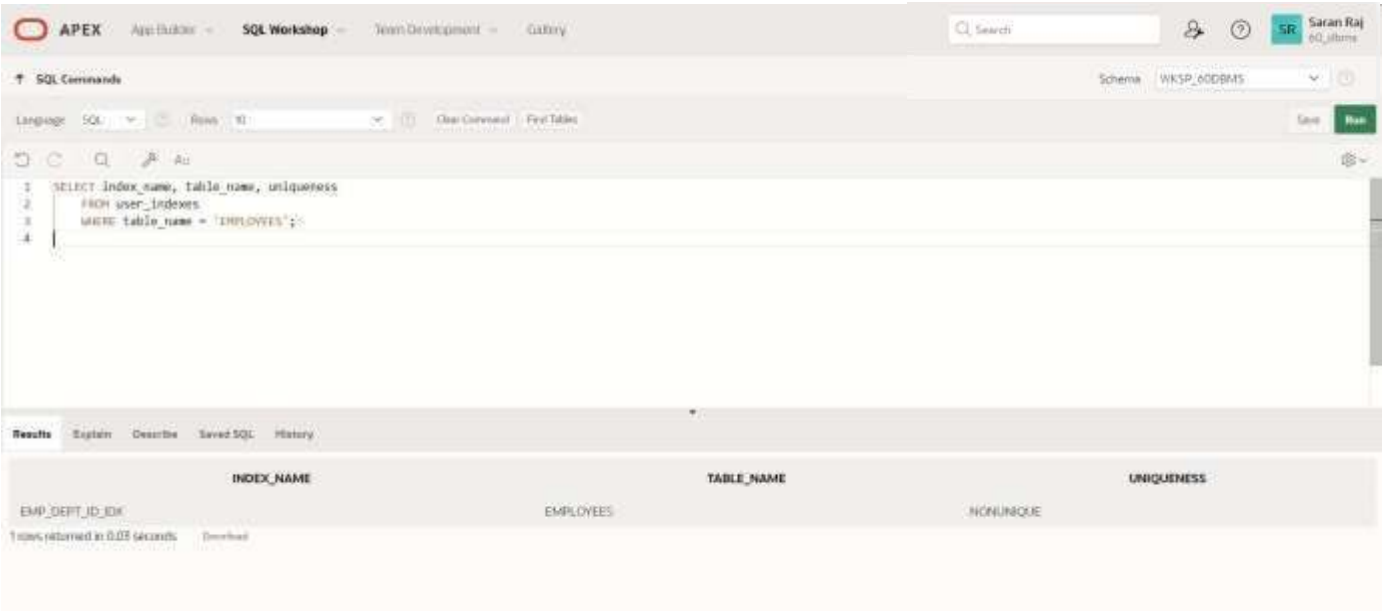


5.) Display the indexes and uniqueness that exist in the data dictionary for the EMP table.

**QUERY:**

SELECT index_name,table_name,uniqueness FROM user_indexes WHERE table_name='EMPLOYEES';

**OUTPUT:**




| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

**CONTROLLING USER ACCESS**

EX_NO:15 DATE:

1. What privilege should a user be given to log on to the Oracle Server? Is this a system or an object privilege?

The CREATE SESSION system privilege

2. What privilege should a user be given to create tables?

The CREATE TABLE privilege

3. If you create a table, who can pass along privileges to other users on your table?

You can, or anyone you have given those privileges to by using the WITH GRANT OPTION.

4. You are the DBA. You are creating many users who require the same system privileges. What should you use to make your job easier?

Create a role containing the system privileges and grant the role to the users

5. What command do you use to change your password?

The ALTER USER statement

6. Grant another user access to your DEPARTMENTS table. Have the user grant you query access to his or her DEPARTMENTS table.

Team 2 executes the GRANT statement. GRANT select ON departments TO <user1>;

Team 1 executes the GRANT statement. GRANT select ON departments TO <user2>;

7. Query all the rows in your DEPARTMENTS table.

SELECT * FROM departments;

8. Add a new row to your DEPARTMENTS table. Team 1 should add Education as department number 500. Team 2 should add Human Resources department number 510. Query the other team's table.

Team 1 executes this INSERT statement. INSERT INTO departments(department_id, department_name) VALUES (500, 'Education'); COMMIT;

Team 2 executes this INSERT statement. INSERT INTO departments(department_id, department_name) VALUES (510, 'Administration'); COMMIT;

9. Query the USER_TABLES data dictionary to see information about the tables that you own.

SELECT table_name FROM user_tables;

10. Revoke the SELECT privilege on your table from the other team.

Team 1 revokes the privilege.

```
REVOKE select
ON departments
FROM user2;
```

Team 2 revokes the privilege.

```
REVOKE select
ON departments
FROM user1;
```

11. Remove the row you inserted into the DEPARTMENTS table in step 8 and save the changes.

Team 1 executes this INSERT statement.

```
DELETE FROM departments
WHERE department_id = 500;
COMMIT;
```

Team 2 executes this INSERT statement.

```
DELETE FROM departments
WHERE department_id = 510;
COMMIT;
```

| Evaluation Procedure | Marks awarded |
|---|---|
| Practice Evaluation (5) | |
| Viva(5) | |
| Total (10) | |
| Faculty Signature | |

**RESULT:**

# CONTROL STRUCTURES

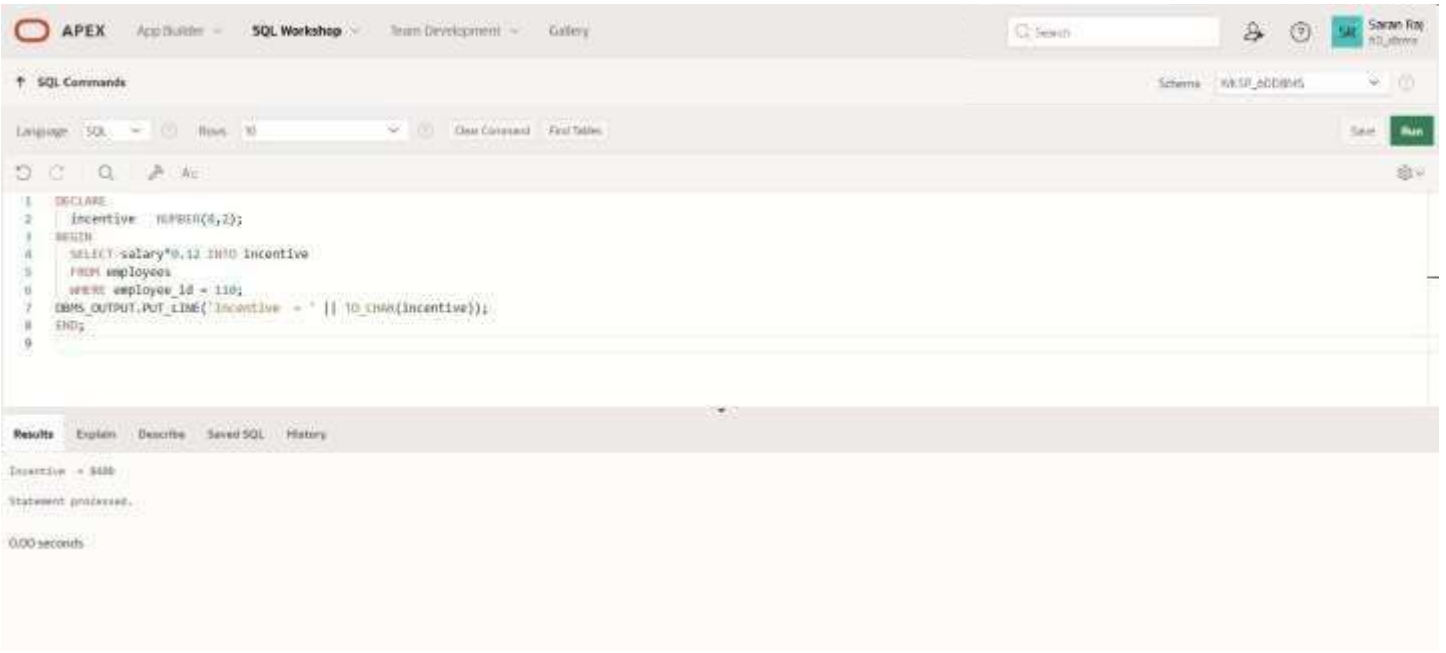
**EX_NO:** **DATE:**

**1.)** Write a PL/SQL block to calculate the incentive of an employee whose ID is 110.

**QUERY:**

```
 DECLARE
 incentive NUMBER(8,2);
BEGIN
 SELECT salary*0.12 INTO incentive
 FROM employees
 WHERE employee_id = 110;
DBMS_OUTPUT.PUT_LINE('Incentive = ' || TO_CHAR(incentive));
END;
```

**OUTPUT:**



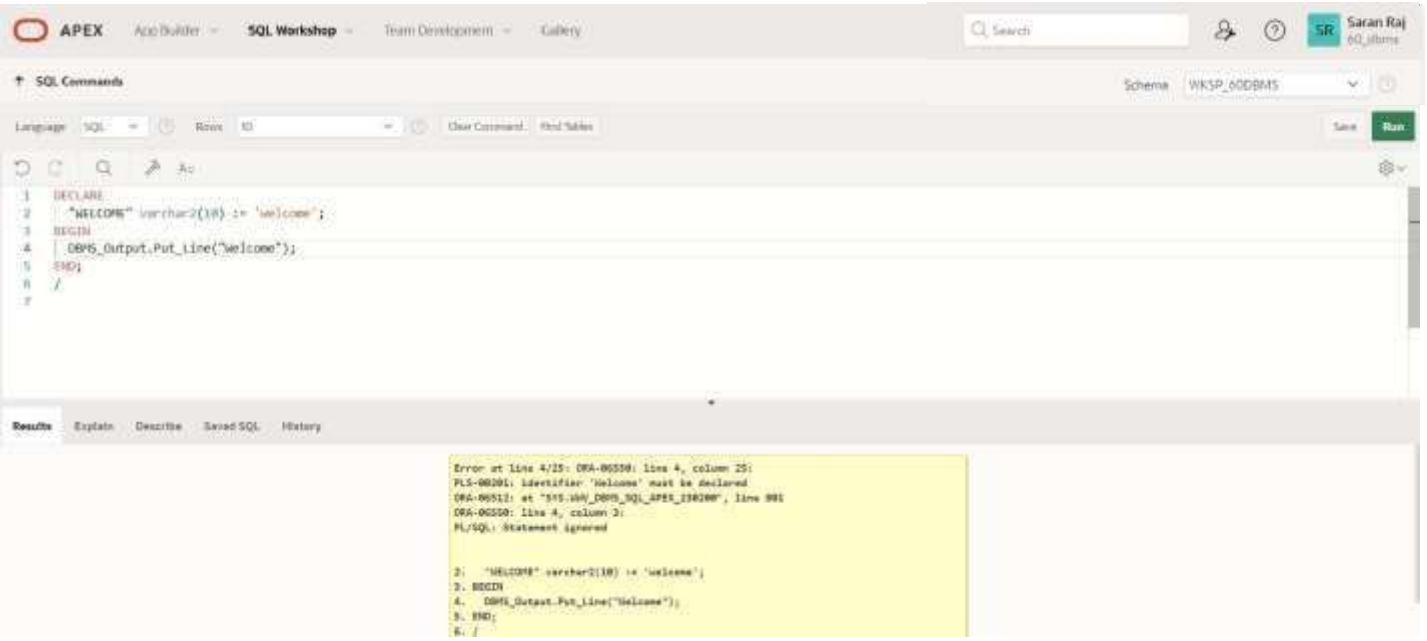
**2.)** Write a PL/SQL block to show an invalid case-insensitive reference to a quoted and without quoted user-defined identifier

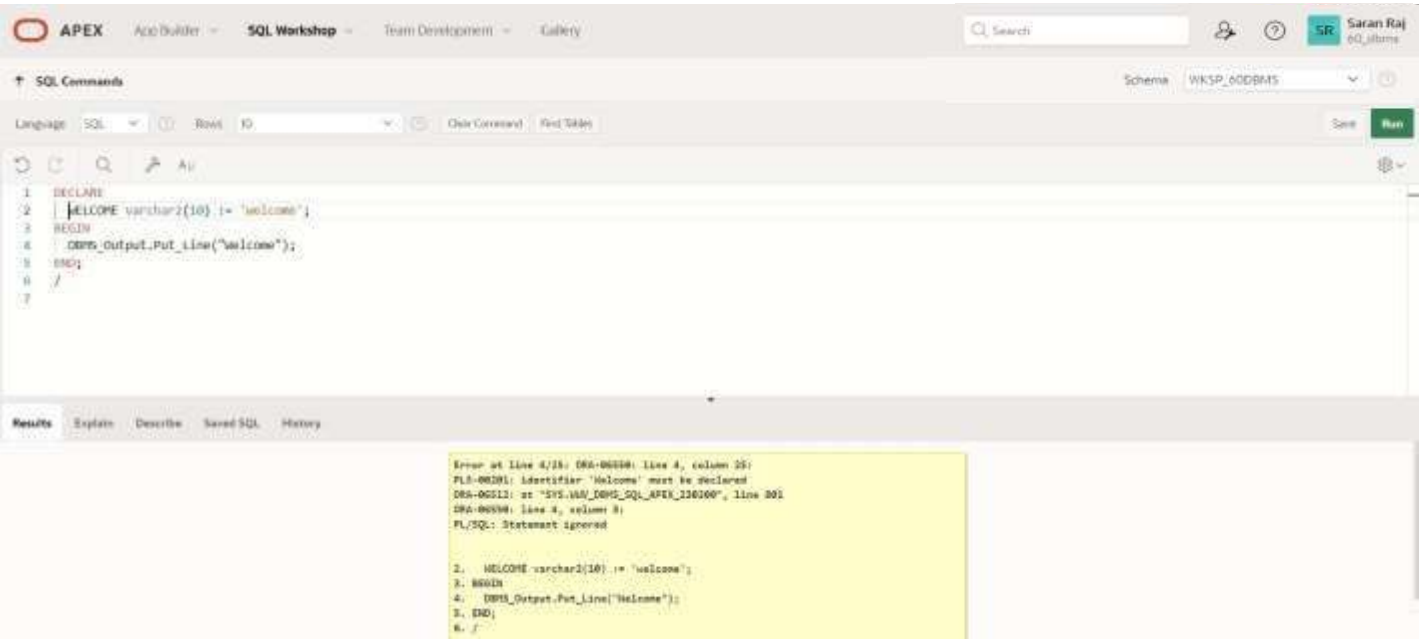
**QUERY:**

```
DECLARE
WELCOME varchar2(10) := 'welcome';
BEGIN
DBMS_Output.Put_Line("Welcome");
END;
/
```

```
DECLARE
WELCOME varchar2(10) := 'welcome';
BEGIN
DBMS_Output.Put_Line("Welcome");
END;
/
```

**OUTPUT:**



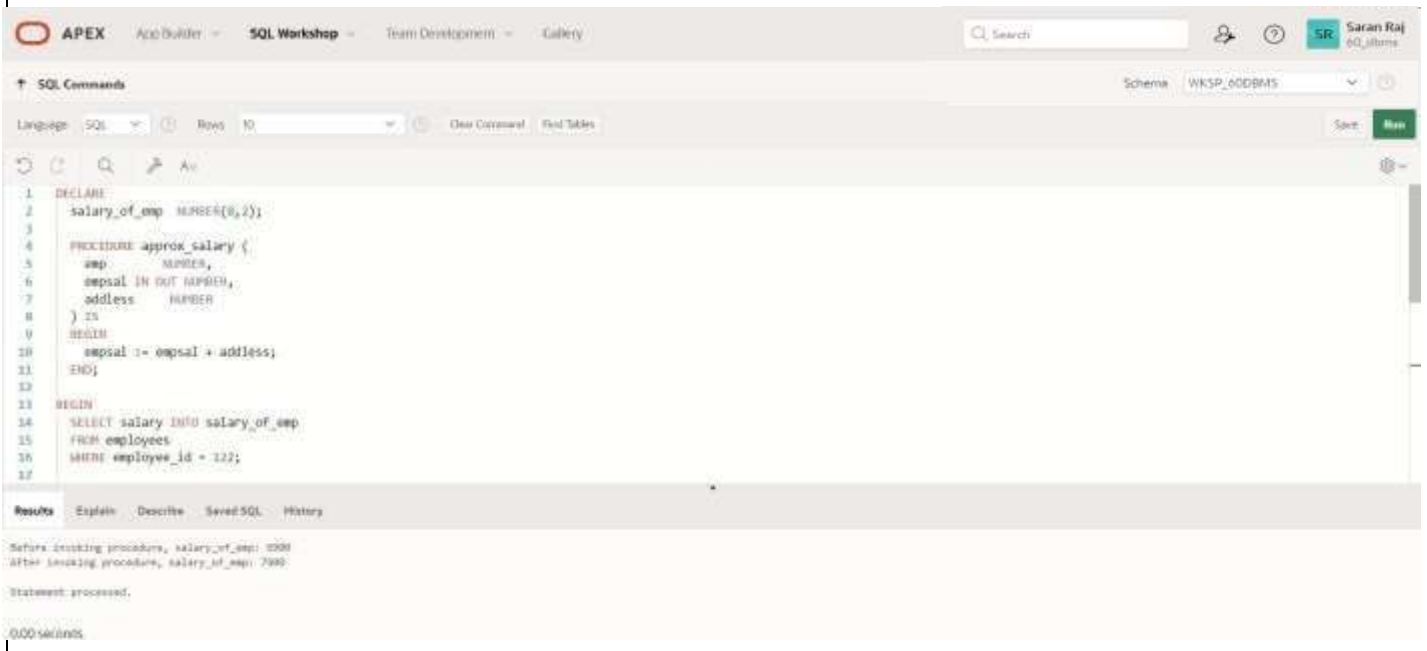



**3.)** Write a PL/SQL block to adjust the salary of the employee whose ID 122.

**QUERY:**

```
DECLARE
  salary_of_emp NUMBER(8,2);
  PROCEDURE approx_salary (
  emp        NUMBER,
    empsal IN OUT NUMBER,
    addless     NUMBER
  ) IS
  BEGIN
    empsal := empsal + addless;
  END;

BEGIN
  SELECT salary INTO salary_of_emp
  FROM employees
  WHERE employee_id = 122;
  DBMS_OUTPUT.PUT_LINE
   ('Before invoking procedure, salary_of_emp: ' || salary_of_emp);
  approx_salary (100, salary_of_emp, 1000);
  DBMS_OUTPUT.PUT_LINE
   ('After invoking procedure, salary_of_emp: ' || salary_of_emp);
END;
/
```

**OUTPUT:**

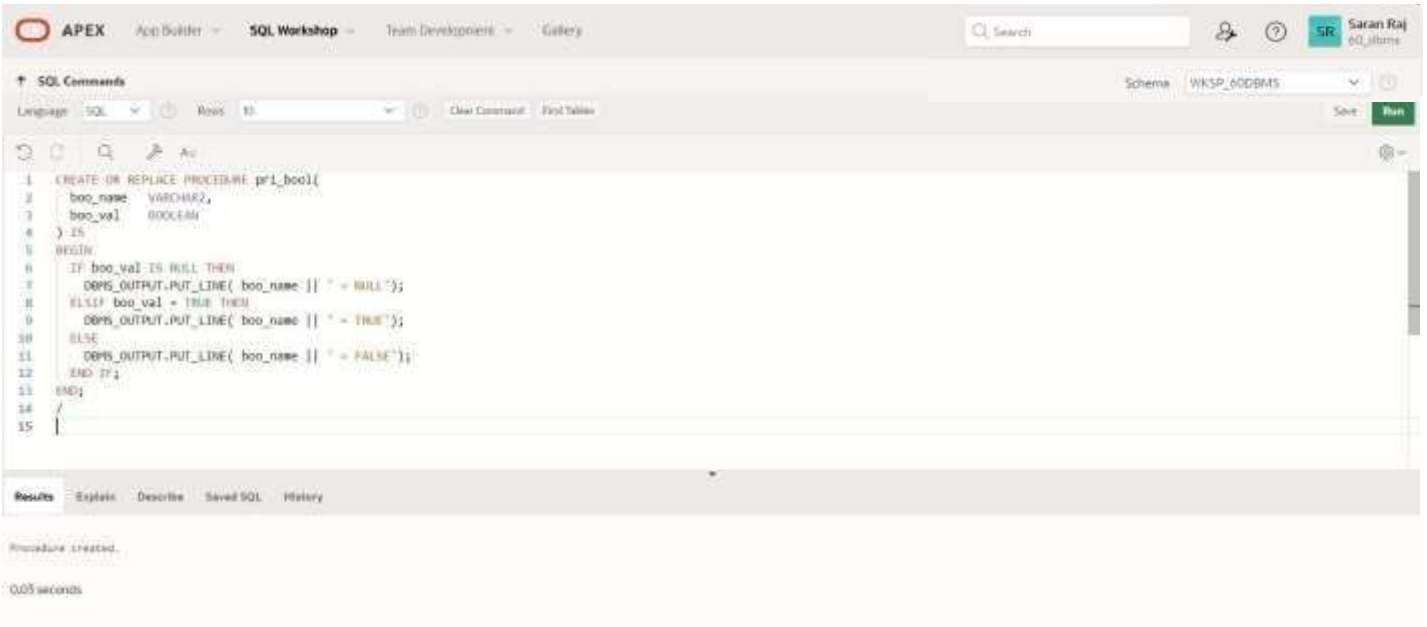


**4.)** Write a PL/SQL block to create a procedure using the "IS [NOT] NULL Operator" and show AND operator returns TRUE if and only if both operands are TRUE.

**QUERY:**

```
CREATE OR REPLACE PROCEDURE pri_bool(
  boo_name VARCHAR2,
  boo_val BOOLEAN
) IS
BEGIN
  IF boo_val IS NULL THEN
    DBMS_OUTPUT.PUT_LINE( boo_name || ' = NULL');
  ELSIF boo_val = TRUE THEN
  DBMS_OUTPUT.PUT_LINE( boo_name || ' = TRUE');
  ELSE
    DBMS_OUTPUT.PUT_LINE( boo_name || ' = FALSE');
  END IF;
END;
/
```

**OUTPUT:**

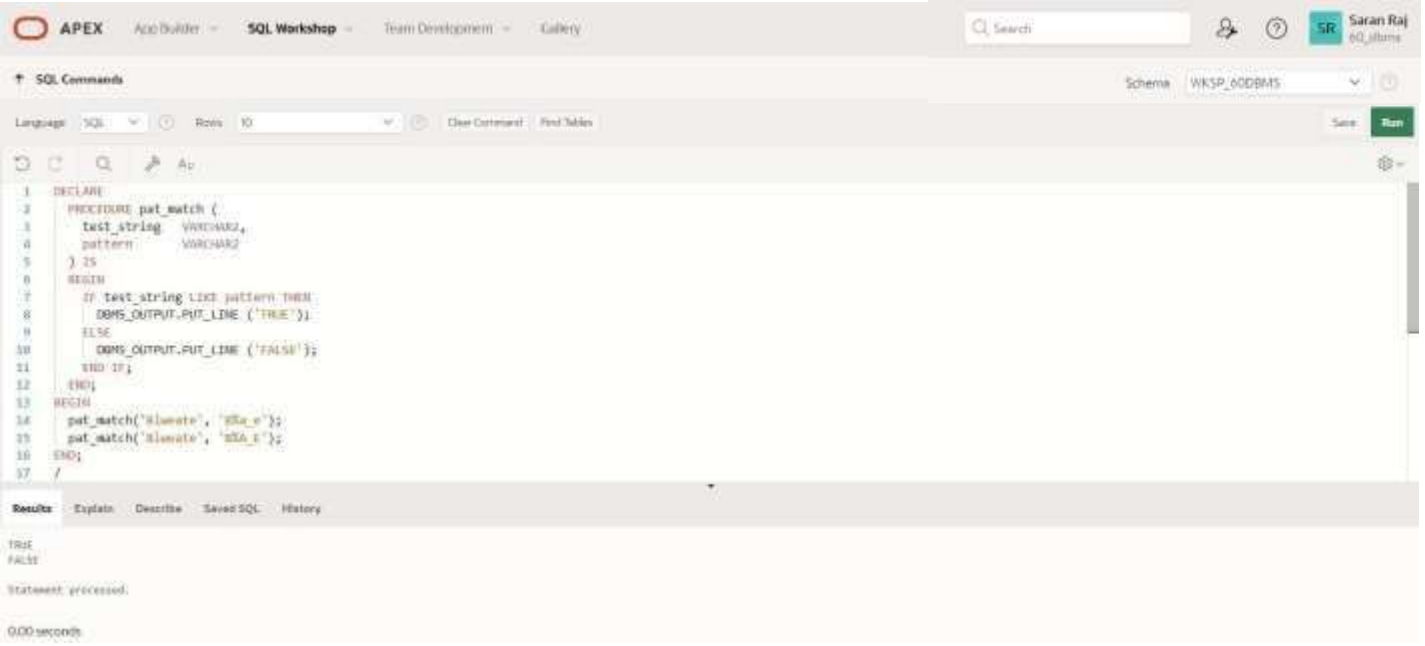


**5.)** Write a PL/SQL block to describe the usage of LIKE operator including wildcard characters and escape character.

**QUERY:**

```
DECLARE
 PROCEDURE pat_match (
  test_string   VARCHAR2,
  pattern VARCHAR2
 ) IS
 BEGIN
  IF test_string LIKE pattern THEN
  DBMS_OUTPUT.PUT_LINE ('TRUE');
  ELSE
    DBMS_OUTPUT.PUT_LINE ('FALSE');
  END IF;
 END;
BEGIN
 pat_match('Blweate',  'B%a_e');
pat_match('Blweate',   'B%A_E');
END;
/
```

**OUTPUT:**

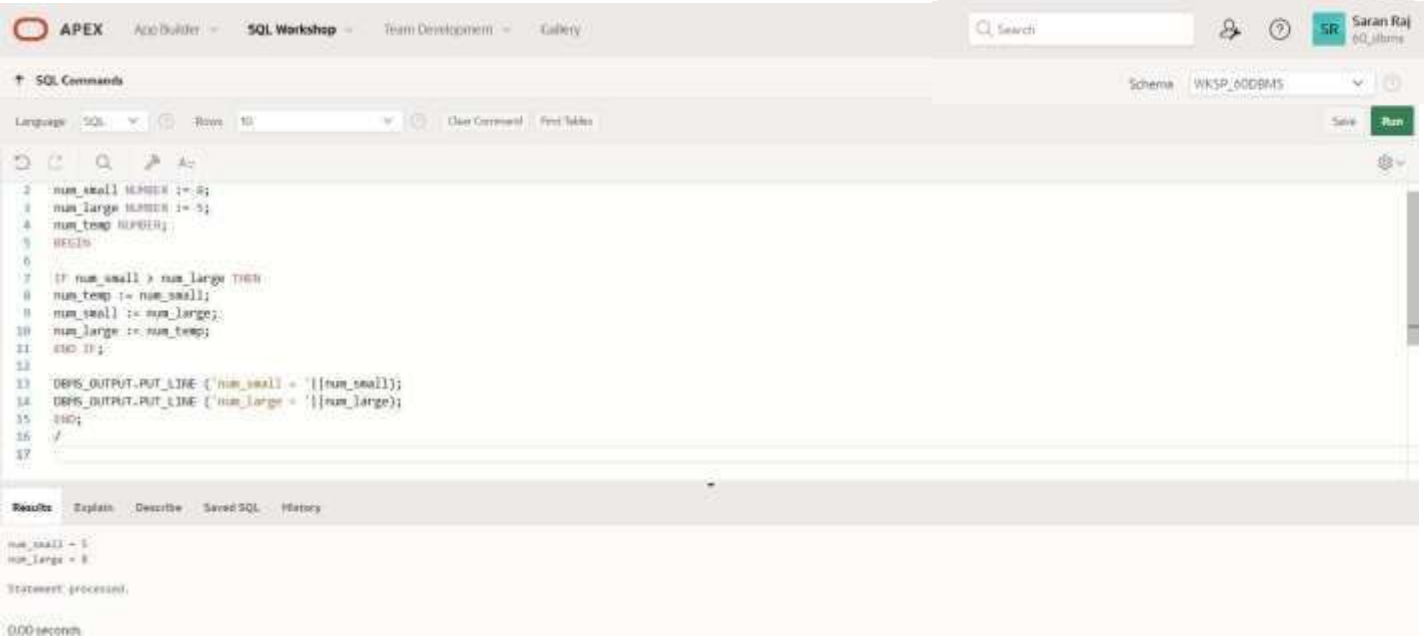


**6.)** Write a PL/SQL program to arrange the number of two variable in such a way that the small number will store in num_small variable and large number will store in num_large variable

**QUERY:**

```
DECLARE
num_small NUMBER := 8;
num_large NUMBER := 5;
num_temp NUMBER;
BEGIN

IF num_small > num_large THEN
num_temp := num_small;
num_small := num_large;
num_large := num_temp;
END IF;

DBMS_OUTPUT.PUT_LINE ('num_small = '||num_small);
DBMS_OUTPUT.PUT_LINE ('num_large = '||num_large);
END;
/
```

**OUTPUT:**

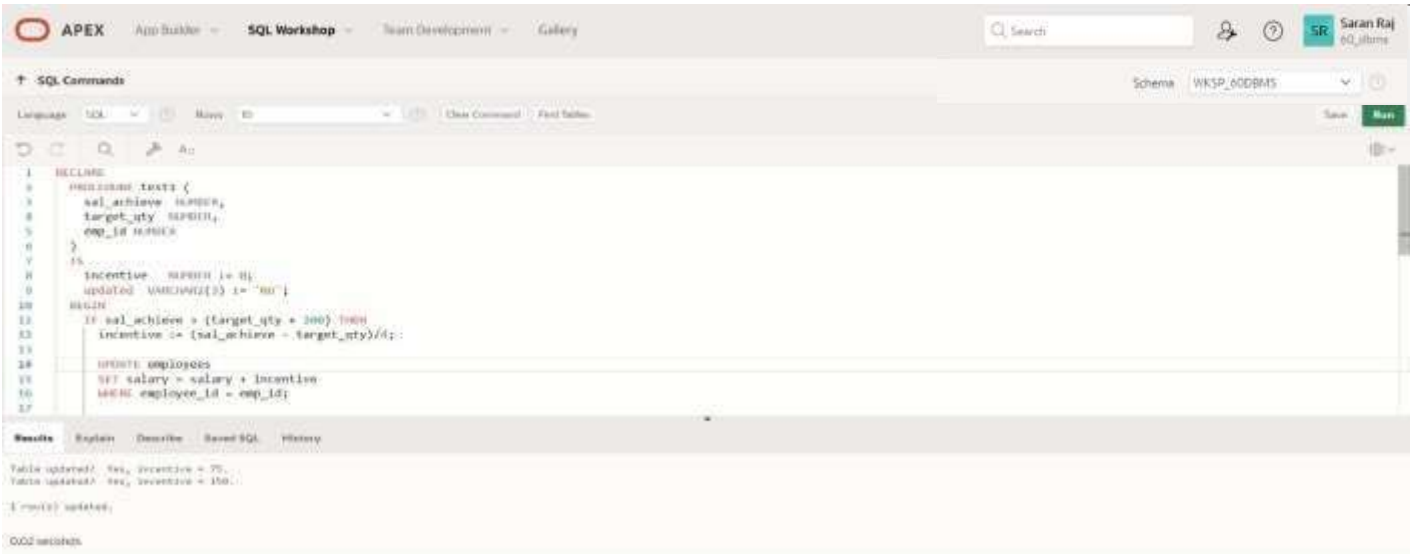


**7.)** Write a PL/SQL procedure to calculate the incentive on a target achieved and display the message either the record updated or not.

**QUERY:**

```
DECLARE
  PROCEDURE test1 (
    sal_achieve NUMBER,
    target_qty NUMBER,
    emp_id NUMBER
  )
  IS
    incentive NUMBER := 0;
  updated VARCHAR2(3) := 'No';
  BEGIN
    IF sal_achieve > (target_qty + 200) THEN
      incentive := (sal_achieve - target_qty)/4;
      UPDATE employees
      SET salary = salary + incentive
      WHERE employee_id = emp_id;
      updated := 'Yes';
    END IF;
    DBMS_OUTPUT.PUT_LINE (
      'Table updated? ' || updated || ', ' ||
      'incentive = ' || incentive || '.'
    );
  END test1;
BEGIN
  test1(2300, 2000, 144);
  test1(3600, 3000, 145);
END;
/
```

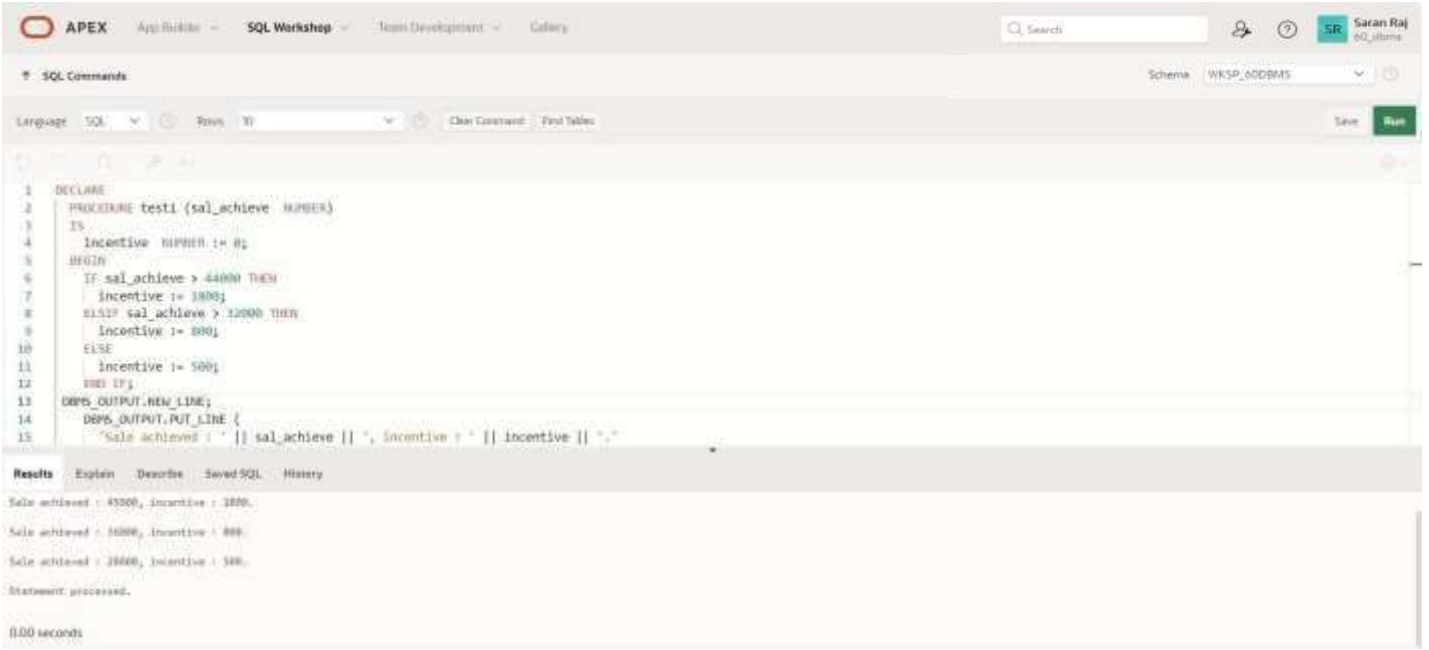
**OUTPUT:**



**8.)** Write a PL/SQL procedure to calculate incentive achieved according to the specific sale limit

**QUERY:**

```
DECLARE
  PROCEDURE test1 (sal_achieve NUMBER)
  IS
    incentive NUMBER := 0;
  BEGIN
    IF sal_achieve > 44000 THEN
      incentive := 1800;
    ELSIF sal_achieve > 32000 THEN
      incentive := 800;
    ELSE
      incentive := 500;
    END IF;
 DBMS_OUTPUT.NEW_LINE;
    DBMS_OUTPUT.PUT_LINE (
      'Sale achieved : ' || sal_achieve || ', incentive : ' || incentive || '.'
    );
  END test1;
BEGIN
  test1(45000);
test1(36000);
test1(28000);
END;
/
```

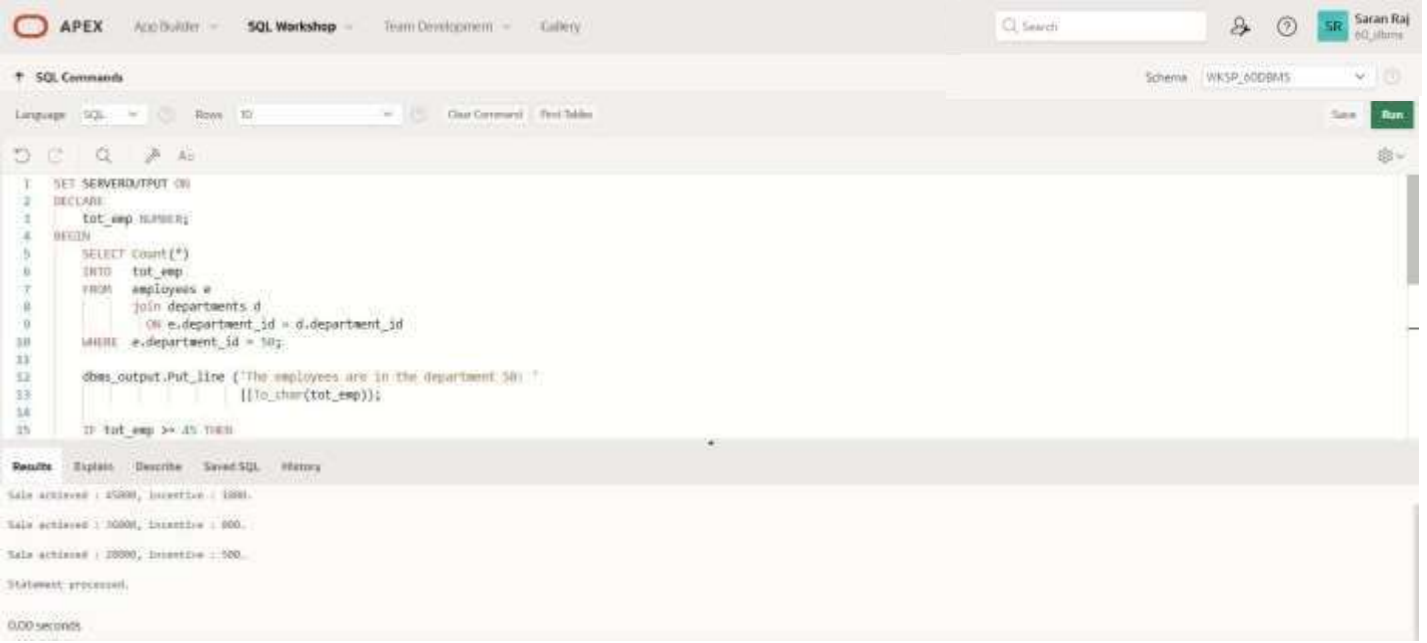


**9.)** Write a PL/SQL program to count number of employees in department 50 and check whether this department have any vacancies or not. There are 45 vacancies in this department.

**QUERY:**

```
SET SERVEROUTPUT ON
DECLARE
   tot_emp NUMBER;
         get_dep_id NUMBER;

BEGIN
   get_dep_id := 80;
   SELECT Count(*)
   INTO tot_emp
   FROM employees e
        join departments d
          ON e.department_id = d.department_id
   WHERE  e.department_id = get_dep_id;
   dbms_output.Put_line ('The employees are in the department '||get_dep_id||' is: '
                    ||To_char(tot_emp));
   IF tot_emp >= 45 THEN
     dbms_output.Put_line ('There are no vacancies in the department '||get_dep_id);
   ELSE
     dbms_output.Put_line ('There are '||to_char(45-tot_emp)||' vacancies in department '||
get_dep_id );
   END IF;
END;
/
```

**OUTPUT:**

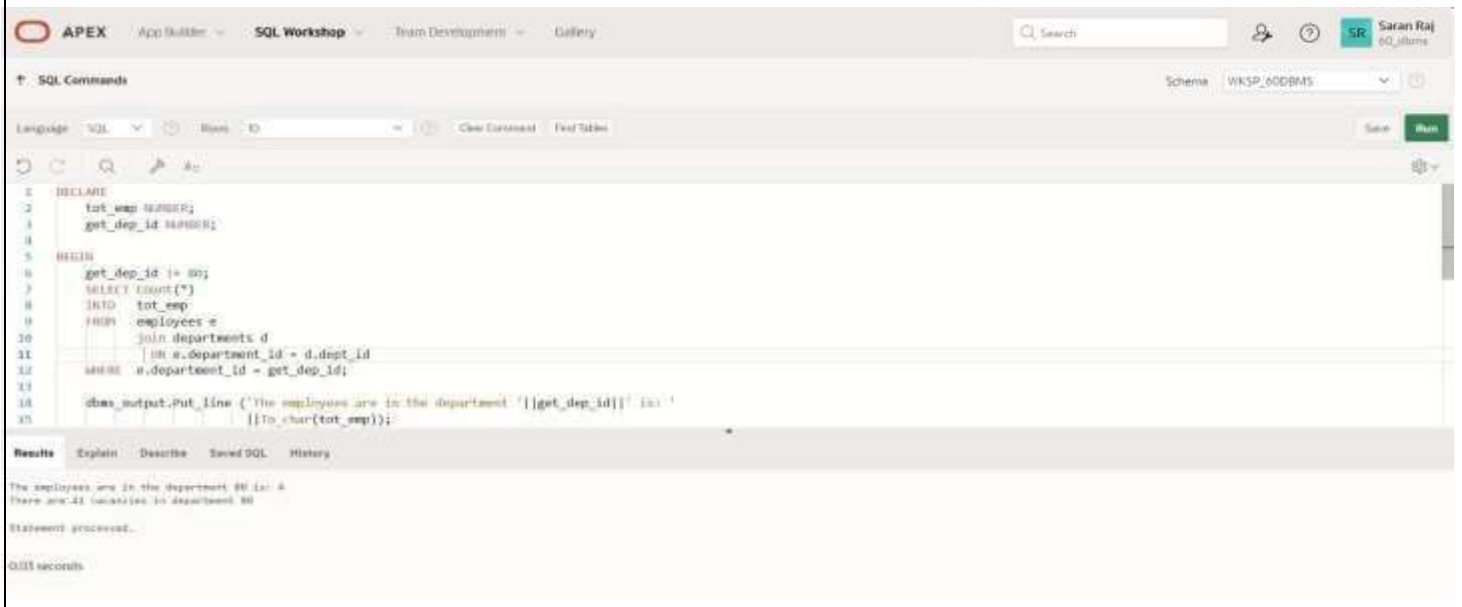


**10.)** Write a PL/SQL program to count number of employees in a specific department and check whether this department have any vacancies or not. If any vacancies, how many vacancies are in that department.

**QUERY:**

```
DECLARE
   tot_emp NUMBER;
         get_dep_id NUMBER;

BEGIN
   get_dep_id := 80;
   SELECT Count(*)
   INTO tot_emp
   FROM employees e
        join departments d
          ON e.department_id = d.dept_id
   WHERE e.department_id = get_dep_id;

   dbms_output.Put_line ('The employees are in the department '||get_dep_id||' is: '
                    ||To_char(tot_emp));

   IF tot_emp >= 45 THEN
     dbms_output.Put_line ('There are no vacancies in the department '||get_dep_id);
   ELSE
     dbms_output.Put_line ('There are '||to_char(45-tot_emp)||' vacancies in department '||
get_dep_id );
   END IF;
END;
/
```

**OUTPUT:**

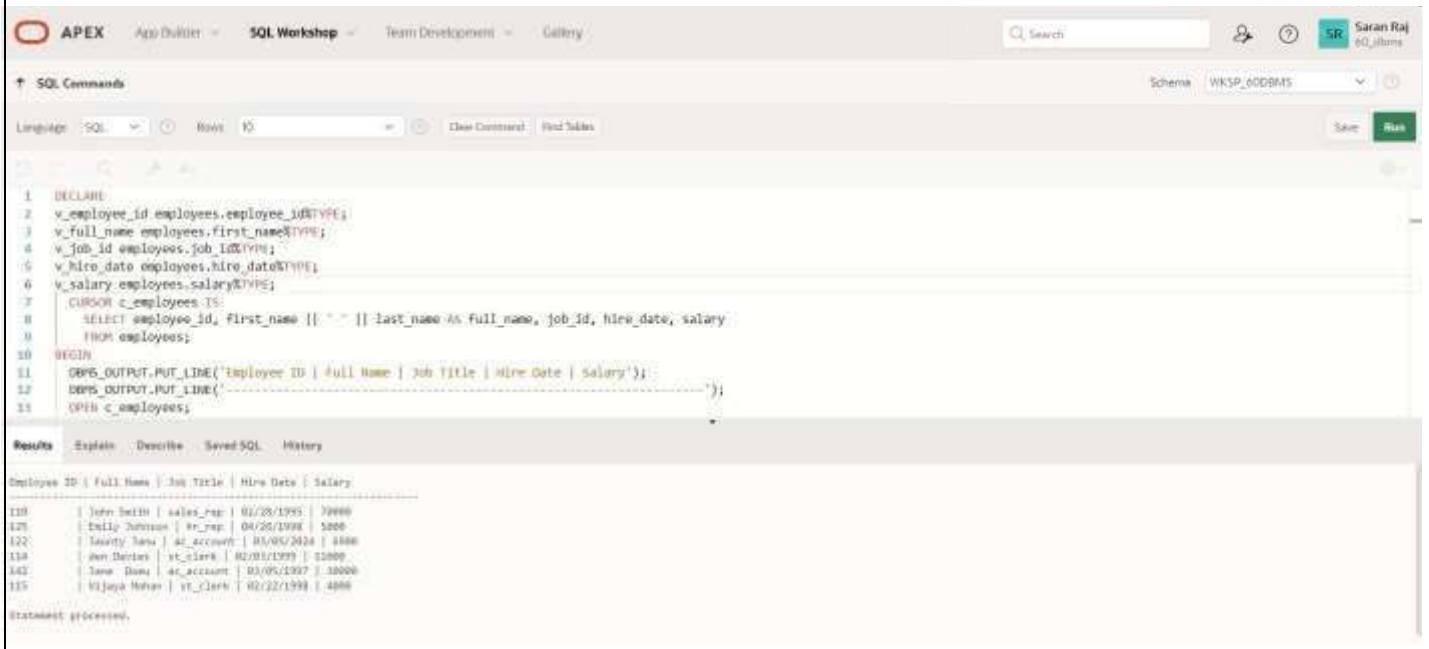


**11.)** Write a PL/SQL program to display the employee IDs, names, job titles, hire dates, and salaries of all employees

**QUERY:**

```
DECLARE
v_employee_id employees.employee_id%TYPE;
v_full_name employees.first_name%TYPE;
v_job_id employees.job_id%TYPE;
v_hire_date employees.hire_date%TYPE;
v_salary employees.salary%TYPE;
CURSOR c_employees IS
   SELECT employee_id, first_name || ' ' || last_name AS full_name, job_id, hire_date, salary
   FROM employees;
BEGIN
  DBMS_OUTPUT.PUT_LINE('Employee ID | Full Name | Job Title | Hire Date | Salary');
  DBMS_OUTPUT.PUT_LINE('-----------------------------------------------------------------------------');
  OPEN c_employees;
  FETCH c_employees INTO v_employee_id, v_full_name, v_job_id, v_hire_date, v_salary;
  WHILE c_employees%FOUND LOOP
   DBMS_OUTPUT.PUT_LINE(v_employee_id || '       | ' || v_full_name || ' | ' || v_job_id || ' | ' ||
v_hire_date || ' | ' || v_salary);
   FETCH c_employees INTO v_employee_id, v_full_name, v_job_id, v_hire_date, v_salary;
  END LOOP;
  CLOSE c_employees;
END;
/
```

**OUTPUT:**

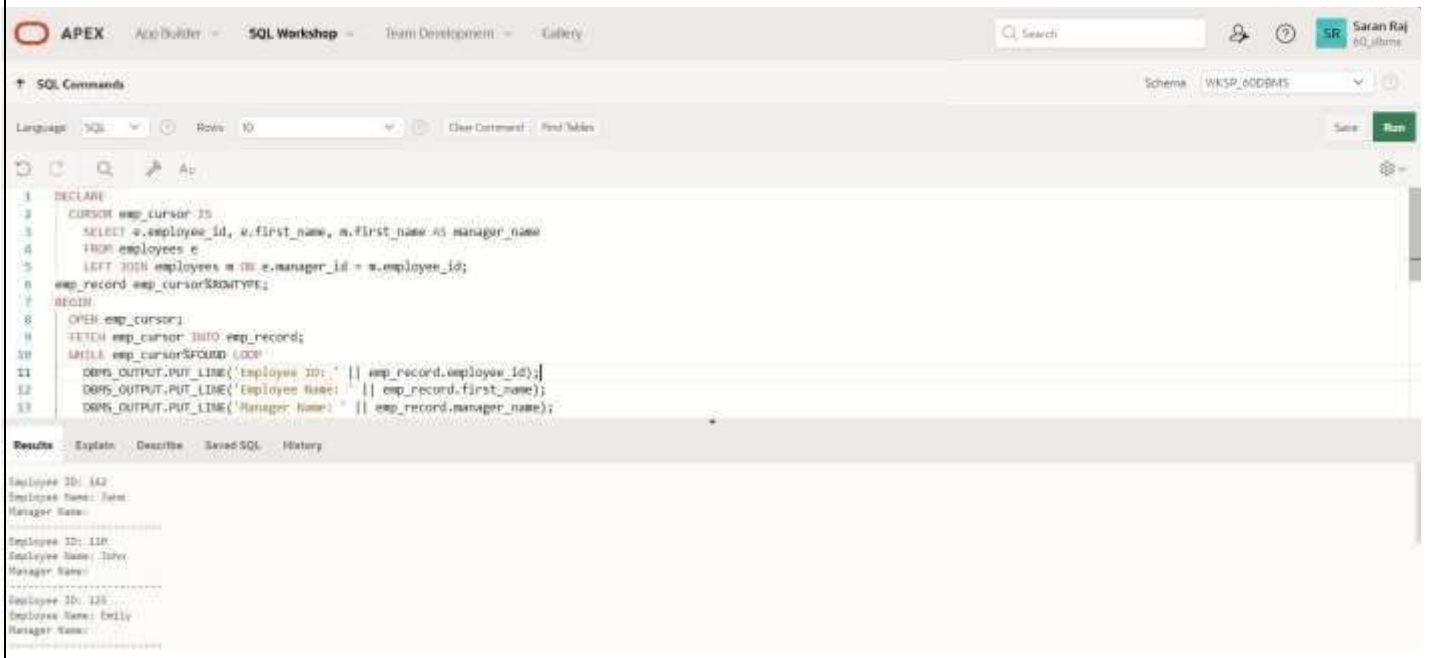


**12.)** Write a PL/SQL program to display the employee IDs, names, and department names of all employees.

**QUERY:**

```
DECLARE
  CURSOR emp_cursor IS
    SELECT e.employee_id, e.first_name, m.first_name AS manager_name
    FROM employees e
    LEFT JOIN employees m ON e.manager_id = m.employee_id;
emp_record emp_cursor%ROWTYPE;
BEGIN
  OPEN emp_cursor;
  FETCH emp_cursor INTO emp_record;
  WHILE emp_cursor%FOUND LOOP
    DBMS_OUTPUT.PUT_LINE('Employee ID: ' || emp_record.employee_id);
    DBMS_OUTPUT.PUT_LINE('Employee Name: ' || emp_record.first_name);
    DBMS_OUTPUT.PUT_LINE('Manager Name: ' || emp_record.manager_name);
    DBMS_OUTPUT.PUT_LINE(' ------------------------ ');
    FETCH emp_cursor INTO emp_record;
  END LOOP;
  CLOSE emp_cursor;
END;
/
```

**OUTPUT:**

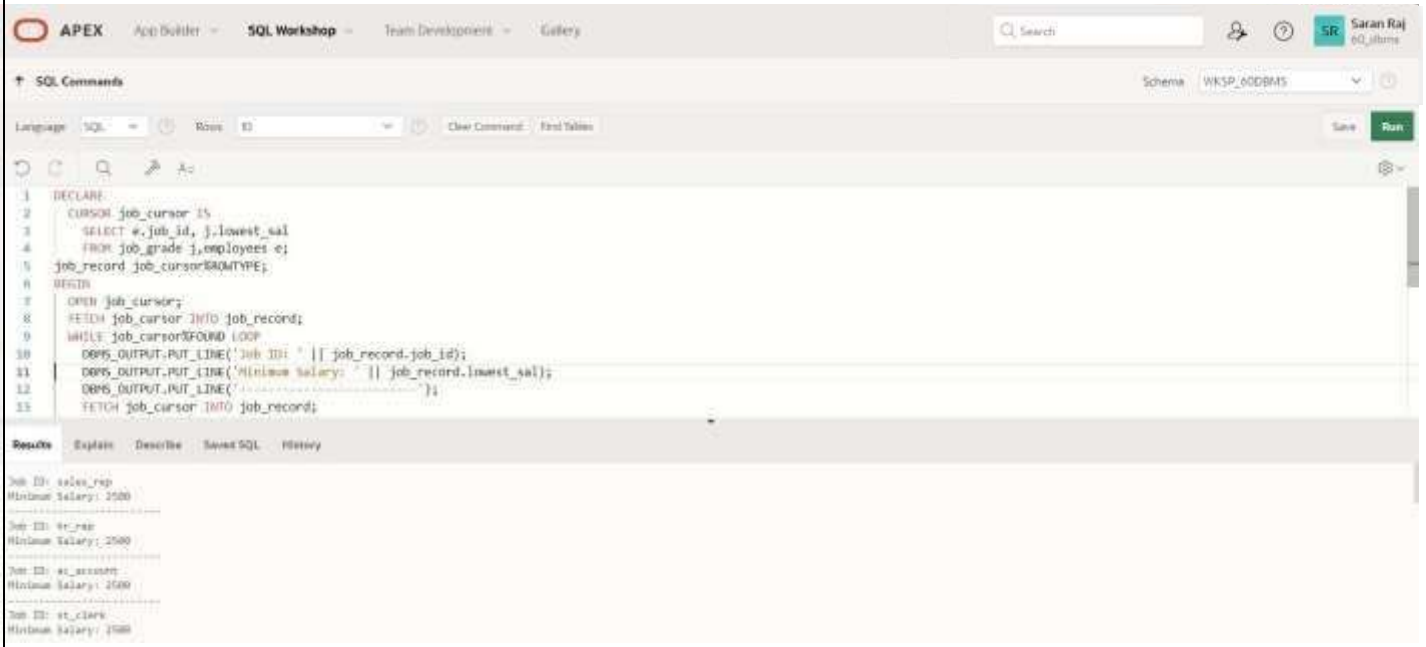


**13.)** Write a PL/SQL program to display the job IDs, titles, and minimum salaries of all jobs

**QUERY:**

```
DECLARE
  CURSOR job_cursor IS
    SELECT e.job_id, j.lowest_sal
    FROM job_grade j,employees e;
job_record job_cursor%ROWTYPE;
BEGIN
  OPEN job_cursor;
  FETCH job_cursor INTO job_record;
  WHILE job_cursor%FOUND LOOP
    DBMS_OUTPUT.PUT_LINE('Job ID: ' || job_record.job_id);
    DBMS_OUTPUT.PUT_LINE('Minimum Salary: ' || job_record.lowest_sal);
    DBMS_OUTPUT.PUT_LINE(' ------------------------ ');
    FETCH job_cursor INTO job_record;
  END LOOP;
  CLOSE job_cursor;
END;
/
```

**OUTPUT:**

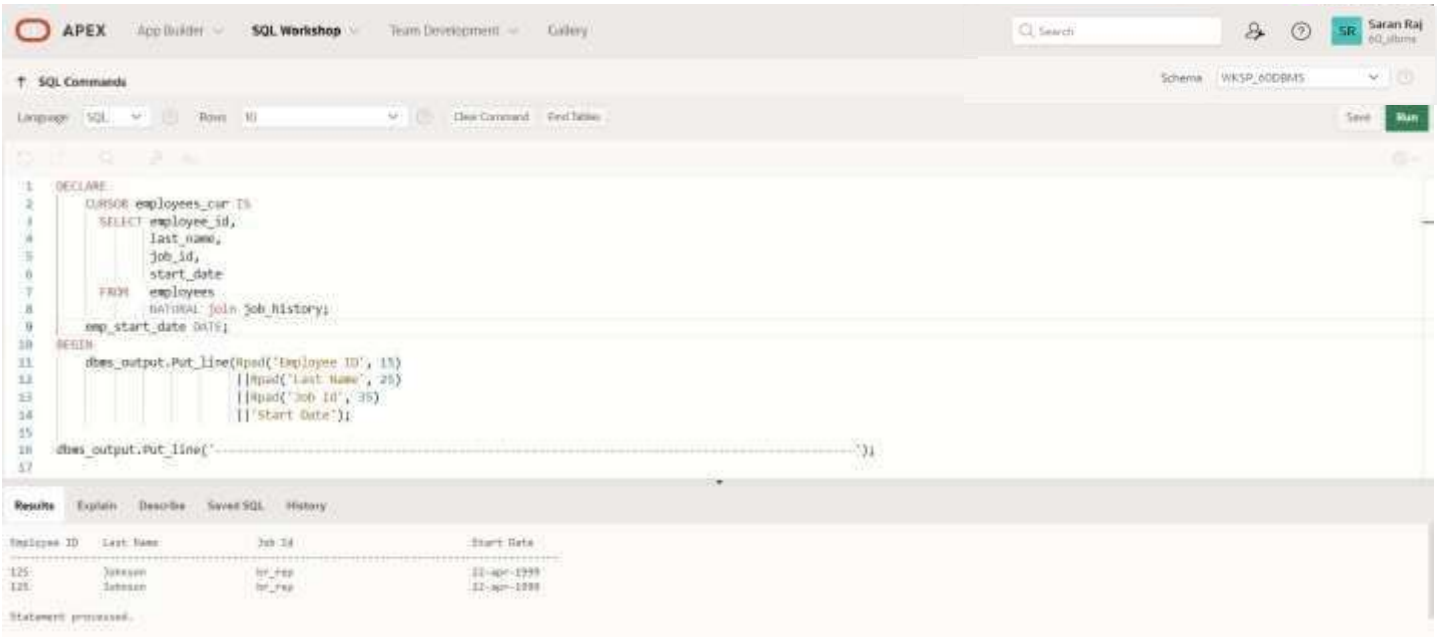


**14.)** Write a PL/SQL program to display the employee IDs, names, and job history start dates of all employees.

**QUERY:**

```
DECLARE
   CURSOR  employees_cur  IS
     SELECT employee_id,last_name, job_id,start_date
   FROM employees NATURAL join job_history;
   emp_start_date DATE;
BEGIN
   dbms_output.Put_line(Rpad('Employee  ID', 15)||Rpad('Last  Name', 25)||  Rpad('Job  Id', 35)
||'Start Date');
dbms_output.Put_line(' ----------------------------------------------------------------------------------------------------');
FOR emp_sal_rec IN employees_cur LOOP
   -- find out most recent end_date in job_history
   SELECT Max(end_date) + 1
   INTO emp_start_date
   FROM job_history
   WHERE   employee_id = emp_sal_rec.employee_id;
   IF emp_start_date IS NULL THEN
   emp_start_date := emp_sal_rec.start_date;
   END IF;
     dbms_output.Put_line(Rpad(emp_sal_rec.e
   mployee_id, 15)
     ||Rpad(emp_sal_rec.last_name,   25)
     ||  Rpad(emp_sal_rec.job_id,  35)
     || To_char(emp_start_date, 'dd-mon-
   yyyy'));
     END LOOP;
     END;
     /
```

**OUTPUT:**

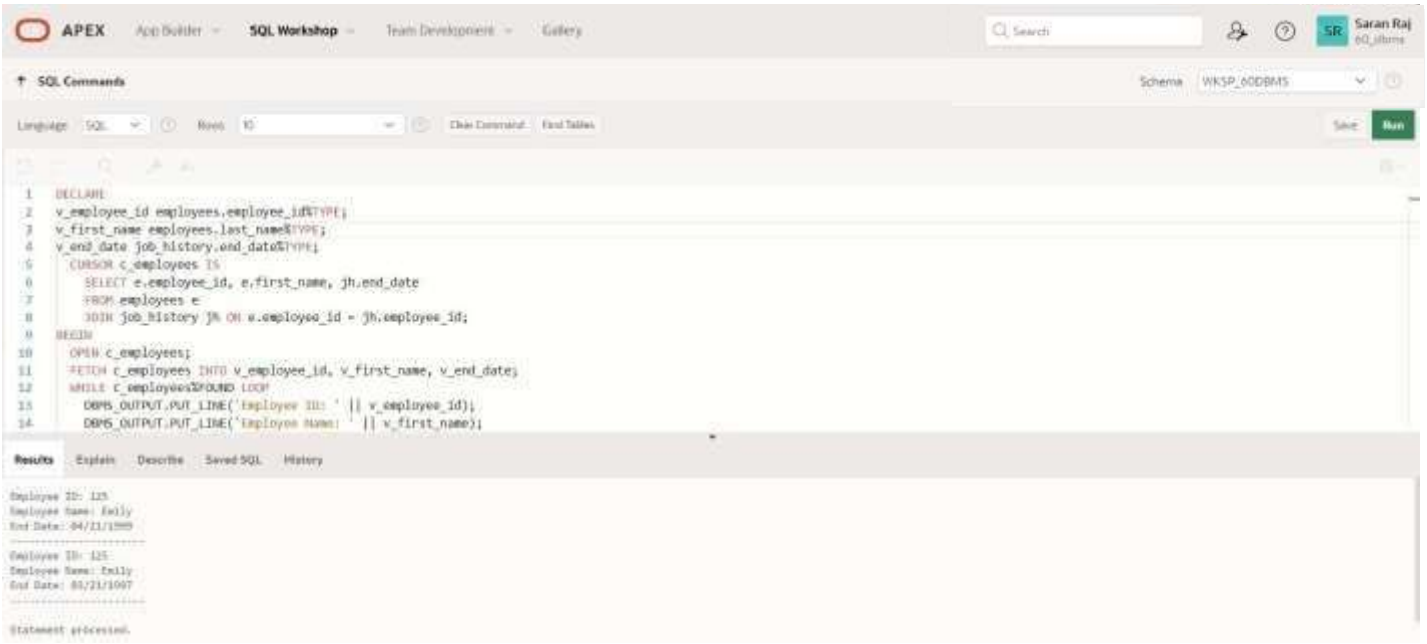



**15.)** Write a PL/SQL program to display the employee IDs, names, and job history end dates of all employees.

**QUERY:**

```
DECLARE
v_employee_id employees.employee_id%TYPE;
v_first_name employees.last_name%TYPE;
v_end_date job_history.end_date%TYPE;
CURSOR c_employees IS
   SELECT e.employee_id, e.first_name, jh.end_date
   FROM employees e
   JOIN job_history jh ON e.employee_id = jh.employee_id;
BEGIN
 OPEN c_employees;
 FETCH c_employees INTO v_employee_id, v_first_name, v_end_date;
 WHILE c_employees%FOUND LOOP
 DBMS_OUTPUT.PUT_LINE('Employee ID: ' || v_employee_id);
 DBMS_OUTPUT.PUT_LINE('Employee Name: ' || v_first_name);
 DBMS_OUTPUT.PUT_LINE('End Date: ' || v_end_date);
 DBMS_OUTPUT.PUT_LINE('--------------------- ');
  FETCH c_employees INTO v_employee_id, v_first_name, v_end_date;
 END LOOP;
 CLOSE c_employees;
 END;
```

**OUTPUT:**


APEX
App Builder
SQL Workshop
Team Development
Gallery
Search
Saran Raj
SQL Commands
Schema
WKSP_60DBMS
Language
SQL
Rows
10
Clear Command
Find Tables
Save
Run
DECLARE
v_employee_id employees.employee_id%TYPE;
v_first_name employees.last_name%TYPE;
v_end_date job_history.end_date%TYPE;
CURSOR c_employees IS
SELECT e.employee_id, e.first_name, jh.end_date
FROM employees e
JOIN job_history jh ON e.employee_id = jh.employee_id;
BEGIN
OPEN c_employees;
FETCH c_employees INTO v_employee_id, v_first_name, v_end_date;
WHILE c_employees%FOUND LOOP
DBMS_OUTPUT.PUT_LINE('Employee ID: ' || v_employee_id);
DBMS_OUTPUT.PUT_LINE('Employee Name: ' || v_first_name);
Results
Explain
Describe
Saved SQL
History
Employee ID: 125
Employee Name: Emily
End Date: 04/21/1999
Employee ID: 125
Employee Name: Emily
End Date: 01/21/1997
Statement processed.

| Evaluation Procedure | Marks awarded |
| --- | --- |
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

# PROCEDURES AND FUNCTIONS

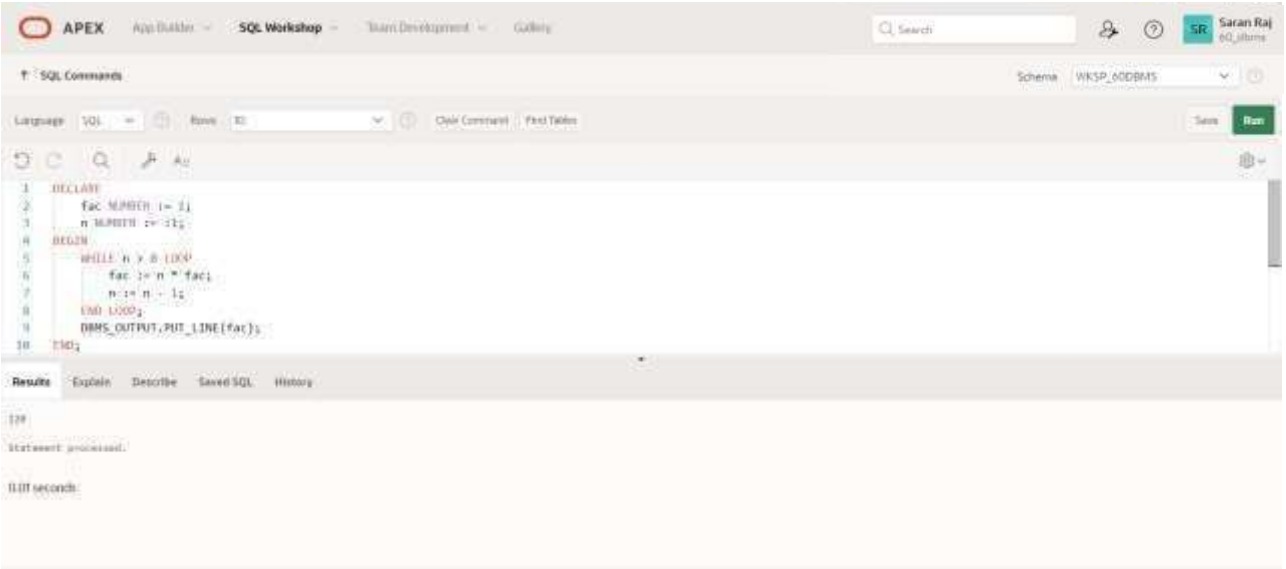
**EX.NO: 17** **DATE:**

**1.) Factorial of a number using function.**

**QUERY:**

```
DECLARE
   fac NUMBER := 1;
   n NUMBER := :1;
BEGIN
   WHILE n > 0 LOOP
      fac := n * fac;
      n := n - 1;
   END LOOP;
   DBMS_OUTPUT.PUT_LINE(fac);
END;
```

OUTPUT:



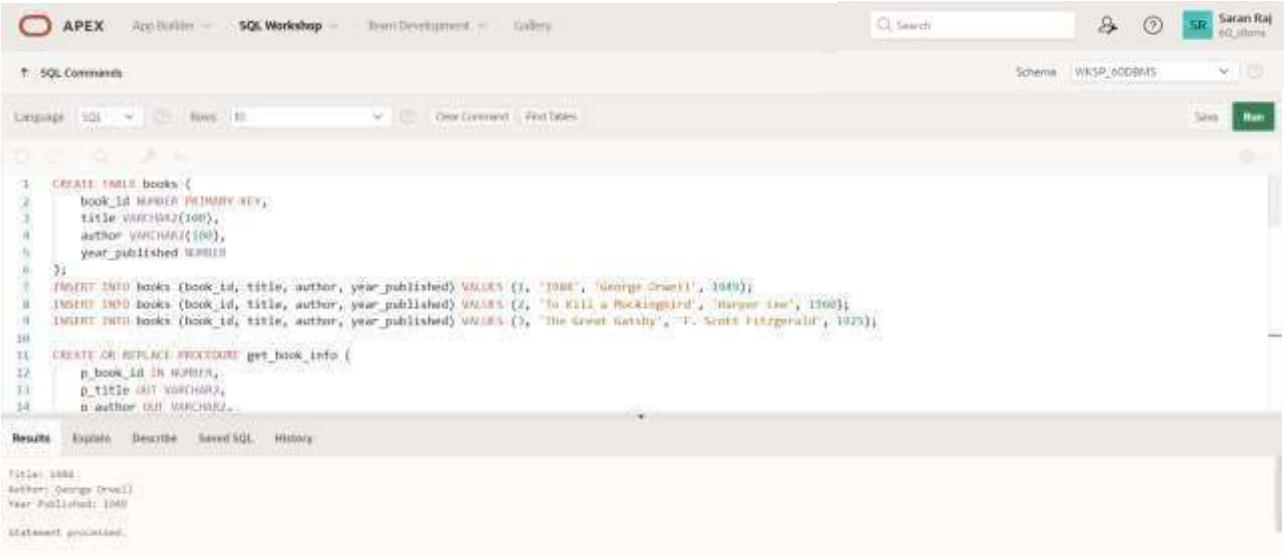

**2.) Write a PL/SQL program using Procedures IN,IN,OUT,OUT parameters to retrieve the corresponding book information in library.**

QUERY:

```
CREATE OR REPLACE PROCEDURE get_book_info (
   p_book_id IN NUMBER,
```

```
    p_title IN OUT VARCHAR2,
    p_author OUT VARCHAR2,
    p_year_published OUT NUMBER
)
AS
BEGIN
    SELECT title, author, year_published INTO p_title, p_author, p_year_published
    FROM books
    WHERE book_id = p_book_id;

    p_title := p_title || ' - Retrieved';
EXCEPTION
    WHEN  NO_DATA_FOUND  THEN
        p_title := NULL;
        p_author := NULL;
        p_year_published := NULL;
END;


DECLARE
    v_book_id NUMBER := 1;
    v_title VARCHAR2(100);
    v_author VARCHAR2(100);
    v_year_published  NUMBER;
BEGIN
    v_title := 'Initial Title';

    get_book_info(p_book_id => v_book_id, p_title => v_title, p_author => v_author, p_year_published =>
v_year_published);

    DBMS_OUTPUT.PUT_LINE('Title: ' || v_title);
    DBMS_OUTPUT.PUT_LINE('Author: ' || v_author);
    DBMS_OUTPUT.PUT_LINE('Year Published: ' || v_year_published);
END;
```

OUTPUT:




| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**R**

# TRIGGER

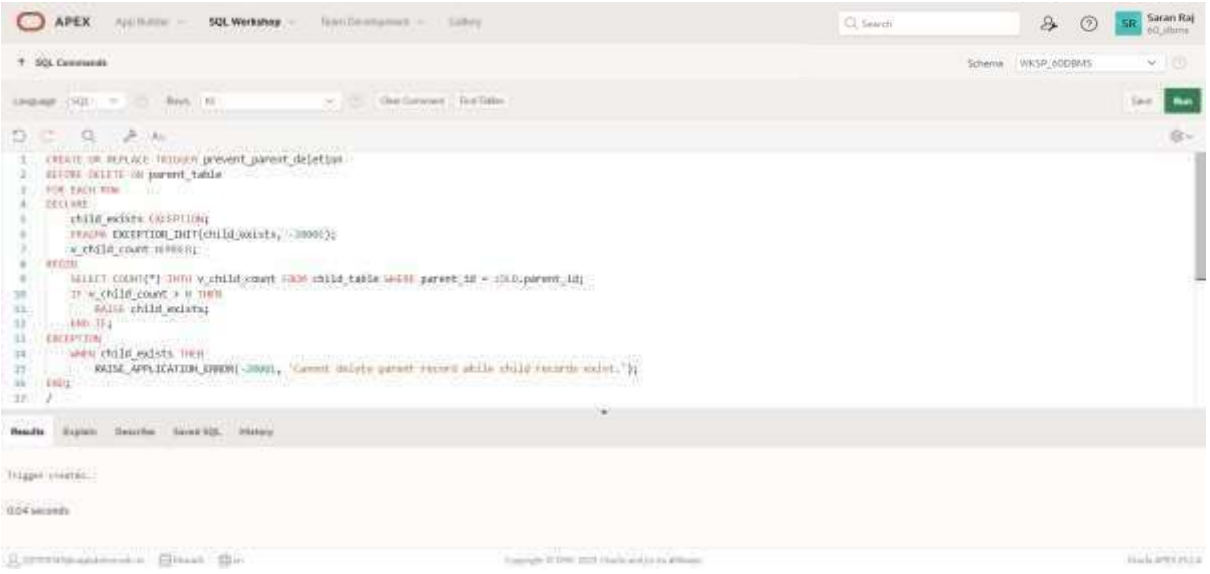
**EX_NO: 18** **DATE:**

1.) Write a code in PL/SQL to develop a trigger that enforces referential integrity by preventing thedeletion of a parent record if child records exist

**QUERY:**

```
CREATE OR REPLACE TRIGGER prevent_parent_deletion
BEFORE DELETE ON parent_table
FOR EACH ROW
DECLARE
   child_exists EXCEPTION;
   PRAGMA EXCEPTION_INIT(child_exists, -20001);
   v_child_count NUMBER;
BEGIN
   SELECT COUNT(*) INTO v_child_count FROM child_table WHERE parent_id = :OLD.parent_id;
   IF v_child_count > 0 THEN
      RAISE child_exists;
   END IF;
EXCEPTION
   WHEN child_exists THEN
      RAISE_APPLICATION_ERROR(-20001, 'Cannot delete parent record while child records exist.');
END;
```

OUTPUT:

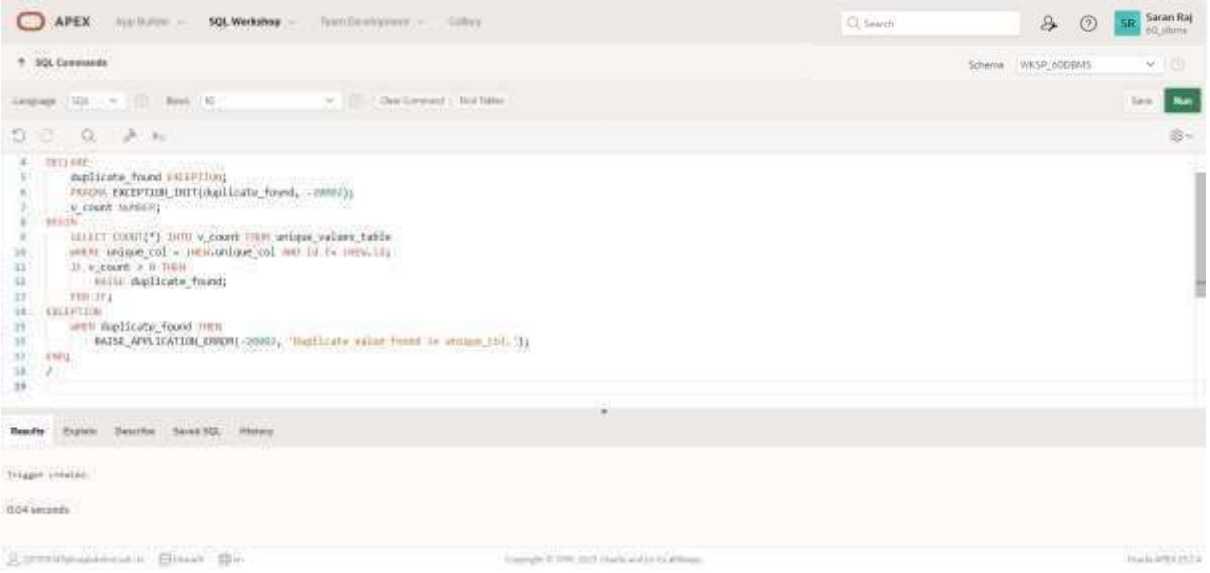



**2.) Write a code in PL/SQL to create a trigger that checks for duplicate values in a specific column and raises an exception if found**

QUERY:

```
CREATE OR REPLACE TRIGGER check_duplicates
BEFORE INSERT OR UPDATE ON unique_values_table
FOR EACH ROW
DECLARE
   duplicate_found EXCEPTION;
   PRAGMA EXCEPTION_INIT(duplicate_found, -20002);
   v_count NUMBER;
BEGIN
   SELECT COUNT(*) INTO v_count FROM unique_values_table
   WHERE unique_col = :NEW.unique_col AND id != :NEW.id;
   IF v_count > 0 THEN
      RAISE duplicate_found;
   END IF;
EXCEPTION
   WHEN duplicate_found THEN
      RAISE_APPLICATION_ERROR(-20002, 'Duplicate value found in unique_col.');
END;
```

OUTPUT:

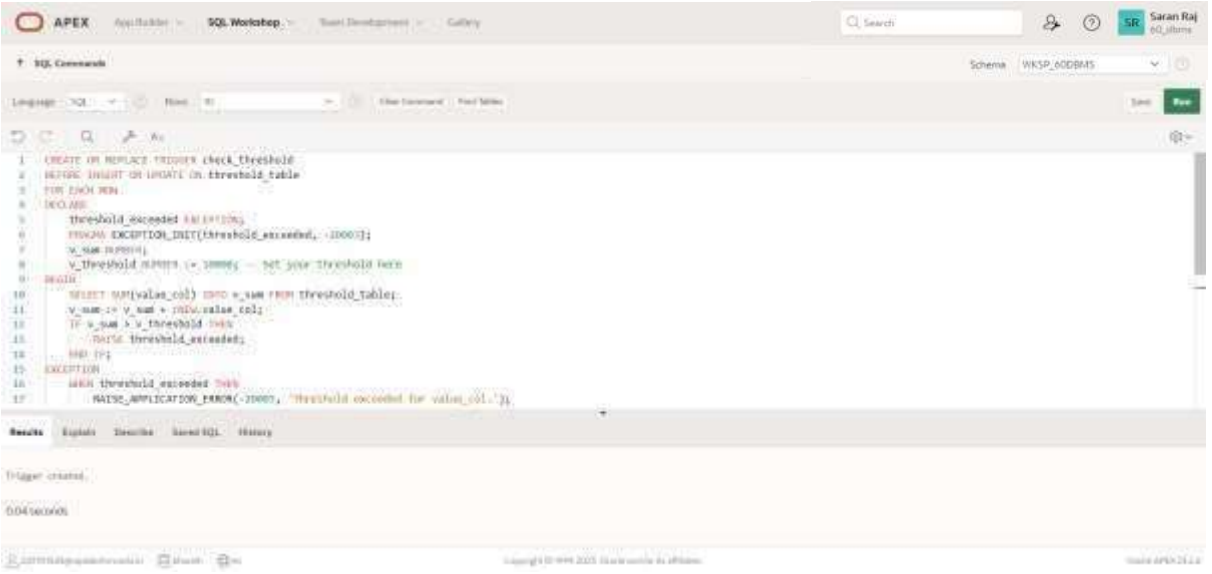


**3.) Write a code in PL/SQL to create a trigger that restricts the insertion of new rows if the total of a column's values exceeds a certain threshold**

QUERY:

```
CREATE OR REPLACE TRIGGER check_threshold
BEFORE INSERT OR UPDATE ON threshold_table
FOR EACH ROW
DECLARE
   threshold_exceeded EXCEPTION;
   PRAGMA EXCEPTION_INIT(threshold_exceeded, -20003);
   v_sum NUMBER;
   v_threshold NUMBER := 10000; -- Set your threshold here
BEGIN
   SELECT SUM(value_col) INTO v_sum FROM threshold_table;
   v_sum := v_sum + :NEW.value_col;
   IF v_sum > v_threshold THEN
      RAISE threshold_exceeded;
   END IF;
EXCEPTION
   WHEN threshold_exceeded THEN
      RAISE_APPLICATION_ERROR(-20003, 'Threshold exceeded for value_col.');
END;
```

OUTPUT:

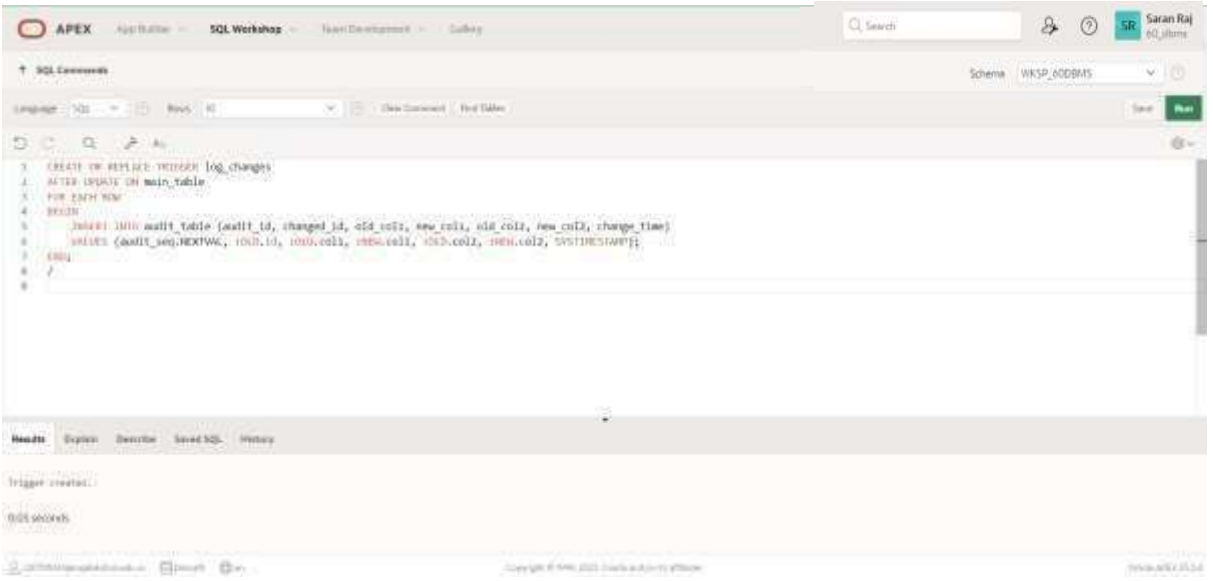


**4.) Write a code in PL/SQL to design a trigger that captures changes made to specific columns and logs them in an audit table.**

QUERY:

```
CREATE OR REPLACE TRIGGER log_changes
AFTER UPDATE ON main_table
FOR EACH ROW
BEGIN
   INSERT INTO audit_table (audit_id, changed_id, old_col1, new_col1, old_col2, new_col2, change_time)
   VALUES (audit_seq.NEXTVAL, :OLD.id, :OLD.col1, :NEW.col1, :OLD.col2, :NEW.col2,
SYSTIMESTAMP);
END;
```

OUTPUT:

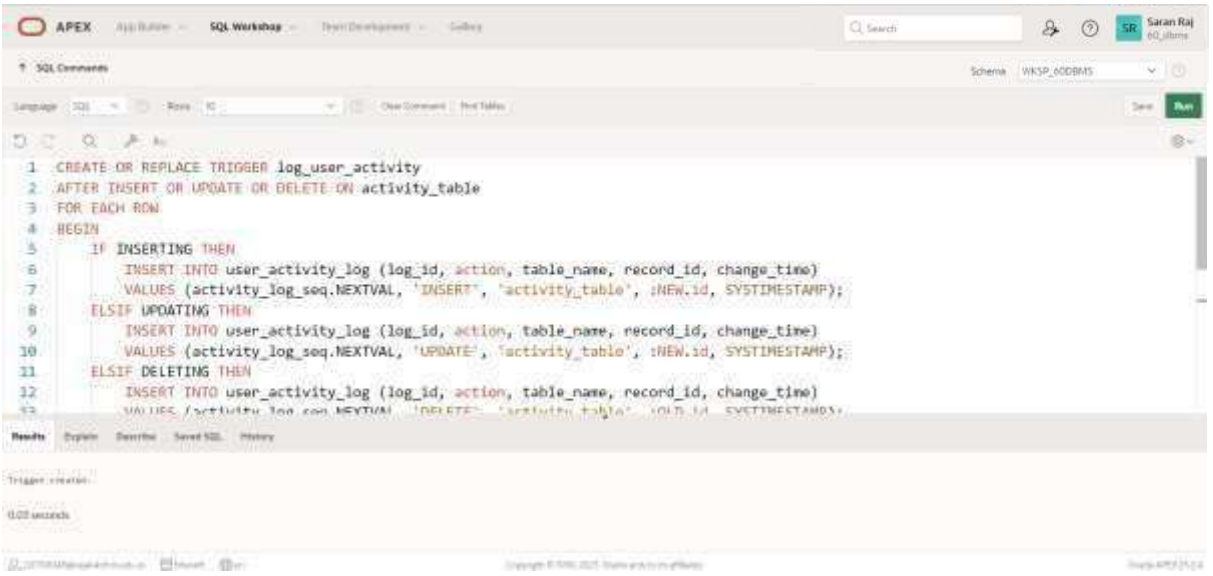


**5.) Write a code in PL/SQL to implement a trigger that records user activity (inserts, updates, deletes) in an audit log for a given set of tables.**

QUERY:

```
CREATE OR REPLACE TRIGGER log_user_activity
AFTER INSERT OR UPDATE OR DELETE ON activity_table
FOR EACH ROW
BEGIN
   IF INSERTING THEN
      INSERT INTO user_activity_log (log_id, action, table_name, record_id, change_time)
      VALUES (activity_log_seq.NEXTVAL, 'INSERT', 'activity_table', :NEW.id, SYSTIMESTAMP);
   ELSIF UPDATING THEN
      INSERT INTO user_activity_log (log_id, action, table_name, record_id, change_time)
      VALUES (activity_log_seq.NEXTVAL, 'UPDATE', 'activity_table', :NEW.id, SYSTIMESTAMP);
   ELSIF DELETING THEN
      INSERT INTO user_activity_log (log_id, action, table_name, record_id, change_time)
      VALUES (activity_log_seq.NEXTVAL, 'DELETE', 'activity_table', :OLD.id, SYSTIMESTAMP);
   END IF;
END;
```

OUTPUT:

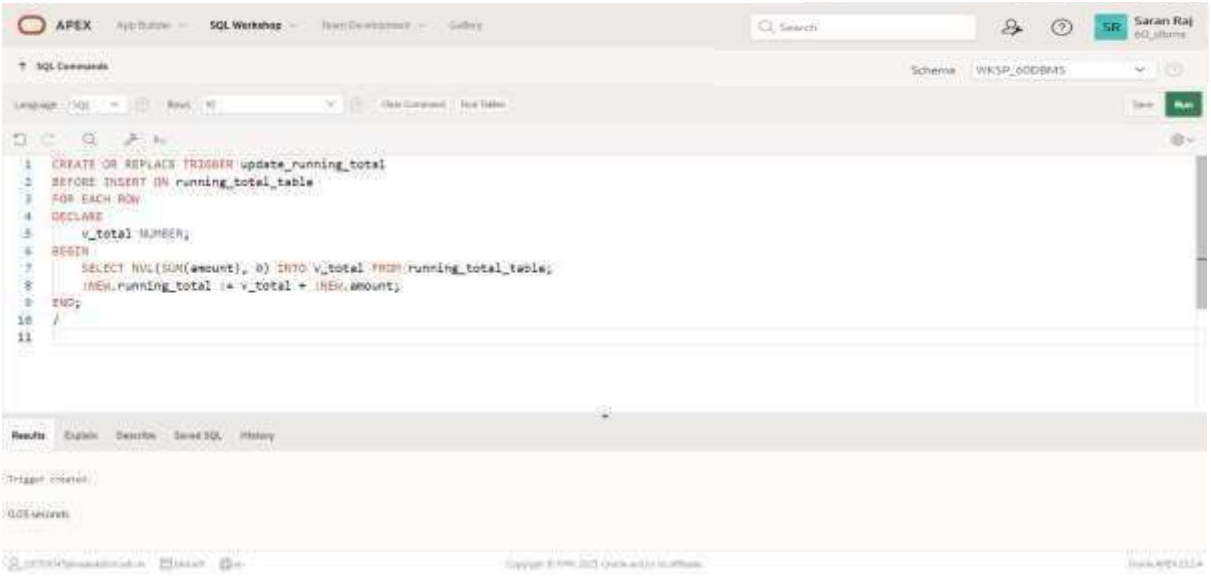



**6.) Write a code in PL/SQL to implement a trigger that automatically calculates and updates a running total column for a table whenever new rows are inserted**

QUERY:

```
CREATE OR REPLACE TRIGGER update_running_total
BEFORE INSERT ON running_total_table
FOR EACH ROW
DECLARE
   v_total NUMBER;
BEGIN
   SELECT NVL(SUM(amount), 0) INTO v_total FROM running_total_table;
   :NEW.running_total := v_total + :NEW.amount;
END;
```

OUTPUT:

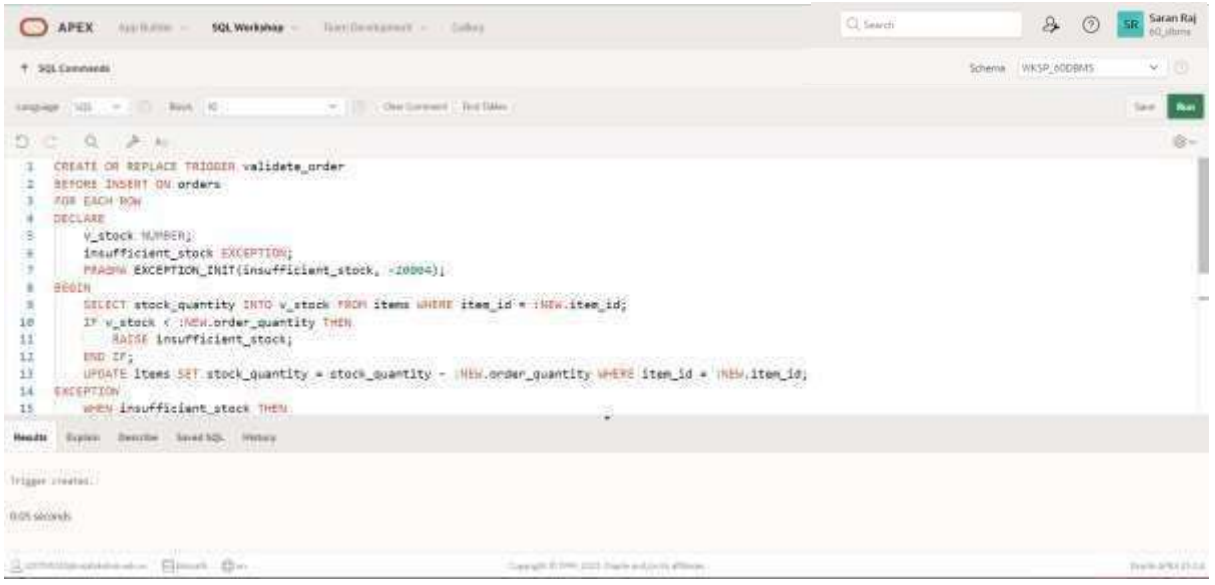



**7.) Write a code in PL/SQL to create a trigger that validates the availability of items before allowing an order to be placed, considering stock levels and pending orders**

QUERY:

```
CREATE OR REPLACE TRIGGER validate_order
BEFORE INSERT ON orders
FOR EACH ROW
DECLARE
   v_stock NUMBER;
   insufficient_stock EXCEPTION;
   PRAGMA EXCEPTION_INIT(insufficient_stock, -20004);
BEGIN
   SELECT stock_quantity INTO v_stock FROM items WHERE item_id = :NEW.item_id;
   IF v_stock < :NEW.order_quantity THEN
      RAISE insufficient_stock;
   END IF;
   UPDATE items SET stock_quantity = stock_quantity - :NEW.order_quantity WHERE item_id =
:NEW.item_id;
EXCEPTION
   WHEN insufficient_stock THEN
      RAISE_APPLICATION_ERROR(-20004, 'Insufficient stock for the item.');
END;
```

OUTPUT:



| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

# MONGO DB

**EX_NO: 19** **DATE:**

**1.)** Write a MongoDB query to find the restaurant id, name, borough and cuisine for those restaurants which prepared dish except 'American' and 'Chinees' or restaurant's name begins with letter 'Wil'.

**QUERY:**

db.restaurants.find( { $or: [{ name: /^Wil/ }, { cuisine: { $nin: ['American', 'Chinese'] } } ] , { restaurant_id: 1, name: 1, borough: 1, cuisine: 1 });

**OUTPUT:**


**2.)** Write a MongoDB query to find the restaurant Id, name, and grades for those restaurants which achieved a grade of "A" and scored 11 on an ISODate "2014-08- 11T00:00:00Z" among many of survey dates.

**QUERY:**

db.restaurants.find( { grades: { $elemMatch: { grade: "A",score: 11, date: ISODate("2014-08-11T00:00:00Z")} }},{ restaurant_id: 1,name: 1,grades: 1 });

**OUTPUT:**


**3.)** Write a MongoDB query to find the restaurant Id, name and grades for those restaurants where the 2nd element of grades array contains a grade of "A" and score 9 on an ISODate "2014-08-11T00:00:00Z".

**QUERY:**

db.restaurants.find( {"grades.1.grade": "A", "grades.1.score": 9, "grades.1.date": ISODate("2014-08-1T00:00:00Z") },{  restaurant_id: 1, name: 1, grades: 1 });

**OUTPUT:**

**4.)** Write a MongoDB query to find the restaurant Id, name, address and geographical location for those restaurants where 2nd element of coord array contains a value which is more than 42 and upto 52

**QUERY:**

db.restaurants.find({$and : [{"address.coord.1": {$gt : 42}},{"address.coord.1": {$lte : 52}}]}, {_id:0, restaurant_id:1, name:1, address:1})

**OUTPUT:**


**5.)** Write a MongoDB query to arrange the name of the restaurants in ascending order along with all the columns.

**QUERY:**

db.restaurants.find({}, { _id: 0 }).sort({ name: 1 });

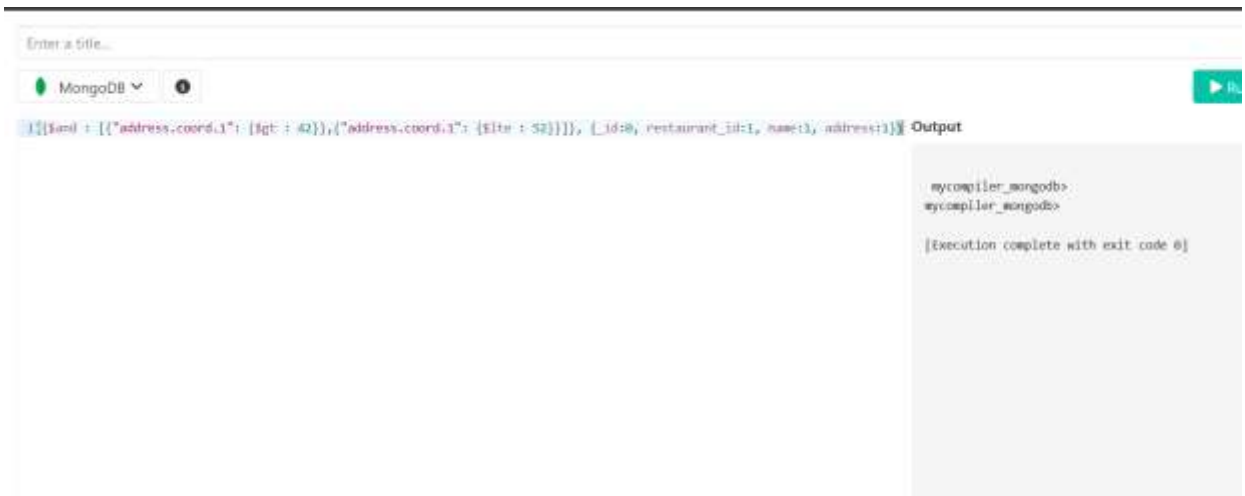
**OUTPUT:**


**6.)** Write a MongoDB query to arrange the name of the restaurants in descending along with all the columns.

**QUERY:**

db.restaurants.find({}, { _id: 0 }).sort({ name: 1 })

**OUTPUT:**



**7.)** Write a MongoDB query to arranged the name of the cuisine in ascending order and for that same cuisine borough should be in descending order.

**QUERY:**

db.restaurants.find({}, { _id: 0 }).sort({ cuisine: 1, borough: -1 })

**OUTPUT:**


**8.)** Write a MongoDB query to know whether all the addresses contains the street or not.

**QUERY:**

db.restaurants.find({ "address.street": { $exists: true, $ne: "" } })

**OUTPUT:**

**9.)** Write a MongoDB query which will select all documents in the restaurants collection where the coord field value is Double.

**QUERY:**

db.restaurants.find({ "address.coord": { $elemMatch: { $type: "double" } } })

**OUTPUT:**


10. Write a MongoDB query which will select the restaurant Id, name and grades for those restaurants which returns 0 as a remainder after dividing the score by 7.

**QUERY:**

db.restaurants.find({ "grades.score": { $mod: [7, 0] } }, { restaurant_id: 1, name: 1, grades: 1 });

**OUTPUT:**


11. Write a MongoDB query to find the restaurant name, borough, longitude and attitude and cuisine for those restaurants which contains 'mon' as three letters somewhere in its name.

**QUERY:**

db.restaurants.find({ name: /mon/i }, { name: 1, borough: 1, "address.coord": 1, cuisine: 1 })

**OUTPUT:**

12. Write a MongoDB query to find the restaurant name, borough, longitude and latitude and cuisine for those restaurants which contain 'Mad' as first three letters of its name.

**QUERY:**

db.restaurants.find({ name: /^Mad/i }, { name: 1, borough: 1, "address.coord": 1, cuisine: 1 })

**OUTPUT:**


13. Write a MongoDB query to find the restaurants that have at least one grade with a score of less than 5.

**QUERY:**

db.restaurants.find({ "grades": { $elemMatch: { "score": { $lt: 5 } } } })

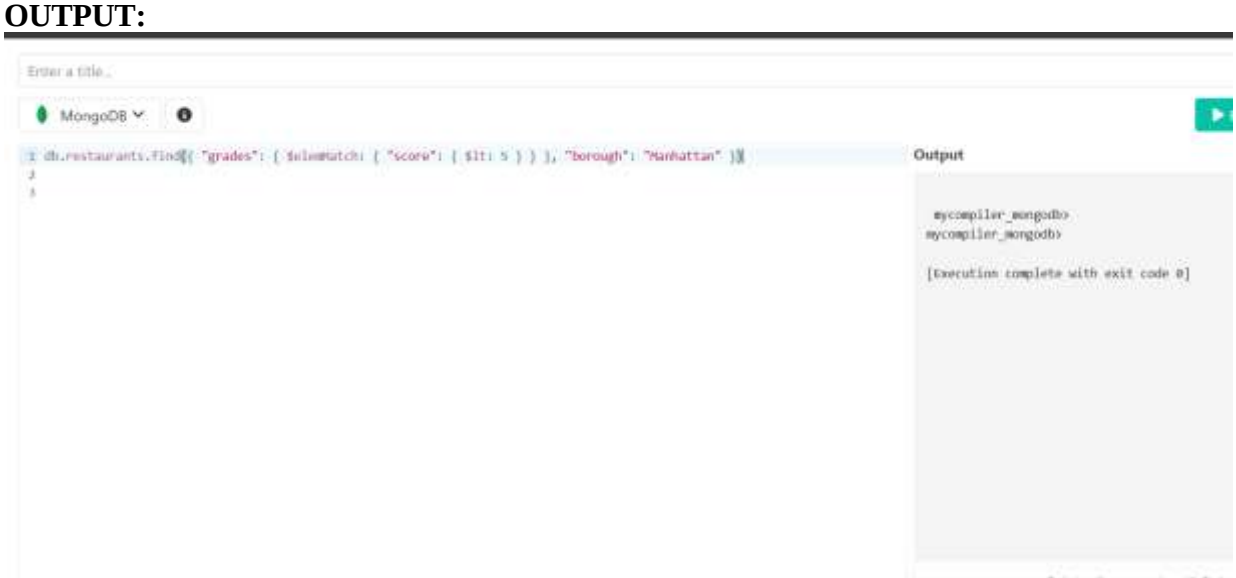
**OUTPUT:**


14. Write a MongoDB query to find the restaurants that have at least one grade with a score of less than 5 and that are located in the borough of Manhattan.

**QUERY:**

db.restaurants.find({ "grades": { $elemMatch: { "score": { $lt: 5 } } }, "borough": "Manhattan" })

**OUTPUT:**



15. Write a MongoDB query to find the restaurants that have at least one grade with a score of less than 5 and that are located in the borough of Manhattan or Brooklyn.

**QUERY:**

db.restaurants.find({ "grades": { $elemMatch: { "score": { $lt: 5 } } }, $or: [{ "borough": "Manhattan" }, { "borough": "Brooklyn" }] })

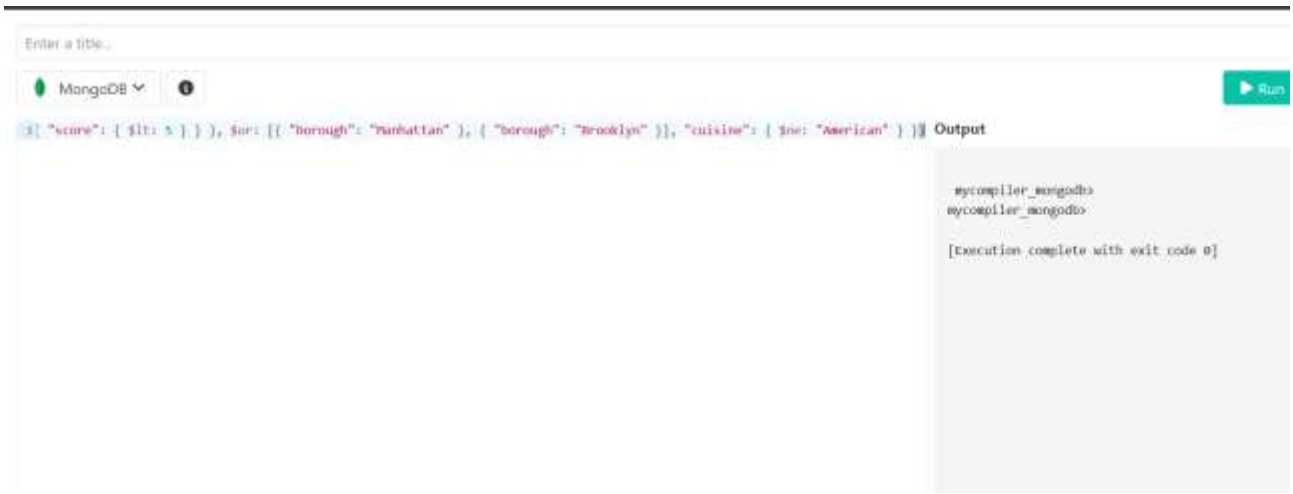
**OUTPUT:**


16. Write a MongoDB query to find the restaurants that have at least one grade with a score of less than 5 and that are located in the borough of Manhattan or Brooklyn, and their cuisine is not American.

**QUERY:**

db.restaurants.find({ "grades": { $elemMatch: { "score": { $lt: 5 } } }, $or: [{ "borough": "Manhattan" }, { "borough": "Brooklyn" }], "cuisine": { $ne: "American" } })

**OUTPUT:**




17. Write a MongoDB query to find the restaurants that have at least one grade with a score of less than 5 and that are located in the borough of Manhattan or Brooklyn, and their cuisine is not American or Chinese.

**QUERY:**

db.restaurants.find({ "grades": { $elemMatch: { "score": { $lt: 5 } } }, $or: [{ "borough": "Manhattan" }, { "borough": "Brooklyn" }], "cuisine": { $nin: ["American", "Chinese"] } })

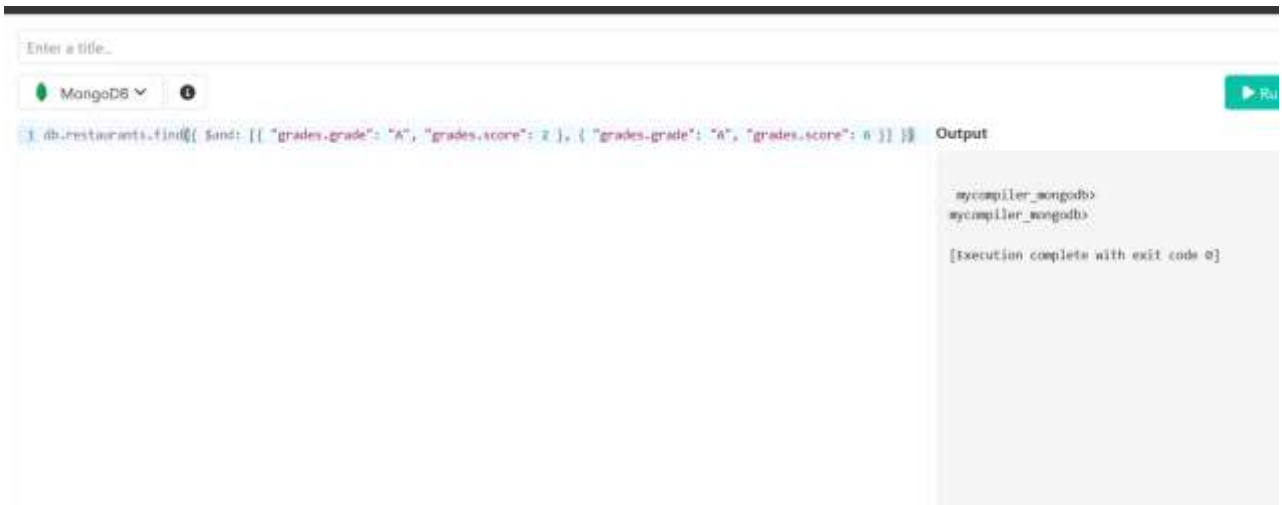
**OUTPUT:**

18. Write a MongoDB query to find the restaurants that have a grade with a score of 2 and a grade with a score of 6.

**QUERY:**

db.restaurants.find({ $and: [{ "grades.grade": "A", "grades.score": 2 }, { "grades.grade": "A", "grades.score": 6 }] })

**OUTPUT:**




19. Write a MongoDB query to find the restaurants that have a grade with a score of 2 and a grade with a score of 6 and are located in the borough of Manhattan.

**QUERY:**

db.restaurants.find({ $and: [{ "grades.grade": "A", "grades.score": 2 }, { "grades.grade": "A", "grades.score": 6 }], "borough": "Manhattan" })

**OUTPUT:**


20. Write a MongoDB query to find the restaurants that have a grade with a score of 2 and a grade with a score of 6 and are located in the borough of Manhattan or Brooklyn.

**QUERY:**

db.restaurants.find({ $and: [{ "grades.grade": "A", "grades.score": 2 }, { "grades.grade": "A", "grades.score": 6 }], $or: [{ "borough": "Manhattan" }, { "borough": "Brooklyn" }] })

**OUTPUT:**


21. Write a MongoDB query to find the restaurants that have a grade with a score of 2 and a

grade with a score of 6 and are located in the borough of Manhattan or Brooklyn, and their cuisine is not American.

**QUERY:**

db.restaurants.find({ $and: [{ "grades.grade": "A", "grades.score": 2 }, { "grades.grade": "A", "grades.score": 6 }], $or: [{ "borough": "Manhattan" }, { "borough": "Brooklyn" }], "cuisine": { $ne: "American" } })

**OUTPUT:**


22. Write a MongoDB query to find the restaurants that have a grade with a score of 2 and a grade with a score of 6 and are located in the borough of Manhattan or Brooklyn, and their cuisine is not American or Chinese.

**QUERY:**

db.restaurants.find({ $and: [{ "grades.grade": "A", "grades.score": 2 }, { "grades.grade": "A", "grades.score": 6 }], $or: [{ "borough": "Manhattan" }, { "borough": "Brooklyn" }], "cuisine": { $nin: ["American", "Chinese"] } })

**OUTPUT:**

23. Write a MongoDB query to find the restaurants that have a grade with a score of 2 or a grade with a score of 6.

**QUERY:**

db.restaurants.find({ $or: [{ "grades.score": 2 }, { "grades.score": 6 }] })

**OUTPUT:**


| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**

# MONGO DB

**EX_NO: 20** **DATE:**

**1.) Find all movies with full information from the 'movies' collection that released in the year 1893.**

**QUERY:**

db.movies.find({ year: 1893 })

**OUTPUT:**


**2.) Find all movies with full information from the 'movies' collection that have a runtime greater than 120 minutes.**

**QUERY:**

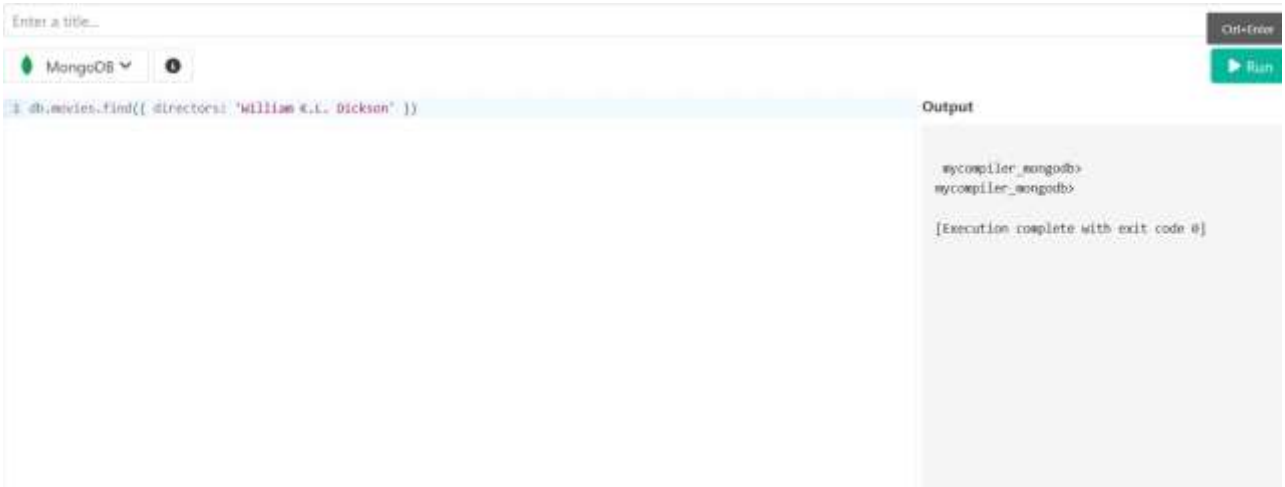
db.movies.find({ runtime: { $gt: 120 } })

**OUTPUT:**


**3.) Find all movies with full information from the 'movies' collection that have "Short" genre.**

**QUERY:**
db.movies.find({ genres: 'Short' })
**OUTPUT:**

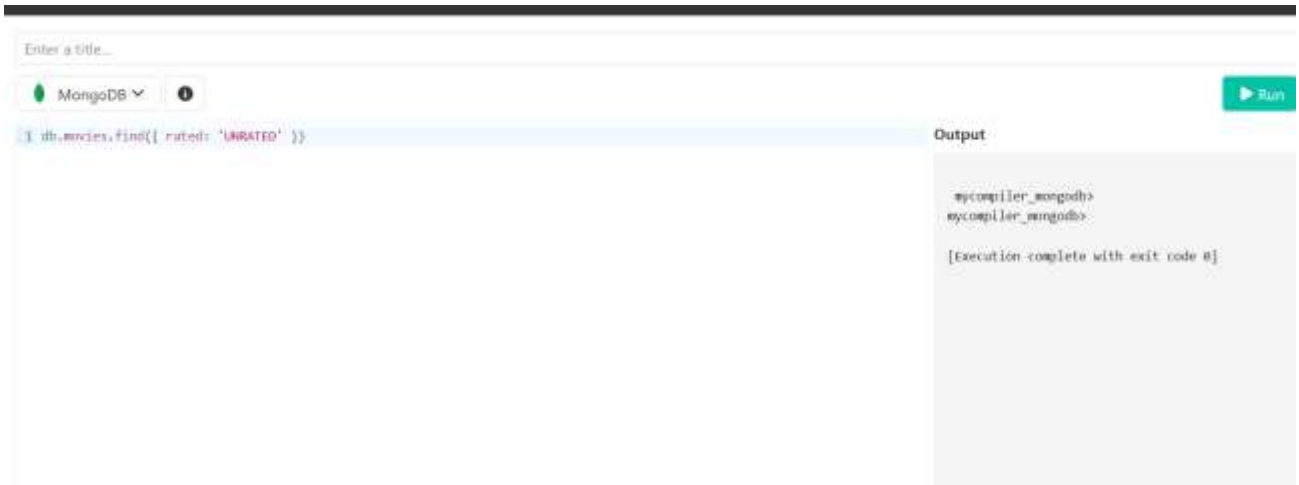

**4.) Retrieve all movies from the 'movies' collection that were directed by "William K.L. Dickson" and include complete information for each movie.**
**QUERY:**
db.movies.find({ directors: 'William K.L. Dickson' })
**OUTPUT:**



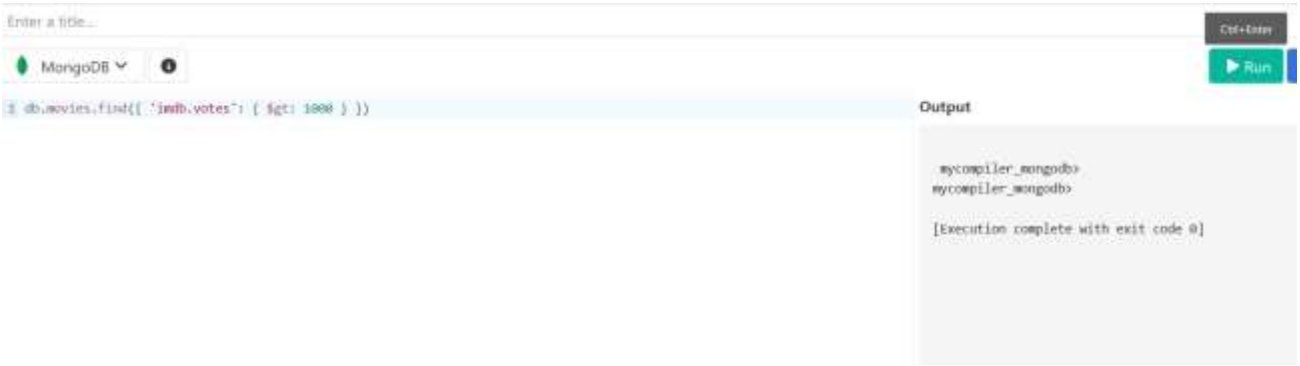

**5.) Retrieve all movies from the 'movies' collection that were released in the USA and include complete information for each movie.**
**QUERY:**

db.movies.find({ countries: 'USA' })
**OUTPUT:**


**6.) Retrieve all movies from the 'movies' collection that have complete information and are rated as "UNRATED".**
**QUERY:**
db.movies.find({ rated: 'UNRATED' })
**OUTPUT:**




**7.) Retrieve all movies from the 'movies' collection that have complete information and have received more than 1000 votes on IMDb.**
**QUERY:**
db.movies.find({ 'imdb.votes': { $gt: 1000 } })
**OUTPUT:**




**8.) Retrieve all movies from the 'movies' collection that have complete information and have an IMDb rating higher than 7.**
**QUERY:**
db.movies.find({ 'imdb.rating': { $gt: 7 } })
**OUTPUT:**

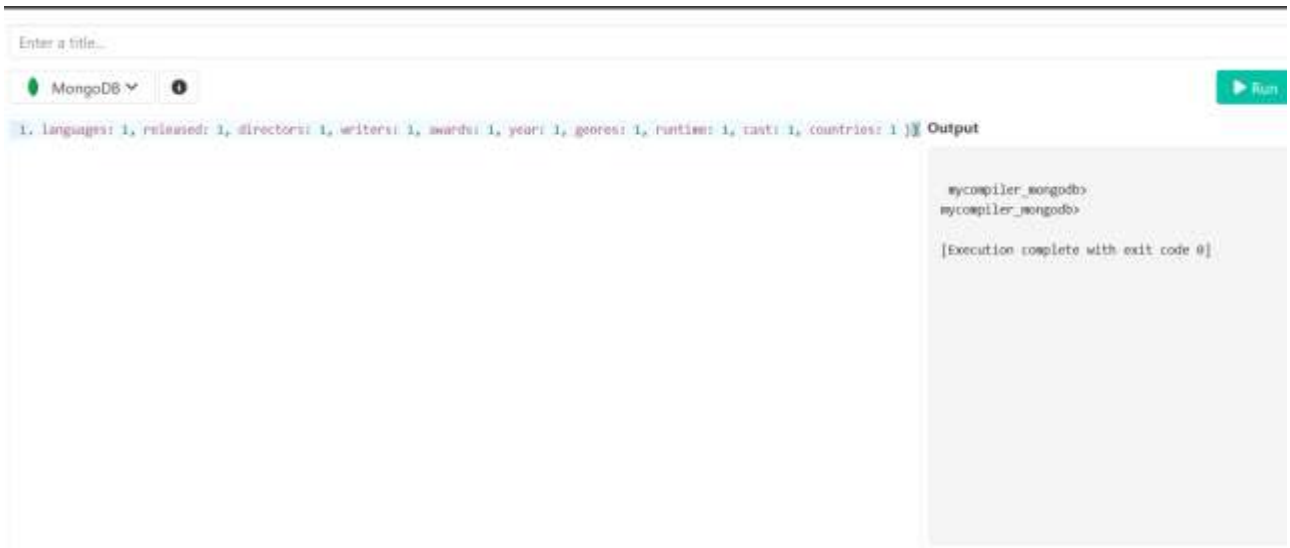

**9.) Retrieve all movies from the 'movies' collection that have complete information and have a viewer rating higher than 4 on Tomatoes.**
**QUERY:**
db.movies.find({ 'tomatoes.viewer.rating': { $gt: 4 } })
**OUTPUT:**


**10.) Retrieve all movies from the 'movies' collection that have received an award.**
**QUERY:**
db.movies.find({ 'awards.wins': { $gt: 0 } })
**OUTPUT:**


**11.) Find all movies with title, languages, released, directors, writers, awards, year, genres, runtime, cast, countries from the 'movies' collection in MongoDB that have at**

**least one nomination.**
**QUERY:**
db.movies.find( { 'awards.nominations': { $gt: 0 } }, { title: 1, languages: 1, released: 1, directors: 1, writers: 1, awards: 1, year: 1, genres: 1, runtime: 1, cast: 1, countries: 1 })
**OUTPUT:**


**12.) Find all movies with title, languages, released, directors, writers, awards, year, genres, runtime, cast, countries from the 'movies' collection in MongoDB with cast including "Charles Kayser".**
**QUERY:**
db.movies.find( { cast: 'Charles Kayser' }, { title: 1, languages: 1, released: 1, directors: 1, writers: 1, awards: 1, year: 1, genres: 1, runtime: 1, cast: 1, countries: 1 })
**OUTPUT:**




**13.) Retrieve all movies with title, languages, released, directors, writers, countries from the 'movies' collection in MongoDB that released on May 9, 1893.**
**QUERY:**
db.movies.find( { released: ISODate("1893-05-09T00:00:00.000Z") }, { title: 1, languages: 1, released: 1, directors: 1, writers: 1, countries: 1 })
**OUTPUT:**


**14.) Retrieve all movies with title, languages, released, directors, writers, countries from the 'movies' collection in MongoDB that have a word "scene" in the title.**
**QUERY:**

db.movies.find( { title: /scene/i }, { title: 1, languages: 1, released: 1, directors: 1, writers: 1, countries: 1 })

**OUTPUT:**


| Evaluation Procedure | Marks awarded |
|---|---|
| Query(5) | |
| Execution (5) | |
| Viva(5) | |
| Total (15) | |
| Faculty Signature | |

**RESULT:**