1. Write a PL/SQL program for GRADE DETERMINATION of UTECH(marks will be keyboard input).

```
Declare     x number(3);     g varchar(2);
Begin   x:=&x;
if x>=90 then  g:='O';
elsif x>=80 and x<90 then g:='E';
elsif x>=70 and x<80 then g:='A';
elsif x>=60 and x<70 then g:='B';
elsif x>=50 and x<60 then g:='C';
elsif x>=40 and x<50 then g:='D';
else g:='F';
end if;
dbms_output.put_line('Grade is: '||g);
end;
/
```

2. Write a PL/SQL program to find largest number from the given three numbers.

```
Declare    a number(5,2);  b number(5,2);  c number(5,2);  m number(5,2);
Begin    a:=&a;      b:=&b;      c:=&c;
if a>b and a>c then     m:=a;
elsif b>c and b>a then     m:=b;
else    m:=c;
end if;
dbms_output.put_line('Max is: '||m);
end;
/
```

3. Generate TABLE OF 5,6,7 using loop, while and for respectively [like 5 * 1= 5, 5*2=10, ..., 5*10= 50]

a) Using Simple Loop:

```
declare     v number(5):=5;   m number(5):=1;   r number(5);
begin
loop
exit when m>10;
r:=v*m;
dbms_output.put_line(v||'*'||m||'='||r);
m:=m+1;
end loop;
end;
/
```

b) Using While Loop:

```
declare         v number(5):=6;    m number(5):=1;   r number(5);
begin
while m<=10
loop
r:=v*m;
dbms_output.put_line(v||'*'||m||'='||r);
m:=m+1;
end loop;
end;
/
```

C) Using for Loop:

```
Declare   v number(5):=7;     m number(5);  r number(5);

begin

for m in 1..10

loop

r:=v*m;

dbms_output.put_line(v||'*'||m||'='||r);

end loop;

end;

/
```

4. Create a Sphere table have attributes for its radius, area and volume. Write a PL/SQL program to insert values in table for radius 1 to 15.

```
SQL> create table sphere(radius number(35,10),area number(35,10),volume number(35,10));///////////

Declare   r number(35,10):=1;  a number(35,10);  v number(35,10);

begin

loop

exit when r>15;

a:=4*3.14*r*r;

v:=1.33*3.14*r*r*r;

insert into sphere values(r,a,v);

commit;

r:=r+1;

end loop;

end;

/
```

Output: SQL> select * from sphere;

5. Write a PL/SQL program ,where you input sid from sailors table and display the sname,rating,age for this sid.

```
Declare          i sailors.s_id%type;     s sailors%rowtype;

Begin      i:='&sid';

select * into s from sailors where s_id=i;

DBMS_OUTPUT.put_LIne('name    rating  age');

DBMS_OUTPUT.put_LIne('------------------------');

DBMS_OUTPUT.put_LIne(s.sname||'   '||s.rating||'   '||s.age);

end;

/
```

====================================

6. Write a PL/SQL Program to check whether given number is Armstrong or not.

```
Declare  str number(10);   len number(2);  r number(10);   su number(10):=0;  n number(10);

Begin  str:='&str';

n:=str;    len:=length(str);

while n>0   loop

r:=mod(n,10);

su:=su+power(r,len);

n:=floor(n/10);

end loop;

if (str=su) then

dbms_output.put_line(str||' is Armstrong Number');

else

dbms_output.put_line(str||' is not Armstrong Number');

end if;

end;

/
```

7. Upgrade the above program to find all armstrong numbers below 15000.

```
declare

str number(10);  len number(2);  r number(10);  su number(10);  n number(10);  cou number(2):=0;

begin

for x in 1..15000

loop

n:=x;

str:=x;

su:=0;

len:=length(str);

while n>0

loop

r:=mod(n,10);

su:=su+power(r,len);

n:=floor(n/10);

end loop;

if (str=su) then

dbms_output.put_line(str||' is Armstrong Number');

cou:=cou+1;

end if;

end loop;

dbms_output.put_line('count is '||cou);

end;

/
```

8. Write a PL/SQL program to check whether a given string(or number) is palindrome or not.

```
Declare  str  varchar(10);  rev  varchar(10):=null;  len number(2);

Begin  str:='&string';  len:=length(str);

for x in reverse 1..len  loop

rev:=rev||substr(str,x,1);  end loop;

 if str=rev then  dbms_output.put_line(str||' is palindrome');

 else  dbms_output.put_line(str||' is not palindrome');

 end if;

 end;

 /            ==================== ==================
```

9. given number is prime or not

```
   declare   n number(10);   r number(10);   l number(10);

  begin  n:=&n;  l:=2;

  while l<=n  loop

   r:=mod(n,l);

   exit when r=0;

   l:=l+1;   end loop;

   if l=n then

    return(n||' is Prime');

    else

    return(n||' is not Prime');

    end if;

    end;

    /

    ======================
```

11. Factorial of a number

```
Declare    n number;   fact number:=1;

begin    n:=&n;

for i in 1..n   loop    fact:=fact*i;   end loop;

dbms_output.put_line('Factorial is: '||fact);

end;

/==============================
```

12. calculate factorial of all numbers upto a given number.

```
Declare   term number(3);  n number;   fact number;

Begin  term:=&term;

 for n in 1..term   loop    fact:=1;

 for i in 1..n   loop   fact:=fact*i;  end loop;

  dbms_output.put_line('Factorial of: '||n|| 'is = '||fact);

  end loop;

  end;

  /======================
```

13. Fibonacci series for n number of terms.

```
declare   n number;   x number;   y number;   s number;

Begin  n:=&n;

x:=0;      y:=1;               s:=0;

dbms_output.put_line(x);

dbms_output.put_line(y);

for i in 2..(n-1)  loop

s:=x+y;

dbms_output.put_line(s);

x:=y;    y:=s;

end loop;

end;

/================================================
```

14. Test a given year is leap year or not.

```
Declare        year number(6);

Begin        year:=&year;

if ((mod(year,4)=0 and mod(year,100)<>0) or (mod(year,400)=0)) then

dbms_output.put_line(year||' is a leap year');

else

dbms_output.put_line(year||' is not a leap year');

end if;

end;

/
```