/\*

Write a function that converts a decimal to a binary number, one that returns the sum of

the digits of the a given number and one that return the reverse of a number.

\*/

CREATE OR REPLACE FUNCTION dtb(pd IN NUMBER) RETURN VARCHAR2 AS

b VARCHAR2(50);

vd NUMBER := pd;

BEGIN

IF vd IS NOT NULL THEN

WHILE (vd > 0) LOOP

b := mod(vd, 2) || b;

vd := trunc(vd/2);

END LOOP;

ELSE

b := 0;

END IF;

RETURN b;

END;

SET SERVEROUTPUT ON

DECLARE nd NUMBER := &vnd;

BEGIN

DBMS\_OUTPUT.PUT\_LINE('Number '||nd|| ' in binary is '||dtb(nd));

END;

CREATE OR REPLACE FUNCTION sum\_digits(pd IN NUMBER) RETURN NUMBER AS

the\_sum NUMBER := 0;

vd NUMBER := pd;

BEGIN

IF vd IS NOT NULL THEN

WHILE (vd > 0) LOOP

the\_sum := the\_sum + mod(vd, 10);

vd := trunc(vd/10);

END LOOP;

END IF;

RETURN the\_sum;

END;

SET SERVEROUTPUT ON

DECLARE nd NUMBER := &vnd;

BEGIN

DBMS\_OUTPUT.PUT\_LINE('Sum of digits of '||nd|| ' is '||sum\_digits(nd));

END;

CREATE OR REPLACE FUNCTION reverse\_num(pd IN NUMBER) RETURN NUMBER AS

vd NUMBER := pd;

rev\_num NUMBER := 0;

BEGIN

IF vd IS NOT NULL THEN

WHILE (vd > 0) LOOP

rev\_num := rev\_num \* 10 + mod(vd, 10);

vd := trunc(vd/10);

END LOOP;

END IF;

RETURN rev\_num;

END;

SET SERVEROUTPUT ON

DECLARE nd NUMBER := &vnd;

BEGIN

DBMS\_OUTPUT.PUT\_LINE('Reverse of '||nd|| ' is '||reverse\_num(nd));

END;

/\*

Write a function taht computes the following sum: 1!+2!+3!+ ...+n!.

\*/

CREATE OR REPLACE FUNCTION factorial(pd IN NUMBER) RETURN NUMBER AS

factorial NUMBER := 1;

vd NUMBER := pd;

BEGIN

FOR i IN 1..vd LOOP

factorial := factorial \* i;

END LOOP;

RETURN factorial;

END;

CREATE OR REPLACE FUNCTION factorial\_sum(pd IN NUMBER) RETURN NUMBER AS

vd NUMBER := pd;

the\_fact\_sum NUMBER := 0;

BEGIN

FOR i in 1..vd LOOP

the\_fact\_sum := the\_fact\_sum + factorial(i);

END LOOP;

RETURN the\_fact\_sum;

END;

SET SERVEROUTPUT ON

DECLARE nd NUMBER := &vnd;

BEGIN

DBMS\_OUTPUT.PUT\_LINE('Number '||nd|| ' in binary is '||factorial\_sum(nd));

END;

/\*

Some sums calculations.

\*/

CREATE OR REPLACE FUNCTION sum1(pd IN NUMBER) RETURN NUMBER AS

vd NUMBER := pd;

the\_sum NUMBER := 0;

BEGIN

FOR i in 1..vd LOOP

the\_sum := the\_sum + 1/((3\*i+1)\*(3\*i-2));

END LOOP;

RETURN the\_sum;

END;

SET SERVEROUTPUT ON

DECLARE nd NUMBER := &vnd;

BEGIN

DBMS\_OUTPUT.PUT\_LINE('The 1st sum is '||sum1(nd));

END;

CREATE OR REPLACE FUNCTION sum2(pd IN NUMBER) RETURN NUMBER AS

vd NUMBER := pd;

the\_sum NUMBER := 0;

BEGIN

FOR i in 1..vd LOOP

the\_sum := the\_sum + 1/(i\*(i+1)\*(i+2));

END LOOP;

RETURN the\_sum;

END;

SET SERVEROUTPUT ON

DECLARE nd NUMBER := &vnd;

BEGIN

DBMS\_OUTPUT.PUT\_LINE('The 2st sum is '||sum2(nd));

END;

/\*

Some sums calculations.

\*/

CREATE OR REPLACE FUNCTION sum1(pd IN NUMBER) RETURN NUMBER AS

vd NUMBER := pd;

the\_sum NUMBER := 0;

BEGIN

FOR i in 1..vd LOOP

the\_sum := the\_sum + sqrt(i+1) - sqrt(i);

END LOOP;

RETURN the\_sum;

END;

SET SERVEROUTPUT ON

DECLARE nd NUMBER := &vnd;

BEGIN

DBMS\_OUTPUT.PUT\_LINE('The 1st sum is '||sum1(nd));

END;

CREATE OR REPLACE FUNCTION sum2(pd IN NUMBER) RETURN NUMBER AS

vd NUMBER := pd;

the\_sum NUMBER := 0;

BEGIN

FOR i in 1..vd LOOP

the\_sum := the\_sum + (2\*i-1)/power(2,i);

END LOOP;

RETURN the\_sum;

END;

SET SERVEROUTPUT ON

DECLARE nd NUMBER := &vnd;

BEGIN

DBMS\_OUTPUT.PUT\_LINE('The 2st sum is '||sum2(nd));

END;