

LAB 7 :ANSWER-1.

```

CREATE TABLE salary_raise(
Instructor_ID NUMBER(5),
Raise_Date DATE,
Raise_Amt NUMERIC(8,2)
);
DECLARE
CURSOR c_raise IS
SELECT * FROM Instructor WHERE dept_name = 'Biology' FOR UPDATE;
r_amt NUMERIC(8, 2);
BEGIN
FOR i IN c_raise
LOOP
r_amt := i.salary * 1.05;
UPDATE Instructor
SET salary = salary * 1.05;
INSERT INTO salary_raise VALUES (i.ID, CURRENT_DATE, r_amt);
END LOOP;
END;
/
SELECT * FROM salary_raise;

```

OUTPUT :

The screenshot shows the Visual Studio Code interface with a file named `pgml.sql` open. The script contains the following PL/SQL code:

```

1  -- 1
2  DROP TABLE salary_raise;
3
4  CREATE TABLE salary_raise(
5      Instructor_ID NUMBER(5),
6      Raise_Date DATE,
7      Raise_Amt NUMERIC(8,2)
8  );
9
10 DECLARE
11     CURSOR c_raise IS
12         SELECT * FROM Instructor WHERE dept_name = 'Biology' FOR UPDATE;
13     r_amt NUMERIC(8, 2);
14
15 BEGIN
16     FOR i IN c_raise
17     LOOP
18         r_amt := i.salary * 1.05;
19         UPDATE Instructor
20         SET salary = salary * 1.05;
21         INSERT INTO salary_raise VALUES (i.ID, CURRENT_DATE, r_amt);
22     END LOOP;
23 END;
24 /
25
26 SELECT * FROM salary_raise;
27
28 -- 2
29 DECLARE
30     CURSOR c2 is select * from student order by tot_cred;
31     sname student.name%type;
32     sid student.id%type;

```

The terminal output shows the execution of the script:

```

SQL> DROP TABLE salary_raise;
DROP TABLE salary_raise
*
ERROR at line 1:
ORA-00942: table or view does not exist

SQL> CREATE TABLE salary_raise(
Instructor_ID NUM 2 BER(5),
Raise_Date DATE,
Raise_Amt 3 4 NUMERIC(8,2)
); 5
Table created.

SQL> DECLARE
CURSOR c_raise IS
SELECT * FRO 2 3 M Instructor WHERE dept_name = 'Biology' FOR UPD
ATE;
r_amt NUMERIC(8, 2);
BEGIN
FOR i IN c_ 4 5 6 7 raise
LOOP
r_amt := i.salary * 1.05;
UPDA 8 9 10 TE Instructor
SET salary = salary * 1.05; 11
INSERT INTO salary_raise VALUES (i.ID, CURRENT_ 12 DATE, r_am
t);
END LOOP;
END;
/ 13 14 15

PL/SQL procedure successfully completed.

SQL> select * from salary_raise;

INSTRUCTOR_ID RAISE_DATE RAISE_AMT
-----
76766 09-JUN-21 75600

```

ANSWER-2.

DECLARE

```
CURSOR c2 is select * from student order by tot_cred;
sname student.name%type;
sid student.id%type;
sdept_name student.dept_name%type;
scred student.tot_cred%type;
BEGIN
OPEN c2;
LOOP
EXIT WHEN (c2%ROWCOUNT > 9) OR (c2%NOTFOUND);
fetch c2 into sid, sname, sdept_name, scred;
dbms_output.put_line(sid || ' ' || sname || ' ' || sdept_name
|| ' ' || scred);
END LOOP;
CLOSE c2;
END;
/
```

OUTPUT :

The screenshot shows the Visual Studio Code editor with a SQL script in a file named 'pgm1.sql'. The script declares a cursor 'c2' and a loop that fetches student records and prints them. The output window on the right shows the execution of the script, which successfully completed. Below the completion message, the output of the query 'select * from student;' is displayed as a table.

ID	NAME	DEPT_NAME	TOT_CRED
00128	Zhang	Comp. Sci.	102
12345	Shankar	Comp. Sci.	32
23121	Chavez	Finance	110
44553	Peltier	Physics	56
45678	Levy	Physics	46
54321	Williams	Comp. Sci.	54
55739	Sanchez	Music	38
70557	Snow	Physics	0
76543	Brown	Comp. Sci.	58
76653	Aoi	Elec. Eng.	60
98765	Bourikas	Elec. Eng.	98

ID	NAME	DEPT_NAME	TOT_CRED
98988	Tanaka	Biology	120
19991	Brandt	History	80

ANSWER-3.

declare

```
cursor c1 is with stu as (select * from (student natural join takes
natural join section)),ins as (select * from (instructor natural join
teaches natural join section))
```

```

select
course_id,title,ins.dept_name,credits,ins.name,ins.building,ins.room_num
ber,ins.time_slot_id,count(*) as no_of_students from stu inner join ins
using(course_id,sec_id,semester,year) natural join course
group by
(course_id,title,ins.dept_name,credits,ins.name,ins.building,ins.room_num
ber,ins.time_slot_id);
begin
for info in c1
loop
dbms_output.put_line('Course ID : '|| info.course_id);
dbms_output.put_line('Title : '|| info.title);
dbms_output.put_line('Department : '|| info.dept_name);
dbms_output.put_line('Credits : '|| info.credits);
dbms_output.put_line('Instructor Name : '|| info.name);
dbms_output.put_line('Building : '|| info.building);
dbms_output.put_line('Room Number : '|| info.room_number);
dbms_output.put_line('Time Slot ID : '|| info.time_slot_id);
dbms_output.put_line('Total Students : '|| info.no_of_students);
dbms_output.put_line('-----');
end loop;
end;
/

```

OUTPUT :

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Visual Studio Code
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DBS_LAB > lab7 > pgml.sql
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46
47
48 -- 3
49 declare
50     cursor c1 is with stu as (select * from (student natu
51         select course_id,title,ins.dept_name,cred
52         group by (course_id,title,ins.dept_name,c
53     begin
54         for info in c1
55         loop
56             dbms_output.put_line('Course ID : '|| info.co
57             dbms_output.put_line('Title : '|| info.title)
58             dbms_output.put_line('Department : '|| info.d
59             dbms_output.put_line('Credits : '|| info.cred
60             dbms_output.put_line('Instructor Name : '|| i
61             dbms_output.put_line('Building : '|| info.bui
62             dbms_output.put_line('Room Number : '|| info.
63             dbms_output.put_line('Time Slot ID : '|| info
64             dbms_output.put_line('Total Students : '|| in
65             dbms_output.put_line('-----')
66         end loop;
67     end;
68 /
69
70 -- 1
71 declare
72     cursor c is select * from Student natural join takes wher
73
74 begin
75     for stud in c
76     loop
77         if stud.tot_cred < 30 then

```

```

SQL> declare
  cursor c1 is with stu as (select * from (student natural join takes n
  atural join section)),ins as (select * from (instructor natural join teaches n
  atural join section))
  se 3 lect course_id,title,ins.dept_name,credits,ins.name,ins
  .building,ins.room_number,ins.time_slot_id,count(*) as no_of_students from stu
  inner join ins using(course_id,sec_id,semester,year) natural join course
  group by (course_id,title, 4 ins.dept_name,credits,ins.name,
  ins.building,ins.room_number,ins.time_slot_id);
  begin
  for info in 5 6 c1
  loop
  dbms_output.put_line 7 8 ('Course ID : '|| info.course_id);
  dbm 9 s_output.put_line('Title : '|| info.title);
  10 dbms_output.put_line('Department : '|| info.dept_name);
  dbms_output.put_line('Cred 11 its : '|| info.credits);
  12 dbms_output.p 12 ut_line('Instructor Name : '|| info.name);
  13 dbms_output.put_line('Building : '|| info.building);
  dbms_output.put_line('Room Num 14 ber : '|| info.room_number);
  dbms_outp 15 ut.put_line('Time Slot ID : '|| info.time_slot_id);
  dbms_output.put_line('Total Students 16 : '|| info.no_of_student
  s);
  dbms_outp 17 ut.put_line('-----');
  end lo 18 op;
  end;
  / 19 20

PL/SQL procedure successfully completed.

SQL> declare
  cursor c is select * from Student natural 2 join takes where course_id='CS-
  101';
  begin
  for 3 4 5 stud in c
  loop
  if stud.tot_cred < 30 then
  6 7 8 delete from takes where id=stud.id and course_id='CS-101';
  end if;
  end loop;
  end;

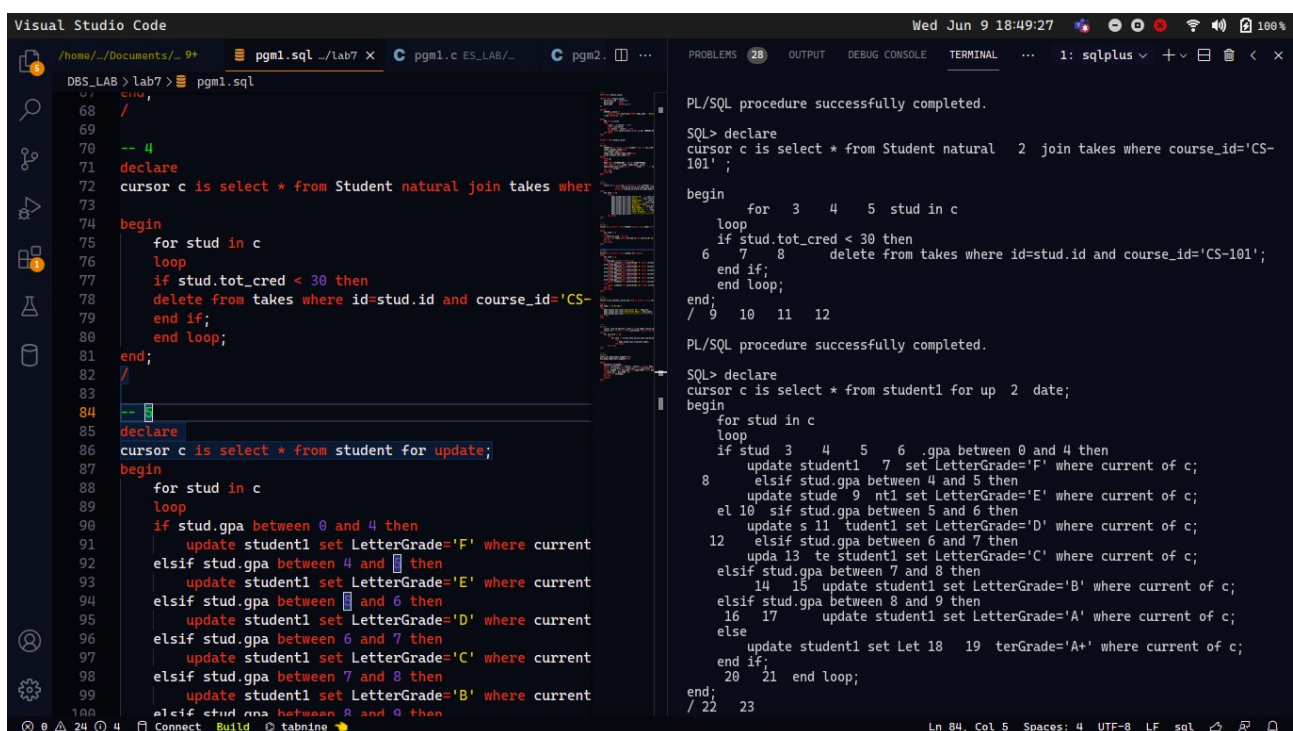
```

Ln 70, Col 5 Spaces: 4 UTF-8 LF sql ↵ 🔍

ANSWER-4.

```
declare
cursor c is select * from Student natural join takes where course_id='CS-101' ;
begin
for stud in c
loop
if stud.tot_cred < 30 then
delete from takes where id=stud.id and course_id='CS-101';
end if;
end loop;
end;
/
```

OUTPUT :



The screenshot shows the Visual Studio Code interface with a SQL file named 'pgm1.sql' open. The code in the editor is a PL/SQL procedure that declares a cursor 'c' to select all rows from the 'Student' table joined with the 'takes' table where the course_id is 'CS-101'. It then enters a loop over the cursor, and for each student, it checks if their total credits are less than 30. If so, it deletes their record from the 'takes' table. The procedure ends with a slash. The terminal on the right shows the execution output, indicating that the PL/SQL procedure was successfully completed. Below the first output, there is a second SQL statement that declares a cursor 'c' to select all rows from the 'student1' table for update, and then enters a loop over the cursor. This second statement is partially visible and appears to be a continuation or a separate example.

```
Visual Studio Code
/home/.../Documents/... 9+ pgm1.sql -/lab7 x C pgm1.c ES_LAB/... C pgm2. ...
DBS_LAB > lab7 > pgm1.sql
68 /
69
70 -- 4
71 declare
72 cursor c is select * from Student natural join takes wher
73
74 begin
75 for stud in c
76 loop
77 if stud.tot_cred < 30 then
78 delete from takes where id=stud.id and course_id='CS-
79 end if;
80 end loop;
81 end;
82 /
83
84 --
85 declare
86 cursor c is select * from student for update;
87 begin
88 for stud in c
89 loop
90 if stud.gpa between 0 and 4 then
91 update student1 set LetterGrade='F' where current
92 elsif stud.gpa between 4 and 5 then
93 update student1 set LetterGrade='E' where current
94 elsif stud.gpa between 5 and 6 then
95 update student1 set LetterGrade='D' where current
96 elsif stud.gpa between 6 and 7 then
97 update student1 set LetterGrade='C' where current
98 elsif stud.gpa between 7 and 8 then
99 update student1 set LetterGrade='B' where current
100 elsif stud.gpa between 8 and 9 then
101 update student1 set LetterGrade='A' where current of c;
102 else
103 update student1 set LetterGrade='A+' where current of c;
104 end if;
105 end loop;
106 end;
107 /
```

PL/SQL procedure successfully completed.

SQL> declare
cursor c is select * from Student natural 2 join takes where course_id='CS-101' ;
begin
for 3 4 5 stud in c
loop
if stud.tot_cred < 30 then
6 7 8 delete from takes where id=stud.id and course_id='CS-101';
end if;
end loop;
end;
/ 9 10 11 12

PL/SQL procedure successfully completed.

SQL> declare
cursor c is select * from student1 for up 2 date;
begin
for stud in c
loop
if stud 3 4 5 6 .gpa between 0 and 4 then
update student1 7 set LetterGrade='F' where current of c;
8 elsif stud.gpa between 4 and 5 then
update stude 9 nt1 set LetterGrade='E' where current of c;
el 10 sif stud.gpa between 5 and 6 then
update s 11 tudent1 set LetterGrade='D' where current of c;
12 elsif stud.gpa between 6 and 7 then
upda 13 te student1 set LetterGrade='C' where current of c;
elsif stud.gpa between 7 and 8 then
14 15 update student1 set LetterGrade='B' where current of c;
elsif stud.gpa between 8 and 9 then
16 17 update student1 set LetterGrade='A' where current of c;
else
update student1 set Let 18 19 terGrade='A+' where current of c;
end if;
20 21 end loop;
end;
/ 22 23

ANSWER-5.

```
declare
cursor c is select * from Studenttable for update;
begin
for stud in c
loop
if stud.gpa between 0 and 4 then
```

```

update Studenttable set LetterGrade='F' where current of c;
elsif stud.gpa between 4 and 5 then
update Studenttable set LetterGrade='E' where current of c;
elsif stud.gpa between 5 and 6 then
update Studenttable set LetterGrade='D' where current of c;
elsif stud.gpa between 6 and 7 then
update Studenttable set LetterGrade='C' where current of c;
elsif stud.gpa between 7 and 8 then
update Studenttable set LetterGrade='B' where current of c;
elsif stud.gpa between 8 and 9 then
update Studenttable set LetterGrade='A' where current of c;
else
update Studenttable set LetterGrade='A+' where current of c;
end if;
end loop;
end;
/

```

OUTPUT :

The screenshot shows the Visual Studio Code interface with a PL/SQL script in the editor and its execution output in the terminal.

Editor Content (pgm1.sql):

```

83 /
84 -- 5
85 declare
86 cursor c is select * from Studenttable for update;
87 begin
88   for stud in c
89   loop
90     if stud.gpa between 0 and 4 then
91       update Studenttable set LetterGrade='F' where current of c;
92     elsif stud.gpa between 4 and 5 then
93       update Studenttable set LetterGrade='E' where current of c;
94     elsif stud.gpa between 5 and 6 then
95       update Studenttable set LetterGrade='D' where current of c;
96     elsif stud.gpa between 6 and 7 then
97       update Studenttable set LetterGrade='C' where current of c;
98     elsif stud.gpa between 7 and 8 then
99       update Studenttable set LetterGrade='B' where current of c;
100    elsif stud.gpa between 8 and 9 then
101      update Studenttable set LetterGrade='A' where current of c;
102    else
103      update Studenttable set LetterGrade='A+' where current of c;
104    end if;
105   end loop;
106 end;
107 /
108 -- 6
109 declare
110 cursor c(cid teaches.course_id%TYPE) is select * from ins
111 begin
112   for temp in c('CS-101')
113   loop

```

Terminal Output:

```

SQL> declare
cursor c is select * from Studenttable for update;
begin
  for stud in c
  loop
    if stud.gpa between 0 and 4 then
      update Studenttable set LetterGrade='F' where current of c;
    elsif stud.gpa between 4 and 5 then
      update Studenttable set LetterGrade='E' where current of c;
    elsif stud.gpa between 5 and 6 then
      update Studenttable set LetterGrade='D' where current of c;
    elsif stud.gpa between 6 and 7 then
      update Studenttable set LetterGrade='C' where current of c;
    elsif stud.gpa between 7 and 8 then
      update Studenttable set LetterGrade='B' where current of c;
    elsif stud.gpa between 8 and 9 then
      update Studenttable set LetterGrade='A' where current of c;
    else
      update Studenttable set LetterGrade='A+' where current of c;
    end if;
  end loop;
end;
/
PL/SQL procedure successfully completed.
SQL> select * from Studenttable;

```

ROLLNO	GPA	LE
1	5.8	D
2	6.5	C
3	3.4	F
4	7.8	B
5	9.5	A+
6	9.5	A+
7	9.5	A+
8	9.5	A+
9	9.5	A+

9 rows selected.

ANSWER-6.

declare

cursor c(cid teaches.course_id%TYPE) is select * from Instructor natural
join teaches where course_id=cid;

begin

for temp in c('CS-101')

loop

dbms_output.put_line('Instructor ID: ' || temp.id);

dbms_output.put_line('Instructor Name: ' || temp.name);

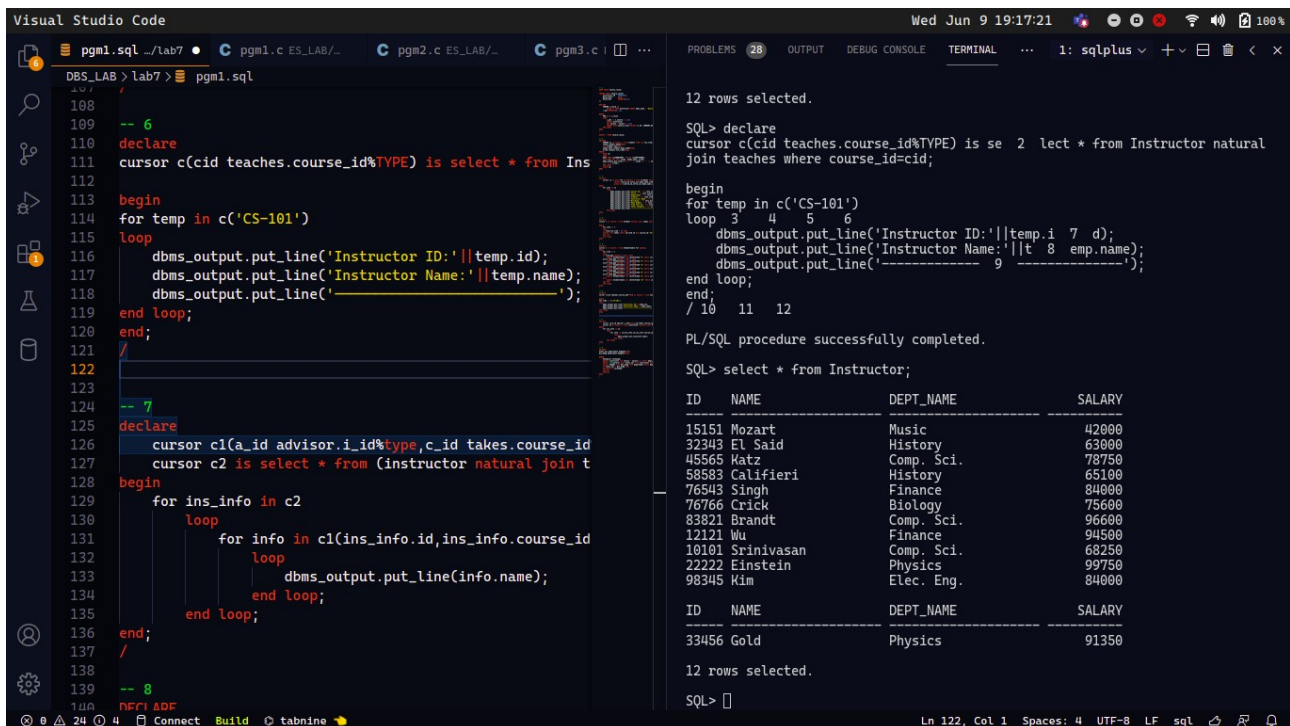
dbms_output.put_line('_____');

end loop;

end;

/

OUTPUT :



The screenshot shows a Visual Studio Code editor with a PL/SQL script in the left pane and its output in the right pane. The script declares a cursor 'c' that selects all columns from the 'Instructor' table joined with the 'teaches' table on 'course_id'. It then loops through the cursor for 'CS-101', printing the instructor ID, name, and a separator line. The output pane shows the execution results, including the number of rows selected (12), the PL/SQL procedure completion message, and a table of instructor data.

```
SQL> declare
cursor c(cid teaches.course_id%TYPE) is se 2 lect * from Instructor natural
join teaches where course_id=cid;

begin
for temp in c('CS-101')
loop
  dbms_output.put_line('Instructor ID: ' || temp.i 7 d);
  dbms_output.put_line('Instructor Name: ' || t 8 emp.name);
  dbms_output.put_line('_____ 9 _____');
end loop;
end;
/ 10 11 12

PL/SQL procedure successfully completed.

SQL> select * from Instructor;

ID      NAME      DEPT_NAME      SALARY
-----
15151 Mozart      Music           42000
32343 EL Said     History         63000
45565 Katz        Comp. Sci.      78750
58583 Califieri   History         65100
76543 Singh       Finance         84000
76766 Crick       Biology         75600
83821 Brandt      Comp. Sci.      96600
12121 Wu          Finance         94500
10101 Srinivasan   Comp. Sci.      68250
22222 Einstein    Physics         99750
98345 Kim         Elec. Eng.      84000

ID      NAME      DEPT_NAME      SALARY
-----
33456 Gold       Physics         91350

12 rows selected.

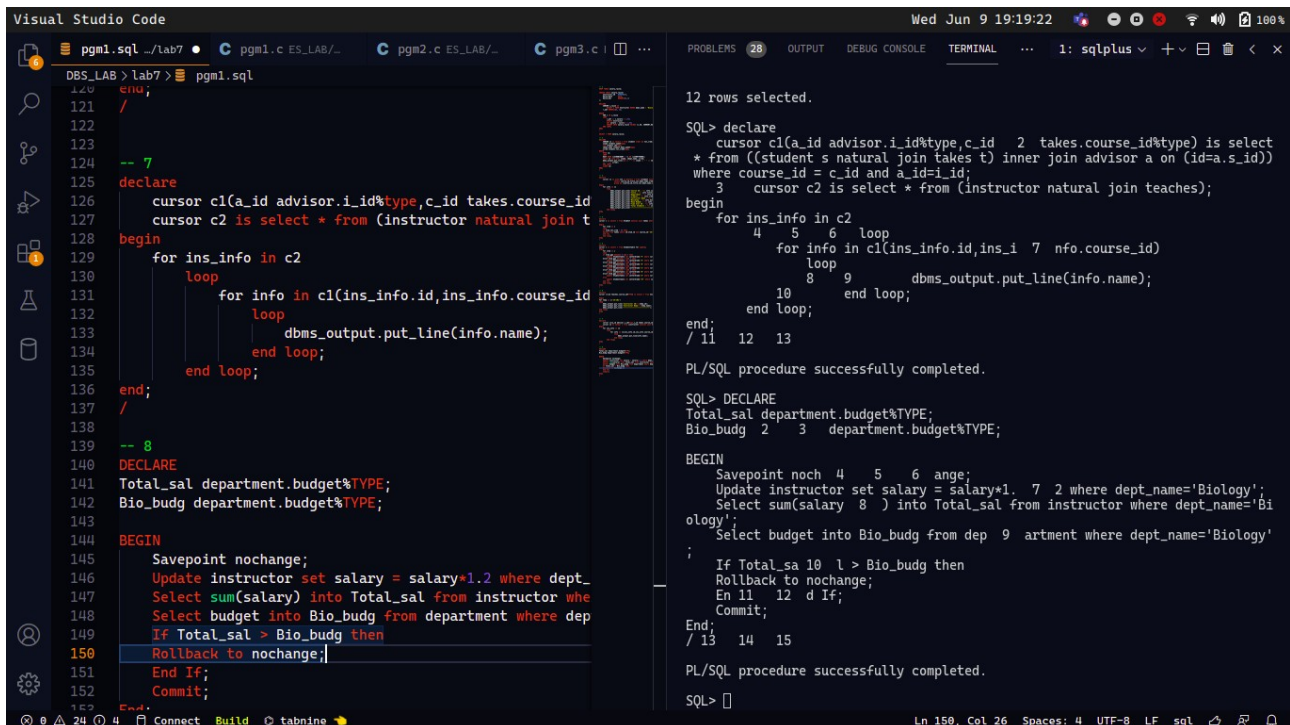
SQL>
```

ANSWER-7.

```
declare
cursor c1(a_id advisor.i_id%type,c_id takes.course_id%type) is select *
from ((student s natural join takes t) inner join advisor a on
(id=a.s_id)) where course_id = c_id and a_id=i_id;
cursor c2 is select * from (instructor natural join teaches);
begin
for ins_info in c2
loop
for info in c1(ins_info.id,ins_info.course_id)
loop

dbms_output.put_line(info.name);
end loop;
end loop;
end;
/
```

OUTPUT :



The screenshot shows the Visual Studio Code editor with a SQL script in a file named 'pgm1.sql'. The script contains two cursors, c1 and c2, and a loop that iterates over c2, then c1 for each row, printing the name of the instructor. The terminal window on the right shows the output of the script, indicating that 12 rows were selected and the PL/SQL procedure was successfully completed.

```
Visual Studio Code
pgm1.sql -/lab7
pgm1.c ES_LAB/...
pgm2.c ES_LAB/...
pgm3.c | ...

DBS_LAB > lab7 > pgm1.sql
120
121
122
123
124
125
126 declare
127 cursor c1(a_id advisor.i_id%type,c_id takes.course_id%type) is select *
128 from ((student s natural join takes t) inner join advisor a on
129 (id=a.s_id)) where course_id = c_id and a_id=i_id;
130 cursor c2 is select * from (instructor natural join teaches);
131 begin
132 for ins_info in c2
133 loop
134 for info in c1(ins_info.id,ins_info.course_id)
135 loop
136 dbms_output.put_line(info.name);
137 end loop;
138 end loop;
139 end;
140 /
141
142 -- 8
143 DECLARE
144 Total_sal department.budget%TYPE;
145 Bio_budg department.budget%TYPE;
146
147 BEGIN
148 Savepoint nochange;
149 Update instructor set salary = salary*1.2 where dept_
150 Select sum(salary) into Total_sal from instructor whe
151 Select budget into Bio_budg from department where dep
152 If Total_sal > Bio_budg then
153 Rollback to nochange;
154 End If;
155 Commit;
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```
Bio_budg department.budget%TYPE;
```

```
BEGIN
```

```
Savepoint nochange;
```

```
Update instructor set salary = salary*1.2 where dept_name='Biology';
```

```
Select sum(salary) into Total_sal from instructor where
```

```
dept_name='Biology';
```

```
Select budget into Bio_budg from department where dept_name='Biology';
```

```
If Total_sal > Bio_budg then
```

```
Rollback to nochange;
```

```
End If;
```

```
Commit;
```

```
End;
```

```
/
```

OUTPUT :

The screenshot shows the Visual Studio Code editor with a PL/SQL script in the left pane and its execution output in the right pane. The script is as follows:

```
138
139 -- 8
140 DECLARE
141 Total_sal department.budget%TYPE;
142 Bio_budg department.budget%TYPE;
143
144 BEGIN
145     Savepoint nochange;
146     Update instructor set salary = salary*1.2 where dept_
147     Select sum(salary) into Total_sal from instructor whe
148     Select budget into Bio_budg from department where dep
149     If Total_sal > Bio_budg then
150     Rollback to nochange;
151     End If;
152     Commit;
153 End;
154 /
```

The output in the terminal shows the execution of the script:

```
12 rows selected.
SQL> declare
  cursor c1(a_id advisor.i_id%type,c_id 2 takes.course_id%type) is select
  * from ((student s natural join takes t) inner join advisor a on (id=a.s_id))
  where course_id = c_id and a_id=i_id;
  cursor c2 is select * from (instructor natural join teaches);
begin
  for ins_info in c2
  loop
    for info in c1(ins_info.id,ins_i 7 nfo.course_id)
    loop
      dbms_output.put_line(info.name);
    end loop;
  end loop;
end;
/ 11 12 13

PL/SQL procedure successfully completed.

SQL> DECLARE
Total_sal department.budget%TYPE;
Bio_budg 2 3 department.budget%TYPE;

BEGIN
  Savepoint noch 4 5 6 ange;
  Update instructor set salary = salary*1. 7 2 where dept_name='Biology';
  Select sum(salary 8 ) into Total_sal from instructor where dept_name='Bi
ology';
  Select budget into Bio_budg from dep 9 artment where dept_name='Biology'
;
  If Total_sa 10 l > Bio_budg then
  Rollback to nochange;
  En 11 12 d If;
  Commit;
End;
/ 13 14 15

PL/SQL procedure successfully completed.

SQL> 
```