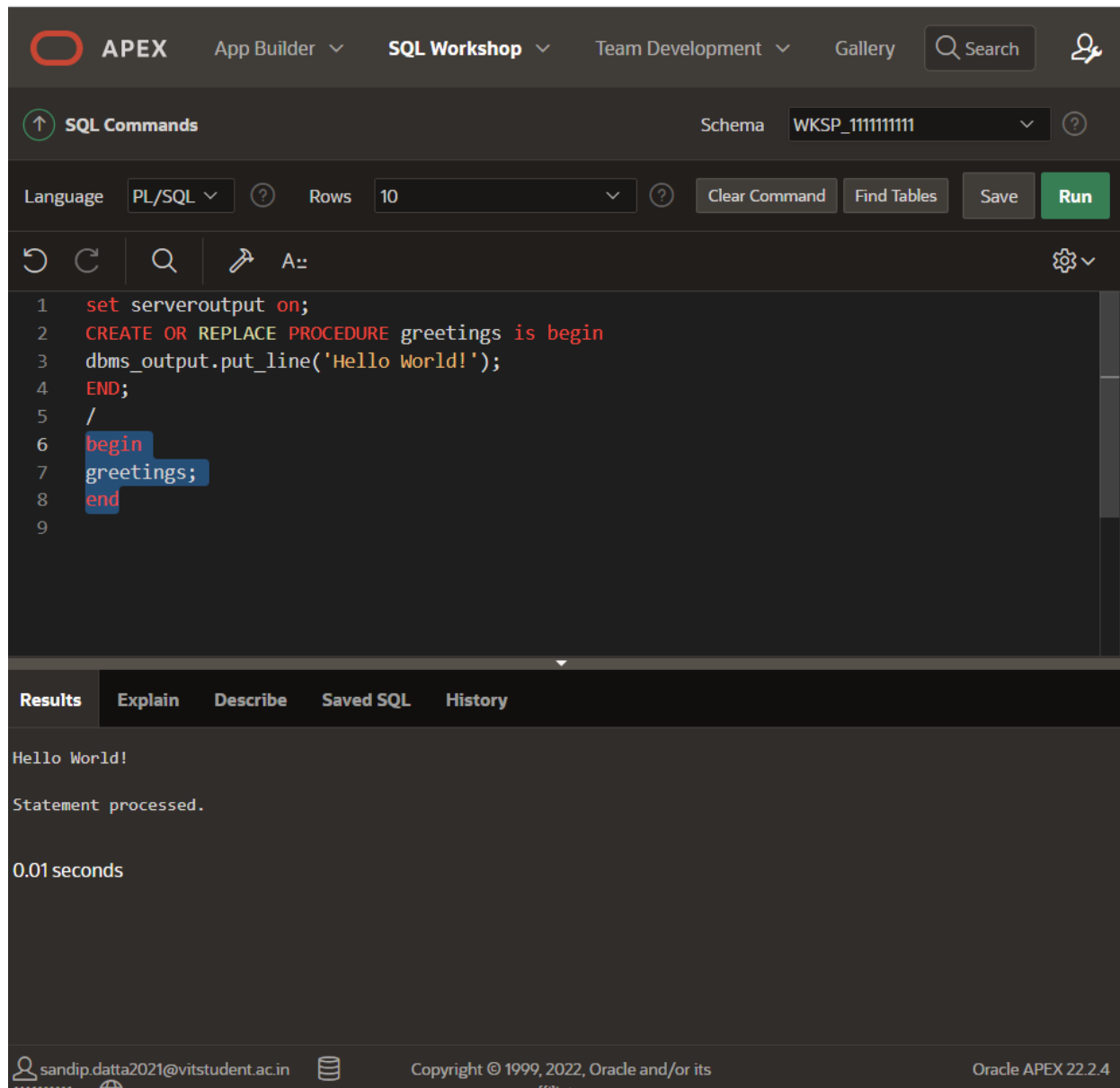


DBMS Lab Exercise-9 PL/SQL Procedures and Functions

Sandip Datta
21BCE1163

1. Write a procedure that prints “Hello World !!!”



The screenshot displays the Oracle APEX SQL Workshop interface. At the top, the navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. The 'SQL Commands' tab is active, showing the schema 'WKSP_111111111'. The language is set to 'PL/SQL' and the number of rows is '10'. The SQL command area contains the following code:

```
1 set serveroutput on;
2 CREATE OR REPLACE PROCEDURE greetings is begin
3 dbms_output.put_line('Hello World!');
4 END;
5 /
6 begin
7 greetings;
8 end
9
```

The 'Run' button is highlighted in green. Below the command area, the 'Results' tab is selected, showing the output 'Hello World!' and 'Statement processed.' with a execution time of '0.01 seconds'. The footer includes the user 'sandip.datta2021@vitstudent.ac.in', copyright information 'Copyright © 1999, 2022, Oracle and/or its affiliates', and the version 'Oracle APEX 22.2.4'.

2. Write a procedure that computes the square of value of a passed value.

The screenshot shows the Oracle APEX SQL Commands interface. The Schema is set to WKSP_111111111. The Language is PL/SQL. The Rows are set to 10. The SQL command is as follows:

```
1 set serveroutput on;
2 CREATE OR REPLACE PROCEDURE square(n in number) is
3 sq number;
4 begin
5 sq := n * n;
6 dbms_output.put_line(sq);
7 END;
8 /
9 begin
10 square(10);
11 end
12
```

The Results tab shows the output:

```
100
Statement processed.
0.01 seconds
```

The footer of the interface includes the user information: sandip.datta2021@vitstudent.ac.in, the copyright notice: Copyright © 1999, 2022, Oracle and/or its affiliates, and the Oracle APEX version: Oracle APEX 22.2.4.

3. Write a procedure program finds the maximum of three value of passed value.

```
set serveroutput on;
```

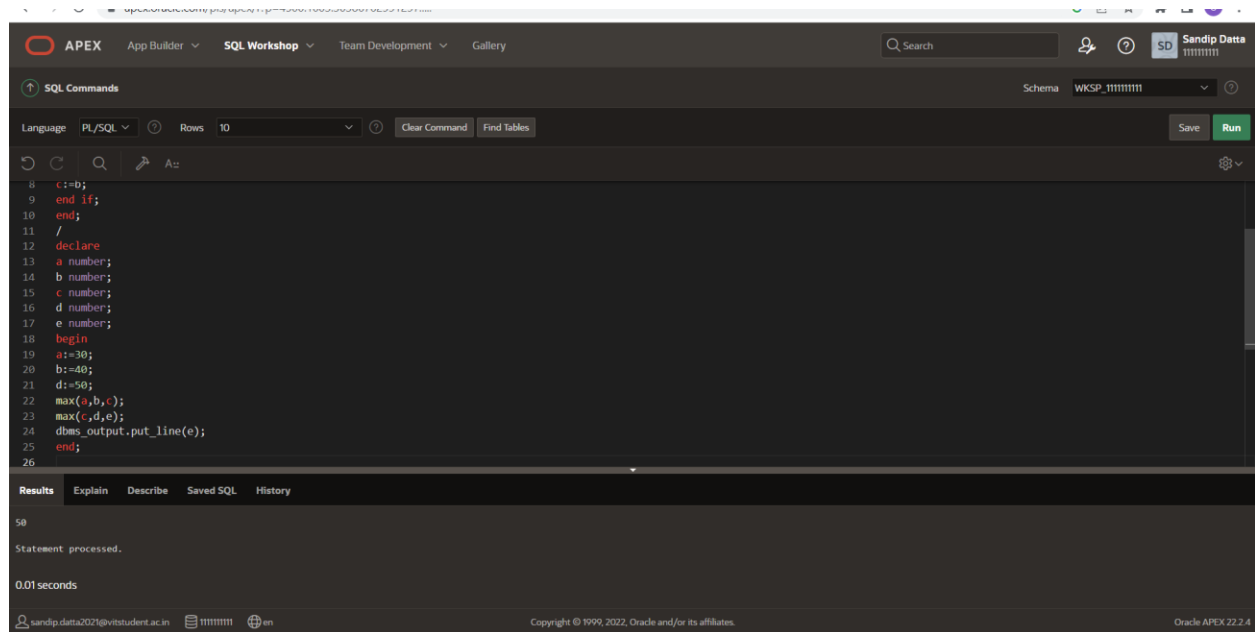
```
CREATE OR REPLACE PROCEDURE max(a in number,b in number,c out number) is
```

```
begin
```

```
if a>b then
```

```
c:=a;
```

```
else
c:=b;
end if;
end;
/
declare
a number;
b number;
c number;
d number;
e number;
begin
a:=30;
b:=40;
d:=50;
max(a,b,c);
max(c,d,e);
dbms_output.put_line(e);
end;
```



4. Write a function prints “Hello World !!!” by passing it as argument.

set serveroutput on;

CREATE OR REPLACE PROCEDURE write(x in string)

is

begin

dbms_output.put_line(x);

end;

/

begin

write('hello world');

end;

The screenshot shows the Oracle APEX SQL Commands editor. The top bar indicates the schema is 'WKSP_111111111'. The language is set to 'PL/SQL' and the number of rows to display is '10'. The SQL code entered is as follows:

```
1 set serveroutput on;
2 CREATE OR REPLACE PROCEDURE write(x in string)
3 is
4
5 begin
6 dbms_output.put_line(x);
7 end;
8 /
9
10 begin
11 write('hello world');
12 end;
13
```

The 'Results' tab is selected, showing the output 'hello world' and the message 'Statement processed.' It also indicates the execution time was '0.01 seconds'.

The footer of the APEX interface shows the user 'sandip.datta2021@vitstudent.ac.in', the copyright notice 'Copyright © 1999, 2022, Oracle and/or its affiliates', and the version 'Oracle APEX 22.2.4'.

5. Write a Function to check whether the given number is prime or not.

```
set serveroutput on;
```

```
CREATE OR REPLACE PROCEDURE checkp (x in number)
```

```
is
```

```
y number:=0;
```

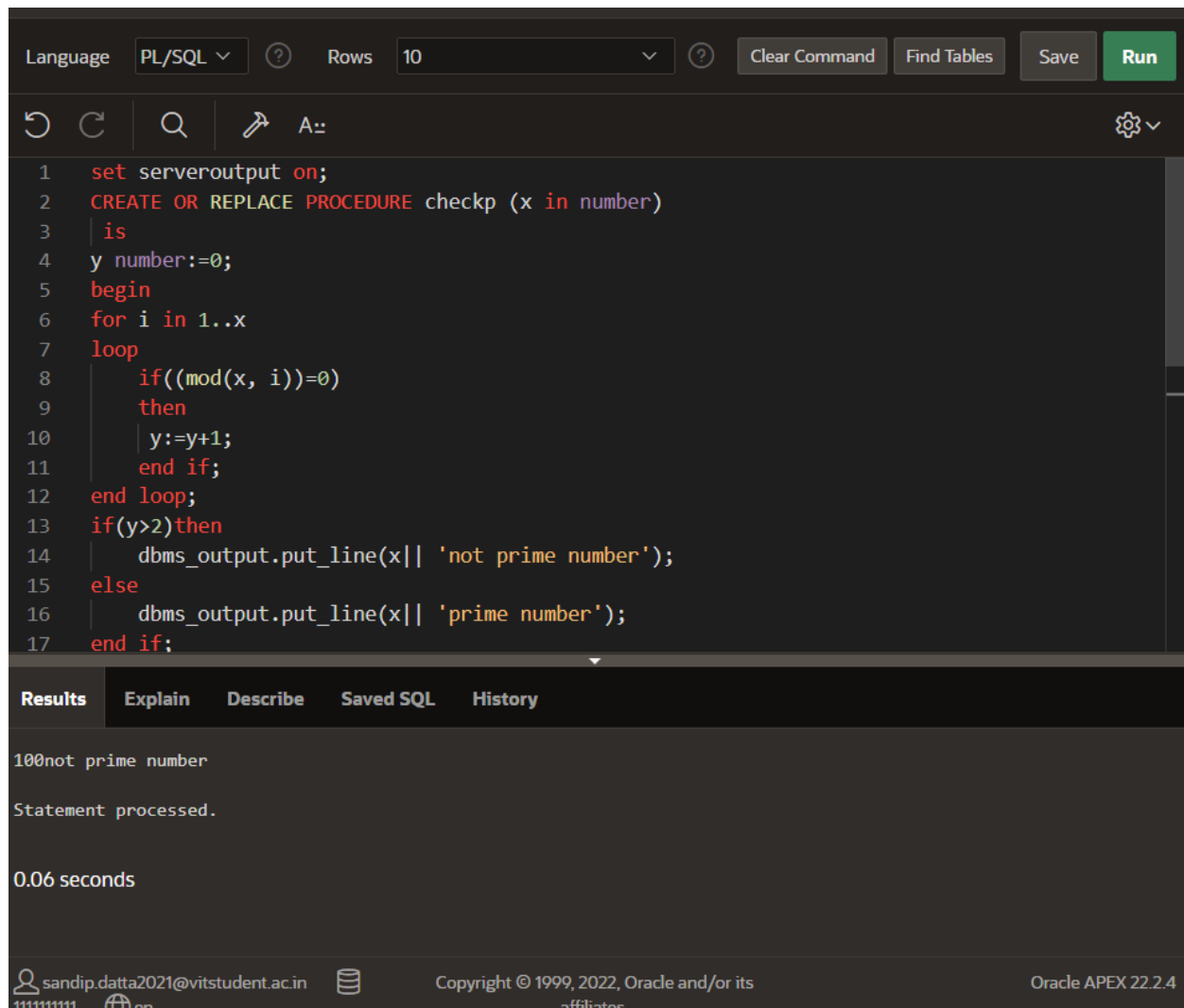
```
begin
```

```
for i in 1..x
```

```
loop
    if((mod(x, i))=0)
        then
            y:=y+1;
        end if;
    end loop;
if(y>2)then
    dbms_output.put_line(x|| 'not prime number');
else
    dbms_output.put_line(x|| 'prime number');
end if;
end;

/

begin
    checkp(100);
end;
```



```
1 set serveroutput on;
2 CREATE OR REPLACE PROCEDURE checkp (x in number)
3 is
4 y number:=0;
5 begin
6 for i in 1..x
7 loop
8     if((mod(x, i))=0)
9     then
10         y:=y+1;
11     end if;
12 end loop;
13 if(y>2)then
14     dbms_output.put_line(x|| 'not prime number');
15 else
16     dbms_output.put_line(x|| 'prime number');
17 end if;
```

Results Explain Describe Saved SQL History

100not prime number

Statement processed.

0.06 seconds

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6. Write a Function to find the sum of digits of a given number and returns the value.

```
set serveroutput on;
```

```
CREATE OR REPLACE PROCEDURE sumofnum (x in number)
```

```
is
```

```
t integer;
```

```
tsum integer;
```

```
y integer;
```

```
begin
```

```
t:=x;
```

```

tsum:=0;

while t <> 0 loop

    y :=mod(t, 10);

    tsum :=tsum+y;

    t :=floor(t/10);

end loop;

    dbms_output.put_line('sum=||tsum);

end;

/

declare

x integer;

tsum integer;

y integer;


begin

x := 123;

sumofnum(x);

end;

```


The screenshot shows the Oracle APEX SQL editor interface. At the top, there's a toolbar with 'Language' set to 'PL/SQL', 'Rows' set to '10', and buttons for 'Clear Command', 'Find Tables', 'Save', and 'Run'. Below the toolbar is a search bar and a settings icon. The main area contains a PL/SQL procedure named 'sumofnum' which calculates the sum of digits of a number. The procedure is as follows:

```
1 set serveroutput on;
2 CREATE OR REPLACE PROCEDURE sumofnum (x in number)
3 is
4 t integer;
5 tsum integer;
6 y integer;
7 begin
8 t:=x;
9 tsum:=0;
10 while t <> 0 loop
11 y :=mod(t, 10);
12 tsum :=tsum+y;
13 t :=floor(t/10);
14 end loop;
15 dbms_output.put_line('sum='||tsum);
16 end;
17 /
18 declare
19 x integer;
20 tsum integer;
21 y integer;
```

Below the code editor, there's a 'Results' tab which shows the output of the procedure: 'sum=6'. Below the results, it says 'Statement processed.' At the bottom, there's a footer with the user's email 'sandip.datta2021@vitstudent.ac.in', the copyright notice 'Copyright © 1999, 2022, Oracle and/or its affiliates', and the version 'Oracle APEX 22.2.4'.

7. Write a Recursive Function to find the factorial of a given number.

```
set serveroutput on;
```

```
CREATE OR REPLACE PROCEDURE factorial (x in number)
```

```
is
```

```
f number;
```

```
y number;
```

```
begin
```

```
y:=x;
```

```
f:=1;
```

```
while y>0 loop

    f:=f*y;

    y:=y-1;

end loop;

    dbms_output.put_line('factorial value='||f);

end;

/

declare

x number;

begin

x := 10;

factorial(x);

end;
```

The screenshot shows the Oracle APEX SQL Workshop interface. At the top, there's a navigation bar with 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and a user icon are on the right. Below this, the 'SQL Commands' tab is active, showing the schema 'WKSP_111111111'. The 'Language' is set to 'PL/SQL' and 'Rows' is set to '10'. There are buttons for 'Clear Command', 'Find Tables', 'Save', and 'Run'. The main editor contains the following PL/SQL code:

```
1 set serveroutput on;
2 CREATE OR REPLACE PROCEDURE factorial (x in number)
3 is
4 f number;
5 y number;
6 begin
7 y:=x;
8 f:=1;
9 while y>0 loop
10 f:=f*y;
11 y:=y-1;
12 end loop;
13 dbms_output.put_line('factorial value='||f);
14 end;
15 /
16 declare
17 x number;
18 begin
19 x := 10;
20 factorial(x);
21 end;
```

Below the editor, there's a 'Results' tab with sub-tabs 'Explain', 'Describe', 'Saved SQL', and 'History'. The 'Results' tab shows the output: 'factorial value=3628800' and 'Statement processed.' At the bottom, there's a footer with the user 'sandip.datta2021@vitstudent.ac.in', the copyright 'Copyright © 1999, 2022, Oracle and/or its affiliates', and the version 'Oracle APEX 22.2.4'.

8. Consider the following schema for PL/SQL programming:

Note : Use function as required.

Employee (Empid, Fname, Lname, DoB, Gender, Salary, Dnumber)

Department (Dno Dname Location)

- i. Write a PL/SQL block to accept an Emp id and display the salary of the person.

```
create table employe_21bce1163(empid number(5),fname varchar(10),lname varchar(10),dob
date,gender varchar(1),salary number(10),dnumber number(2));
```

```
create table department_21bce1163(dnumber number(2),dname varchar(10),dloc varchar(10));
```

```
insert into employe_21bce1163 values(100,'sandip','datta',to_date('12-07-2003','dd-mm-
yyyy'),'M',987000,10);
```

```
insert into employe_21bce1163 values(101,'rohan','mathur',to_date('11-11-2003','dd-mm-
yyyy'),'M',458000,10);
```

```
insert into employe_21bce1163 values(102,'sean','mendes',to_date('18-02-2003','dd-mm-
yyyy'),'M',968000,11);
```

```
insert into employe_21bce1163 values(103,'lula','roy',to_date('25-08-2003','dd-mm-
yyyy'),'F',234000,11);
```

```
insert into employe_21bce1163 values(104,'bela','sen',to_date('04-08-2003','dd-mm-
yyyy'),'M',999000,12);
```

```
insert into department_21bce1163 values(10,'hr','delhi');
```

```
insert into department_21bce1163 values(11,'database','pune');
```

```
insert into department_21bce1163 values(12,'analytics','goa');
```

```
create or replace procedure displaysal(employeid in employe_21bce1163.empid%type)
```

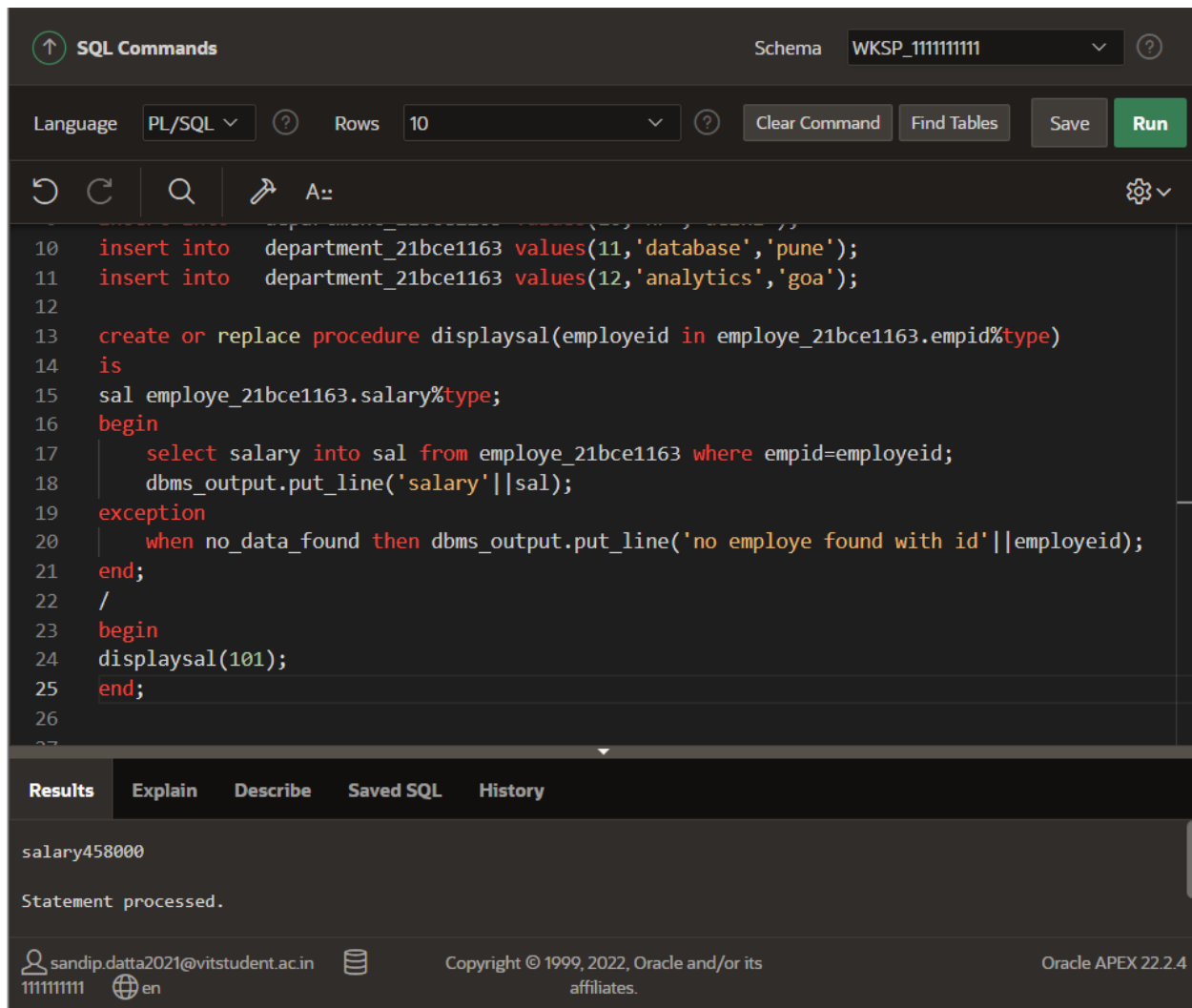
```
is
```

```
sal employe_21bce1163.salary%type;
```

```
begin
```

```
    select salary into sal from employe_21bce1163 where empid=employeid;
```

```
        dbms_output.put_line('salary'||sal);  
exception  
        when no_data_found then dbms_output.put_line('no employe found with id'||employeid);  
end;  
  
/  
  
begin  
displaysal(101);  
end;
```



SQL Commands

Schema: WKSP_111111111

Language: PL/SQL Rows: 10

Clear Command Find Tables Save Run

```
10 insert into department_21bce1163 values(11,'database','pune');
11 insert into department_21bce1163 values(12,'analytics','goa');
12
13 create or replace procedure displaysal(employeeid in employee_21bce1163.empid%type)
14 is
15 sal employee_21bce1163.salary%type;
16 begin
17     select salary into sal from employee_21bce1163 where empid=employeeid;
18     dbms_output.put_line('salary'||sal);
19 exception
20     when no_data_found then dbms_output.put_line('no employee found with id'||employeeid);
21 end;
22 /
23 begin
24     displaysal(101);
25 end;
```

Results Explain Describe Saved SQL History

salary458000

Statement processed.

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ii. Write a PL/SQL block to delete the details of the retired employee.

```
create table employee_21bce1163(empid number(5),fname varchar(10),lname varchar(10),dob
date,gender varchar(1),salary number(10),dnumber number(2));

create table department_21bce1163(dnumber number(2),dname varchar(10),dloc varchar(10));

insert into employee_21bce1163 values(100,'sandip','datta',to_date('12-07-2003','dd-mm-
yyyy'),'M',987000,10);

insert into employee_21bce1163 values(101,'rohan','mathur',to_date('11-11-2003','dd-mm-
yyyy'),'M',458000,10);
```

```
insert into employe_21bce1163 values(102,'sean','mendes',to_date('18-02-2003','dd-mm-  
yyyy'),'M',968000,11);
```

```
insert into employe_21bce1163 values(103,'lula','roy',to_date('25-08-2003','dd-mm-  
yyyy'),'F',234000,11);
```

```
insert into employe_21bce1163 values(104,'bela','sen',to_date('04-08-2003','dd-mm-  
yyyy'),'M',999000,12);
```

```
insert into employe_21bce1163 values(105,'bold','roy',to_date('05-02-1950','dd-mm-  
yyyy'),'F',978000,12);
```

```
insert into department_21bce1163 values(10,'hr','delhi');
```

```
insert into department_21bce1163 values(11,'database','pune');
```

```
insert into department_21bce1163 values(12,'analytics','goa');
```

```
create or replace procedure delretire_21bce1163 is
```

```
retireage number:=60;
```

```
currentdate date:=sysdate;
```

```
begin
```

```
delete from employe_21bce1163
```

```
where months_between(current_date,dob)/12>=retireage;
```

```
dbms_output.put_line(sql%rowcount||'deleted');
```

```
end;
```

begin

delretire_21bce1163;

end;

The screenshot displays the Oracle APEX SQL Workshop interface. At the top, the navigation bar includes the APEX logo, 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery' menus, along with a search bar and a user icon. Below this, the 'SQL Commands' section shows the 'Schema' set to 'WKSP_111111111'. The 'Language' is set to 'PL/SQL' and 'Rows' is set to '10'. Action buttons include 'Clear Command', 'Find Tables', 'Save', and a green 'Run' button. The main editor area contains the following PL/SQL code:

```
13
14 create or replace procedure delretire_21bce1163 is
15 retireage number:=60;
16 currentdate date:=sysdate;
17
18 begin
19     delete from employe_21bce1163
20     where months_between(current_date,dob)/12>=retireage;
21
22     dbms_output.put_line(sql%rowcount||'deleted');
23 end;
24
25 begin
26 delretire_21bce1163;
27 end;
28
29
30
```

Below the editor, the 'Results' tab is active, showing the output '1deleted' and the status 'Statement processed.'. The footer contains the user 'sandip.datta2021@vitstudent.ac.in', the copyright notice 'Copyright © 1999, 2022, Oracle and/or its affiliates.', and the version 'Oracle APEX 22.2.4'.

- iii. Write a PL/SQL block to update the salary of all employees by 4% whose salary is above 10,000.

```
create table employe_21bce1163(empid number(5),fname varchar(10),lname varchar(10),dob
date,gender varchar(1),salary number(10),dnumber number(2));
```

```
create table department_21bce1163(dnumber number(2),dname varchar(10),dloc varchar(10));
```

```
insert into employe_21bce1163 values(100,'sandip','datta',to_date('12-07-2003','dd-mm-
yyyy'),'M',987000,10);
```

```
insert into employe_21bce1163 values(101,'rohan','mathur',to_date('11-11-2003','dd-mm-
yyyy'),'M',458000,10);
```

```
insert into employe_21bce1163 values(102,'sean','mendes',to_date('18-02-2003','dd-mm-
yyyy'),'M',968000,11);
```

```
insert into employe_21bce1163 values(103,'lula','roy',to_date('25-08-2003','dd-mm-
yyyy'),'F',234000,11);
```

```
insert into employe_21bce1163 values(104,'bela','sen',to_date('04-08-2003','dd-mm-
yyyy'),'M',999000,12);
```

```
insert into employe_21bce1163 values(105,'bold','roy',to_date('05-02-1950','dd-mm-
yyyy'),'F',978000,12);
```

```
insert into department_21bce1163 values(10,'hr','delhi');
```

```
insert into department_21bce1163 values(11,'database','pune');
```

```
insert into department_21bce1163 values(12,'analytics','goa');
```

create or replace procedure inc_21bce1163 is

sal_increase number:=1.04;

begin

update employe_21bce1163

set salary=salary*sal_increase

where salary>10000;

dbms_output.put_line(sql%rowcount||'rows updated');

end;

begin

inc_21bce1163;

end;

The screenshot shows the Oracle APEX SQL Workshop interface. At the top, there's a navigation bar with 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and a user icon are also present. Below this, the 'SQL Commands' section is active, showing the schema 'WKSP_111111111'. The 'Language' is set to 'PL/SQL' and 'Rows' is set to '10'. There are buttons for 'Clear Command', 'Find Tables', 'Save', and 'Run'. The main area contains a PL/SQL script with line numbers 11 to 27. The script includes two INSERT statements, a procedure definition 'inc_21bce1163', and a call to the procedure. The 'Results' tab at the bottom shows '5 rows updated' and 'Statement processed.'.

```
11 insert into department_21bce1163 values(11,'database','pune');
12 insert into department_21bce1163 values(12,'analytics','goa');
13
14 create or replace procedure inc_21bce1163 is
15
16 sal_increase number:=1.04;
17 begin
18 update employe_21bce1163
19 set salary=salary*sal_increase
20 where salary>10000;
21 dbms_output.put_line(sql%rowcount||'rows updated');
22 end;
23
24 begin
25 inc_21bce1163;
26 end;
27
```

Results Explain Describe Saved SQL History

5 rows updated

Statement processed.

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- iv. Write a PL/SQL to display the department name along with the number of employees in each department.

create table employe_21bce1163(empid number(5),fname varchar(10),lname varchar(10),dob date,gender varchar(1),salary number(10),dnumber number(2));

create table department_21bce1163(dnumber number(2),dname varchar(10),dloc varchar(10));

```
insert into employe_21bce1163 values(100,'sandip','datta',to_date('12-07-2003','dd-mm-  
yyyy'),'M',987000,10);
```

```
insert into employe_21bce1163 values(101,'rohan','mathur',to_date('11-11-2003','dd-mm-  
yyyy'),'M',458000,10);
```

```
insert into employe_21bce1163 values(102,'sean','mendes',to_date('18-02-2003','dd-mm-  
yyyy'),'M',968000,11);
```

```
insert into employe_21bce1163 values(103,'lula','roy',to_date('25-08-2003','dd-mm-  
yyyy'),'F',234000,11);
```

```
insert into employe_21bce1163 values(104,'bela','sen',to_date('04-08-2003','dd-mm-  
yyyy'),'M',999000,12);
```

```
insert into employe_21bce1163 values(105,'bold','roy',to_date('05-02-1950','dd-mm-  
yyyy'),'F',978000,12);
```

```
insert into department_21bce1163 values(10,'hr','delhi');
```

```
insert into department_21bce1163 values(11,'database','pune');
```

```
insert into department_21bce1163 values(12,'analytics','goa');
```

create or replace procedure count_21bce1163 is

cursor dept is

```
select dname,count(*) as emcount
```

```
from department_21bce1163 join employe_21bce1163 on
```

```
department_21bce1163.dnumber=employe_21bce1163.dnumber group by dname;
```

```
begin
for deprow in dept loop
  dbms_output.put_line(deprow.dname||'='||deprow.emcount);
end loop;
end;
```

```
begin
count_21bce1163;
end;
```

**APEX**

App Builder ▾

SQL Workshop ▾

Team Development ▾

Gallery

Search

 **SQL Commands**

Schema WKSP_111111111 ▾



Language PL/SQL ▾



Rows

10 ▾



Clear Command

Find Tables

Save

Run

A::



```
13
14 create or replace procedure count_21bce1163 is
15
16 cursor dept is
17 select dname,count(*) as emcount
18 from department_21bce1163 join employe_21bce1163 on
19 department_21bce1163.dnumber=employe_21bce1163.dnumber group by dname;
20 begin
21 for deprow in dept loop
22   dbms_output.put_line(deprow.dname||'='||deprow.emcount);
23 end loop;
24 end;
25
26 begin
27 count_21bce1163;
28 end;
29
30
31
```

Results

Explain

Describe

Saved SQL

History

analytics=1

hr=2

database=2

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Oracle APEX 22.2.4