DBMS Lab Exercise-10 <u>Triggers in SQL</u>

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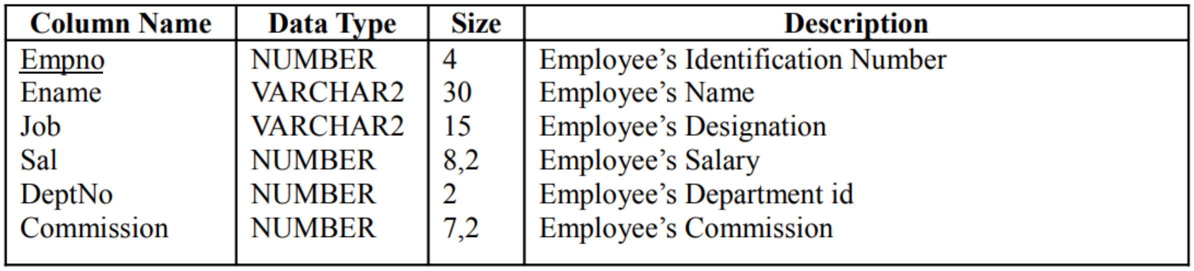
21BCE1163

Triggers in SQL

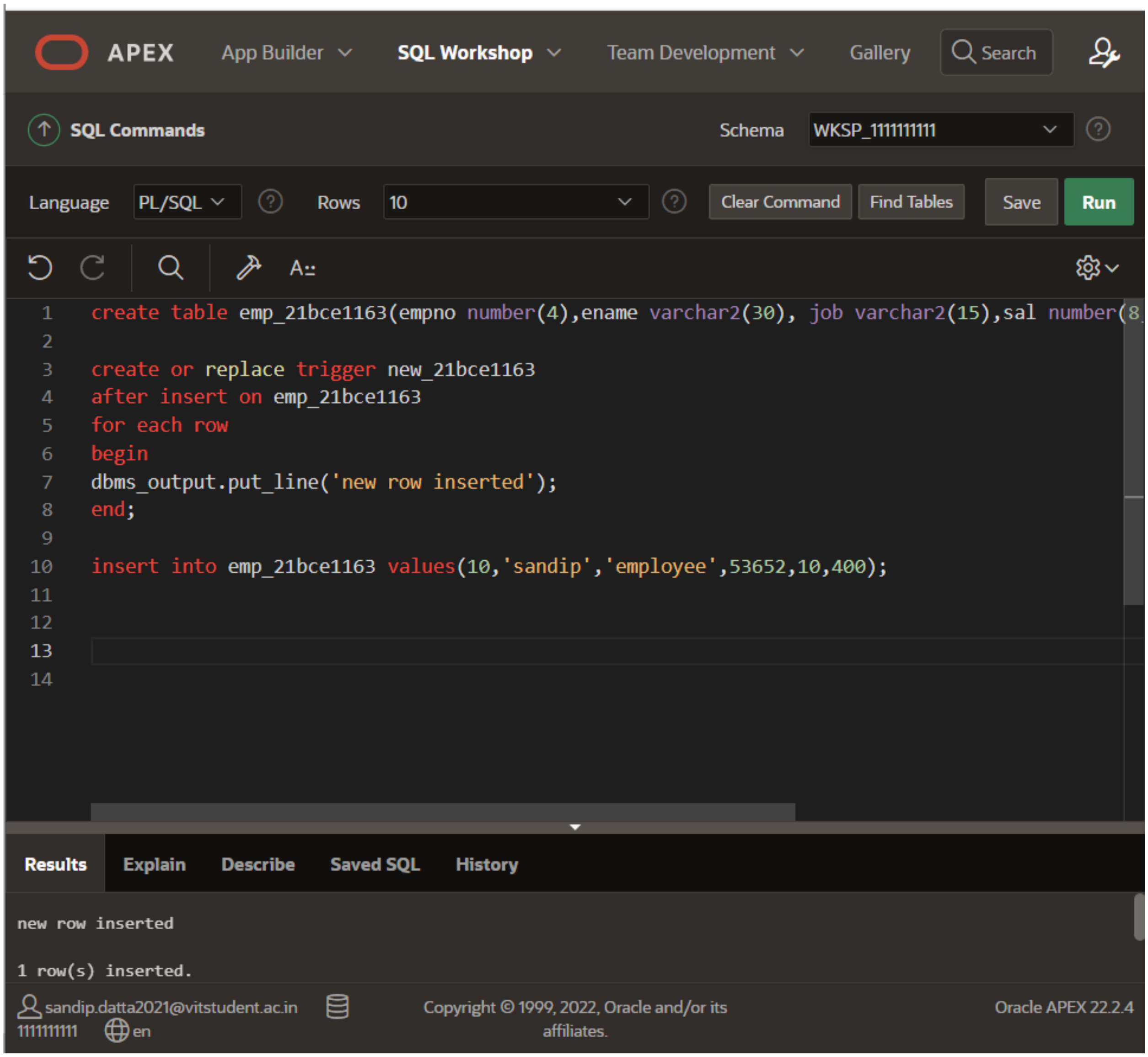
1. Consider the table Employee Table



Column Name	Data Type	Size	Description
Empno	NUMBER	4	Employee’s Identification Number
Ename	VARCHAR2	30	Employee’s Name
Job	VARCHAR2	15	Employee’s Designation
Sal	NUMBER	8,2	Employee’s Salary
DeptNo	NUMBER	2	Employee’s Department id
Commission	NUMBER	7,2	Employee’s Commission

i. Create a trigger message that “a new row is inserted” after the record is added successfully.

```
create table emp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal
number(8,2),deptno number(2),com number(7,2));


create or replace trigger new_21bce1163

after insert on emp_21bce1163

for each row

begin

dbms_output.put_line('new row inserted');

end;


insert into emp_21bce1163 values(10,'sandip','employee',53652,10,400);
```



Schema WKSP_1111111111

Language PL/SQL

Rows 10

```
create table emp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal number(8

create or replace trigger new_21bce1163
after insert on emp_21bce1163
for each row
begin
dbms_output.put_line('new row inserted');
end;

insert into emp_21bce1163 values(10,'sandip','employee',53652,10,400);
```

```
new row inserted

1 row(s) inserted.
```

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1111111111 en

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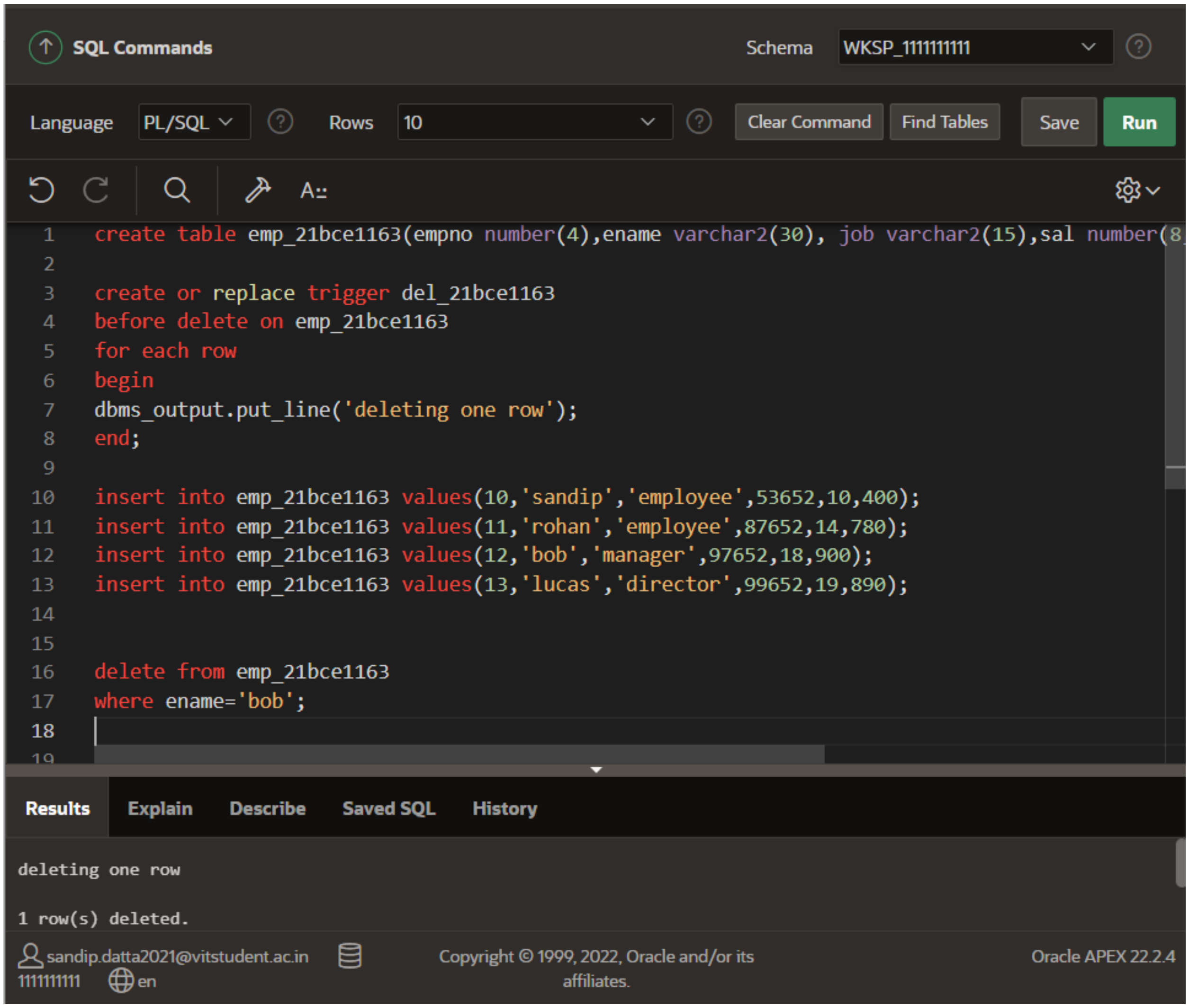
ii. Write a before delete trigger on Employee table. (If the entire record of an Employee is attempted to delete)

create table emp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal number(8,2),deptno number(2),com number(7,2));

create or replace trigger del_21bce1163

before delete on emp_21bce1163

```
for each row
begin
dbms_output.put_line('deleting one row');
end;

insert into emp_21bce1163 values(10,'sandip','employee',53652,10,400);
insert into emp_21bce1163 values(11,'rohan','employee',87652,14,780);
insert into emp_21bce1163 values(12,'bob','manager',97652,18,900);
insert into emp_21bce1163 values(13,'lucas','director',99652,19,890);


delete from emp_21bce1163
where ename='bob';
```



Schema WKSP_1111111111

Language PL/SQL

Rows 10

```
create table emp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal number(8

create or replace trigger del_21bce1163
before delete on emp_21bce1163
for each row
begin
dbms_output.put_line('deleting one row');
end;

insert into emp_21bce1163 values(10,'sandip','employee',53652,10,400);
insert into emp_21bce1163 values(11,'rohan','employee',87652,14,780);
insert into emp_21bce1163 values(12,'bob','manager',97652,18,900);
insert into emp_21bce1163 values(13,'lucas','director',99652,19,890);


delete from emp_21bce1163
where ename='bob';
```

```
deleting one row

1 row(s) deleted.
```

iii. Write a trigger, for every any update on the salary column, the updated row is inserted into a new table.

create table emp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal number(8,2),deptno number(2),com number(7,2));

create table newemp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal number(8,2),deptno number(2),com number(7,2));

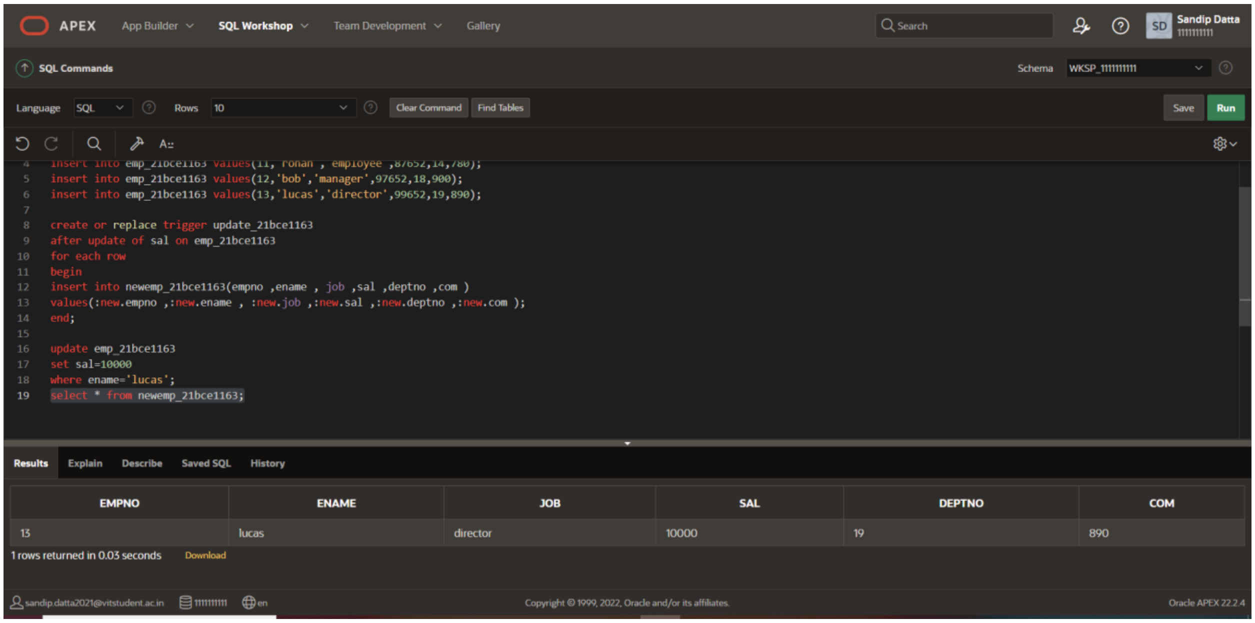
insert into emp_21bce1163 values(10,'sandip','employee',53652,10,400);

insert into emp_21bce1163 values(11,'rohan','employee',87652,14,780);

insert into emp_21bce1163 values(12,'bob','manager',97652,18,900);

insert into emp_21bce1163 values(13,'lucas','director',99652,19,890);

```
create or replace trigger update_21bce1163

after update of sal on emp_21bce1163

for each row

begin

insert into newemp_21bce1163(empno ,ename , job ,sal ,deptno ,com )

values(:new.empno ,:new.ename , :new.job ,:new.sal ,:new.deptno ,:new.com );

end;


update emp_21bce1163

set sal=10000

where ename='lucas';

select * from newemp_21bce1163;
```



Language SQL

Rows 10

```
insert into emp_21bce1163 values(11,'ronan','employee',87652,14,780);
insert into emp_21bce1163 values(12,'bob','manager',97652,18,900);
insert into emp_21bce1163 values(13,'lucas','director',99652,19,890);

create or replace trigger update_21bce1163
after update of sal on emp_21bce1163
for each row
begin
insert into newemp_21bce1163(empno ,ename , job ,sal ,deptno ,com )
values(:new.empno ,:new.ename , :new.job ,:new.sal ,:new.deptno ,:new.com );
end;

update emp_21bce1163
set sal=10000
where ename='lucas';
select * from newemp_21bce1163;
```

EMPNO	ENAME	JOB	SAL	DEPTNO	COM
13	lucas	director	10000	19	890

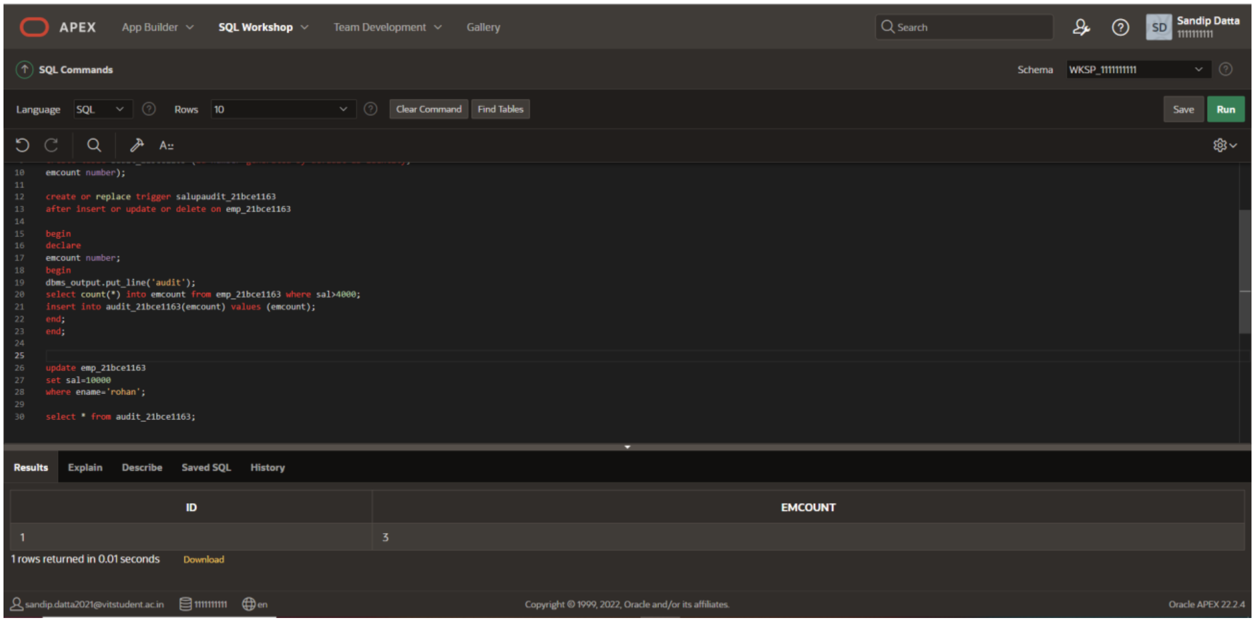
1 rows returned in 0.03 seconds

iv. Store the count of employees having salary > 4000 in new table Audit

```
create table emp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal number(8,2),deptno number(2),com number(7,2));

create table newemp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal number(8,2),deptno number(2),com number(7,2));
```

```
insert into emp_21bce1163 values(10,'sandip','employee',53652,10,400);
insert into emp_21bce1163 values(11,'rohan','employee',87652,14,780);
insert into emp_21bce1163 values(12,'bob','manager',97652,18,900);
insert into emp_21bce1163 values(13,'lucas','director',99652,19,890);


create table audit_21bce1163 (id number generated by default as identity,
emcount number);

create or replace trigger salupaudit_21bce1163
after insert or update or delete on emp_21bce1163

begin
declare
emcount number;
begin
dbms_output.put_line('audit');
select count(*) into emcount from emp_21bce1163 where sal>4000;
insert into audit_21bce1163(emcount) values (emcount);
end;
end;


update emp_21bce1163
set sal=10000
where ename='rohan';
```

select * from audit_21bce1163;



```
emcount number);

create or replace trigger salupaudit_21bce1163
after insert or update or delete on emp_21bce1163

begin
declare
emcount number;
begin
dbms_output.put_line('audit');
select count(*) into emcount from emp_21bce1163 where sal>4000;
insert into audit_21bce1163(emcount) values (emcount);
end;
end;


update emp_21bce1163
set sal=10000
where ename='rohan';

select * from audit_21bce1163;
```

ID	EMCOUNT
1	3

1 rows returned in 0.01 seconds

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v. Give 10% raise to all employees whose salary > 8000.

create table emp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal number(8,2),deptno number(2),com number(7,2));

create table newemp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal number(8,2),deptno number(2),com number(7,2));

insert into emp_21bce1163 values(10,'sandip','employee',53652,10,400);

insert into emp_21bce1163 values(11,'rohan','employee',87652,14,780);

insert into emp_21bce1163 values(12,'bob','manager',97652,18,900);

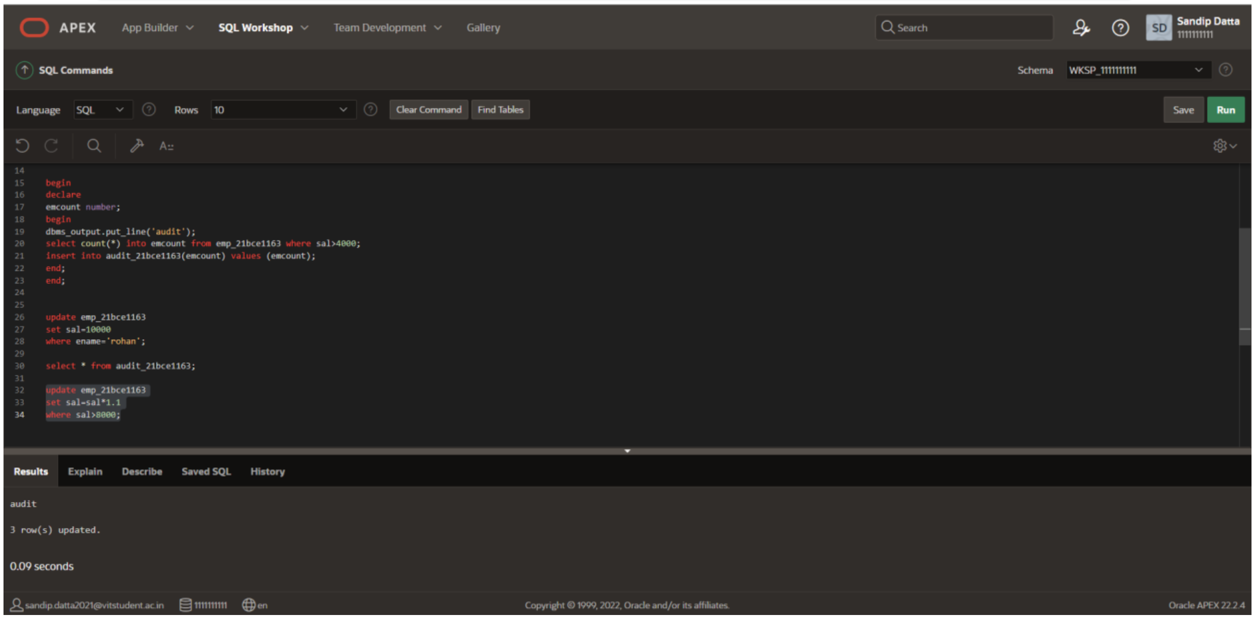
insert into emp_21bce1163 values(13,'lucas','director',99652,19,890);

create table audit_21bce1163 (id number generated by default as identity,

emcount number);

create or replace trigger salupaudit_21bce1163

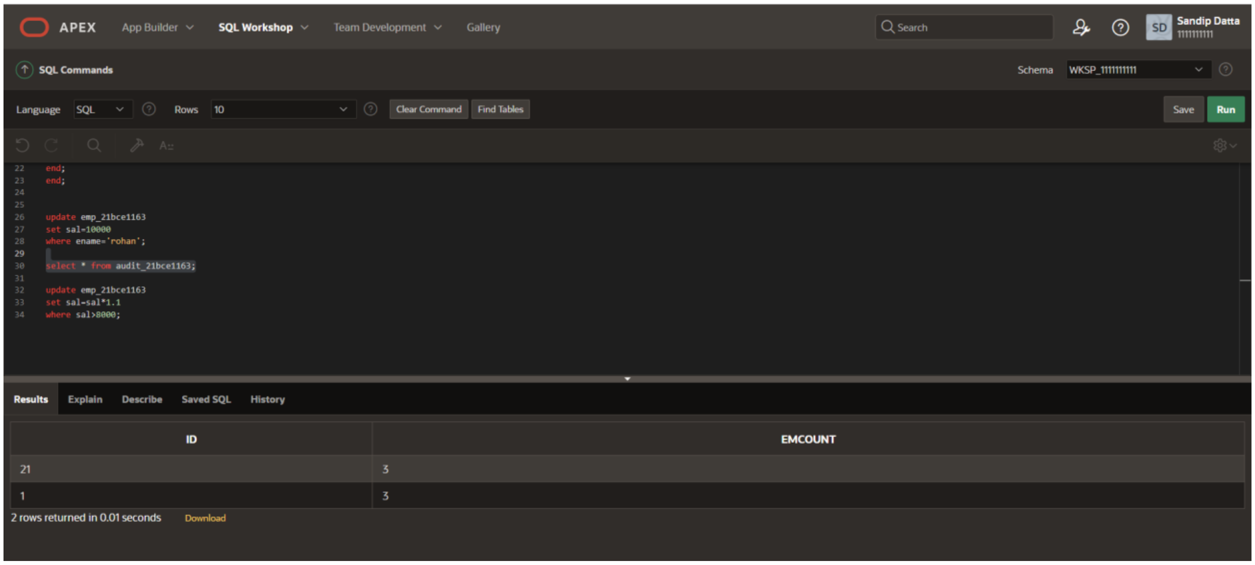
```
after insert or update or delete on emp_21bce1163

begin
declare
emcount number;
begin
dbms_output.put_line('audit');
select count(*) into emcount from emp_21bce1163 where sal>4000;
insert into audit_21bce1163(emcount) values (emcount);
end;
end;



update emp_21bce1163
set sal=10000
where ename='rohan';

select * from audit_21bce1163;

update emp_21bce1163
set sal=sal*1.1
where sal>8000;
```



```
begin
declare
emcount number;
begin
dbms_output.put_line('audit');
select count(*) into emcount from emp_21bce1163 where sal>4000;
insert into audit_21bce1163(emcount) values (emcount);
end;
end;


update emp_21bce1163
set sal=10000
where ename='rohan';

select * from audit_21bce1163;

update emp_21bce1163
set sal=sal*1.1
where sal>8000;
```

```
audit

3 row(s) updated.
```

0.09 seconds



```
end;
end;


update emp_21bce1163
set sal=10000
where ename='rohan';

select * from audit_21bce1163;

update emp_21bce1163
set sal=sal*1.1
where sal>8000;
```

ID	EMCOUNT
21	3
1	3

2 rows returned in 0.01 seconds

vi. For given table, create “Before Update” trigger preventing a change on Primary Key column

create table emp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal number(8,2),deptno number(2),com number(7,2));

create table newemp_21bce1163(empno number(4),ename varchar2(30), job varchar2(15),sal number(8,2),deptno number(2),com number(7,2));

insert into emp_21bce1163 values(10,'sandip','employee',53652,10,400);

insert into emp_21bce1163 values(11,'rohan','employee',87652,14,780);

insert into emp_21bce1163 values(12,'bob','manager',97652,18,900);

```
insert into emp_21bce1163 values(13,'lucas','director',99652,19,890);
```

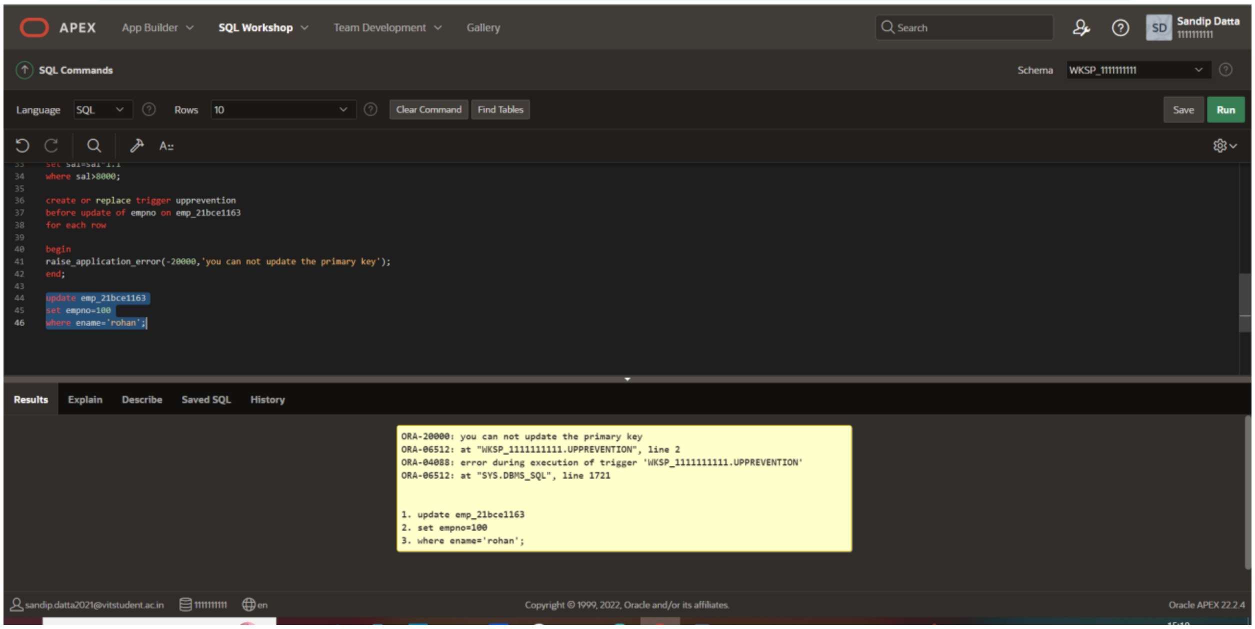
```
create table audit_21bce1163 (id number generated by default as identity,
emcount number);
```

```
create or replace trigger salupaudit_21bce1163
after insert or update or delete on emp_21bce1163

begin
declare
emcount number;
begin
dbms_output.put_line('audit');
select count(*) into emcount from emp_21bce1163 where sal>4000;
insert into audit_21bce1163(emcount) values (emcount);
end;
end;
```

```
update emp_21bce1163
set sal=10000
where ename='rohan';
```

```
select * from audit_21bce1163;
```

```
update emp_21bce1163

set sal=sal*1.1

where sal>8000;


create or replace trigger upprevention

before update of empno on emp_21bce1163

for each row


begin

raise_application_error(-20000,'you can not update the primary key');

end;


update emp_21bce1163

set empno=100

where ename='rohan';
```



```
set sal=sal*1.1
where sal>8000;

create or replace trigger upprevention
before update of empno on emp_21bce1163
for each row

begin
raise_application_error(-20000,'you can not update the primary key');
end;

update emp_21bce1163
set empno=100
where ename='rohan';
```

```
ORA-20000: you can not update the primary key
ORA-06512: at "WKSP_1111111111.UPPREVENTION", line 2
ORA-04088: error during execution of trigger 'WKSP_1111111111.UPPREVENTION'
ORA-06512: at "SYS.DBMS_SQL", line 1721


1. update emp_21bce1163
2. set empno=100
3. where ename='rohan';
```