

## EXPERIMENT NO. 09

**AIM:** To implement control flow function and user defined functions in SQL.

### THEORY:

Procedures and functions are PL/SQL blocks that are named, and they are also known as subprograms. Procedures and Functions are the subprograms which can be created and saved in the database as database objects.

Control Flow Functions :-

Case when [test1 ] then [result1] ...else [default] end	Returns resultN if testN evaluates as true, else return default.
Case [test] when [val1] then [result1] ... Else [default] End	Returns resultN if test evaluates to valN, else return default.
If(test,t,f)	Returns t if test evaluates as true; else returns f
Ifnull (arg1, arg2)	Returns arg1 if arg1 is not null; else returns arg2
Nullif(arg1,arg2)	Returns null if arg1 equals arg2; else returns arg2

- Functions – These subprograms return a single value; mainly used to compute and return a value.

Syntax is as follows :-

delimiter \$\$

```
CREATE FUNCTION function_name(  
    param1,  
    param2,...  
)  
RETURNS datatype  
DETERMINISTIC  
BEGIN  
-- statements  
END $$
```

delimiter ;

The DETERMINISTIC and NOT DETERMINISTIC characteristics indicate whether a function always produces the same result for given inputs.

```
mysql> select * from student;
```

fname	lname	english	maths	science
john	Doe	50	51	50
sarah	shaikh	65	67	65
joe	wumba	45	47	43
deniel	Clark	70	72	70

```
4 rows in set (0.00 sec)
```

```
mysql> select fname, lname, (english+maths+science) as 'total_marks', case when (english+maths+science) <140 then 'D'
-> when (english+maths+science) between 145 and 175 then 'C'
-> when (english+maths+science) between 176 and 200 then 'B'
-> else 'A' end
-> as grade from student;
```

fname	lname	total_marks	grade
john	Doe	151	C
sarah	shaikh	197	B
joe	wumba	135	D
deniel	Clark	212	A

```
4 rows in set (0.00 sec)
```

```
mysql> select * from student;
```

fname	lname	english	maths	science
john	Doe	50	51	50
sarah	shaikh	65	67	65
joe	wumba	45	47	43
deniel	Clark	70	72	70
Mery	thumb	50	31	47

```
5 rows in set (0.00 sec)
```

```
mysql> select concat(fname, lname) as name, if((maths)/100<0.32, 'fail in maths', 'pass in math') as result_math
from student;
```

name	result_math
johnDoe	pass in math
sarahshaikh	pass in math
joewumba	pass in math
denielClark	pass in math
Merythumb	fail in maths

```
5 rows in set (0.00 sec)
```

```
mysql> DELIMITER $$
mysql> CREATE FUNCTION calcProfit(cost FLOAT, price FLOAT) RETURNS DECIMAL(9,2)
-> DETERMINISTIC
-> BEGIN
->   DECLARE profit DECIMAL(9,2);
->   SET profit = price-cost;
->   RETURN profit;
-> END$$
```

Query OK, 0 rows affected (0.01 sec)

```
mysql> DELIMITER ;
mysql> SELECT *, calcProfit(prod_cost,prod_price) AS profit FROM products;
```

prod_id	prod_name	prod_cost	prod_price	profit
11	tv	12000	15000	3000.00
12	ac	22000	25000	3000.00
13	printer	16000	20000	4000.00

3 rows in set (0.00 sec)

```
mysql> DELIMITER $$
mysql> CREATE FUNCTION tax(salary int) RETURNS int
-> DETERMINISTIC
-> BEGIN
->   DECLARE tax_cal int;
->   SET tax_cal = salary*0.08;
->   RETURN tax_cal;
-> END$$
```

Query OK, 0 rows affected (0.01 sec)

```
mysql> DELIMITER ;
mysql> select * from employee;
```

fname	lname	salary
mourgous	taylor	58000
david	mantoo	65000
vargas	rock	60000

3 rows in set (0.00 sec)

```
mysql> select *,tax(salary) from employee;
```

fname	lname	salary	tax(salary)
mourgous	taylor	58000	4640
david	mantoo	65000	5200
vargas	rock	60000	4800

3 rows in set (0.01 sec)

CONCLUSION: - Hence studied the user defined functions in SQL.