20BCS042 | Mohd Adil Assignment 11

```
mysql> create database assignment11;
Query DK, 1 row affected (0.04 sec)
mysql> delimiter ]
mysql> SET GLDBAL log_bin_trust_function_creators = 1]
Query DK, 0 rows affected (0.01 sec)
```

Q1. Write a SQL function and stored procedure for average of three numbers.

Function:

```
mysql> create function 42CSavg3no(a int, b int,c int) returns int
   -> begin
   -> declare sum, avg int;
   -> set sum = a + b + c;
   -> set avg = sum/3;
   -> return avg;
   -> end]
Query □K, 0 rows affected (0.03 sec)
```

```
mysql> create procedure 42CSavg3no(In a int, In b int, In c int, Out t int)
    -> begin
    -> declare sum int;
    \rightarrow set sum = a + b + c;
    \rightarrow set t = sum/3;
    -\rangle end]
Query DK, 0 rows affected (0.01 sec)
mysql> call 42CSavg3no(4, 5, 6, @avg)]
Query DK, 0 rows affected (0.01 sec)
mysql> select @avg]
+----+
l @avg l
+----+
I 5 I
+----+
1 row in set (0.00 sec)
```

Q2. Write a SQL function and stored procedure to calculate factorial.

```
mysql> create function 42CSfactorial(n int) returns int
    -> begin
    -> declare f, i int default 1;
    -> myloop: loop
    \rightarrow if i>n then
    -> leave myloop;
    -> else
    \rightarrow set f = f*i;
    \rightarrow set i = i + 1;
    -> iterate myloop;
    -> end if;
    -> end loop;
    -> return f;
    -> end]
Query DK, 0 rows affected (0.01 sec)
mysql> select 42CSfactorial(5)]
+----+
I 42CSfactorial(5) I
+----+
             120 I
+----+
1 row in set (0.00 sec)
```

```
mysql> create function 42CSfactorial(n int) returns int
   -> begin
   -> declare f,i int default 1;
   -> myloop:loop
   -> if i>n then
   -> leave myloop;
   -> else
   -> set f = f*i;
   -> set i = i + 1;
   -> iterate myloop;
   -> end if;
   -> end loop;
   -> return f;
   -> end]
Query OK, 0 rows affected (0.01 sec)
mysql> select 42CSfactorial(5)]
+-----+
| 42CSfactorial(5) |
    120 |
1 row in set (0.00 sec)
```

```
mysql> create procedure 42CSfactorial(In n int, Out fact int)
    -> begin
    -> declare f, i int default 1;
    -> myloop: loop
    \rightarrow if i>n then
    -> leave myloop;
    -> else
    \rightarrow set f = f*i;
    \rightarrow set i = i + 1;
    -> iterate myloop;
    \rightarrow end if;
    -> end loop;
    -> set fact = f;
    -\rangle end]
Query DK, 0 rows affected (0.01 sec)
mysql> call 42CSfactorial(5,@factorial5)]
Query DK, 0 rows affected (0.00 sec)
mysql> select @factorial5]
+----+
I @factorial5 |
+----+
120 |
+----+
1 row in set (0.00 sec)
```

```
mysql> create procedure 42CSfactorial(In n int,Out fact int)
   -> begin
    -> declare f,i int default 1;
   -> myloop:loop
   -> if i>n then
   -> leave myloop;
   -> else
   -> set f = f*i;
   -> set i = i + 1;
   -> iterate myloop;
   -> end if;
   -> end loop;
   -> set fact = f;
   -> end]
Query OK, 0 rows affected (0.01 sec)
mysql> call 42CSfactorial(5,@factorial5)]
Query OK, 0 rows affected (0.00 sec)
mysql> select @factorial5]
@factorial5
  120
1 row in set (0.00 sec)
```

Q3. Write a SQL function and stored procedure to print Fibonacci series up to n terms and its sum.

```
mysql> create function 42CSfibonacci(n int) returns varchar(1000)
    -> begin
    -> declare i int default 3;
    -> declare a, temp int default 0;
    -> declare b, sum int default 1;
    -> declare str varchar(1000);
    -> set str = CAST(a as char(2));
    \rightarrow set str = CONCAT(str," ");
    -> myloop: loop
    -> if i>n then
    -> leave myloop;
    -> else
    \rightarrow set temp = a + b;
    \rightarrow set a = b;
    \rightarrow set b = temp;
    \rightarrow set i = i + 1;
    -> set sum = sum + temp;
    \rightarrow set str = CONCAT(str, CAST(a as char(2)));
    \rightarrow set str = CONCAT(str, " ");
    \rightarrow end if;
    -> end loop;
    -> set str = CONCAT(str, CAST(b as char(2)));
    -> set str = CONCAT(str, " and sum = ");
    -> set str = CONCAT(str, CAST(sum as char(3)));
    -> return str;
    -\rangle end]
Query DK, 0 rows affected (0.01 sec)
mysql> select 42CSfibonacci(6)]
I 42CSfibonacci(6) I
+----+
I \ 0 \ 1 \ 1 \ 2 \ 3 \ 5 \ and \ sum = 12 \ I
+----+
1 row in set (0.00 sec)
```

```
mysql> create function 42CSfibonacci(n int) returns varchar(1000)
    -> begin
   -> declare i int default 3;
    -> declare a, temp int default 0;
    -> declare b, sum int default 1;
   -> declare str varchar(1000);
    -> set str = CAST(a as char(2));
    -> set str = CONCAT(str," ");
   -> myloop:loop
    -> if i>n then
    -> leave myloop;
   -> else
   -> set temp = a + b;
   -> set a = b;
   -> set b = temp;
    -> set i = i + 1;
   -> set sum = sum + temp;
   -> set str = CONCAT(str,CAST(a as char(2)));
   -> set str = CONCAT(str, " ");
   -> end if;
   -> end loop;
    -> set str = CONCAT(str,CAST(b as char(2)));
   -> set str = CONCAT(str, " and sum = ");
   -> set str = CONCAT(str,CAST(sum as char(3)));
    -> return str;
    -> end]
Query OK, 0 rows affected (0.01 sec)
mvsql> select 42CSfibonacci(6)]
+-----
| 42CSfibonacci(6)
| 0 1 1 2 3 5 and sum = 12 |
   . - - - - - - - - - - - - - - - - - +
1 row in set (0.00 sec)
```

```
mysql> create procedure 42CSfibonacci(In n int, Dut retStr varchar(1000))
    -> begin
    -> declare i int default 3;
    -> declare a, temp int default 0;
    -> declare b, sum int default 1;
    -> declare str varchar(1000);
    -> set str = CAST(a as char(2));
    \rightarrow set str = CONCAT(str, " ");
    -> myloop: loop
    -> if i>n then
    -> leave myloop;
    -> else
    \rightarrow set temp = a + b;
    \rightarrow set a = b;
    \rightarrow set b = temp;
    \rightarrow set i = i + 1;
    -> set sum = sum + temp;
    -> set str = CONCAT(str, CAST(a as char(2)));
    \rightarrow set str = CONCAT(str, "");
    -> end if;
```

```
-> end loop;
   -> set str = CONCAT(str, CAST(b as char(2)));
   \rightarrow set str = CONCAT(str, " and sum = ");
   -> set str = CONCAT(str, CAST(sum as char(3)));
   -> set retstr = str;
   -> end]
Query DK, 0 rows affected (0.01 sec)
mysql> call 42CSfibonacci(6,@series6)]
Query DK, 0 rows affected (0.00 sec)
mysql> select @series6]
+----+
l @series6
+----+
I \ 0 \ 1 \ 1 \ 2 \ 3 \ 5 \ and \ sum = 12 \ I
+----+
1 row in set (0.00 sec)
mysql> create procedure 42CSfibonacci(In n int,Out retStr varchar(1000))
   -> begin
   -> declare i int default 3;
   -> declare a, temp int default 0;
   -> declare b, sum int default 1;
   -> declare str varchar(1000);
   -> set str = CAST(a as char(2));
   -> set str = CONCAT(str," ");
   -> myloop:loop
   -> if i>n then
   -> leave myloop;
   -> else
   -> set temp = a + b;
   -> set a = b;
   -> set b = temp;
   -> set i = i + 1;
   -> set sum = sum + temp;
   -> set str = CONCAT(str,CAST(a as char(2)));
   -> set str = CONCAT(str, " ");
   -> end if;
   -> end loop;
   -> set str = CONCAT(str,CAST(b as char(2)));
   -> set str = CONCAT(str, " and sum = ");
   -> set str = CONCAT(str,CAST(sum as char(3)));
    -> set retstr = str;
    -> end]
Query OK, 0 rows affected (0.01 sec)
mysql> call 42CSfibonacci(6,@series6)]
Query OK, 0 rows affected (0.00 sec)
mysql> select @series6]
+-----+
@series6
0 1 1 2 3 5 and sum = 12
+-----+
1 row in set (0.00 sec)
```

Q4. Write a SQL function and stored procedure to calculate age.

```
mysql> create function 42CScalcAge(dat date) returns varchar(25)
    -> begin
    -> declare curDate date default CURRENT_DATE();
   -> declare tempDate date;
   -> declare year, month, date int default 0;
   -> declare str varchar(25) default "";
   -> set year = TIMESTAMPDIFF(YEAR, dat, curDate);
   -> set month = TIMESTAMPDIFF(MONTH, dat, curDate);
   -> set month = month - (year*12);
   -> set tempDate = DATE_ADD(dat, INTERVAL year YEAR);
   -> set tempDate = DATE_ADD(tempDate, INTERVAL month MONTH);
   -> set date = DATEDIFF(curDate, tempDate) + 1;
   -> set str = CDNCAT(str, CAST(year as char(2)));
   \rightarrow set str = CONCAT(str, "Y");
   -> set str = CONCAT(str,CAST(month as char(2)));
   \rightarrow set str = CONCAT(str, "M ");
   -> set str = CONCAT(str, CAST(date as char(2)));
   \rightarrow set str = CONCAT(str, "D ");
    -> return str;
    -\rangle end]
Query DK, 0 rows affected (0.01 sec)
mysql> select 42CScalcAge('1992-05-11')]
+----+
| 42CScalcAge('1992-05-11') |
+----+
I 29Y 11M 19D
+----+
1 row in set (0.00 sec)
```

```
mysql> create function 42CScalcAge(dat date) returns varchar(25)
   -> begin
   -> declare curDate date default CURRENT_DATE();
   -> declare tempDate date;
   -> declare year, month, date int default 0;
   -> declare str varchar(25) default "";
   -> set year = TIMESTAMPDIFF(YEAR, dat, curDate);
   -> set month = TIMESTAMPDIFF(MONTH,dat,curDate);
   -> set month = month - (year*12);
   -> set tempDate = DATE_ADD(dat,INTERVAL year YEAR);
   -> set tempDate = DATE_ADD(tempDate,INTERVAL month MONTH);
   -> set date = DATEDIFF(curDate,tempDate) + 1;
   -> set str = CONCAT(str,CAST(year as char(2)));
   -> set str = CONCAT(str,"Y ");
   -> set str = CONCAT(str,CAST(month as char(2)));
   -> set str = CONCAT(str,"M ");
   -> set str = CONCAT(str,CAST(date as char(2)));
   -> set str = CONCAT(str, "D ");
   -> return str;
   -> end]
Query OK, 0 rows affected (0.01 sec)
mysql> select 42CScalcAge('1992-05-11')]
| 42CScalcAge('1992-05-11') |
------
 29Y 11M 19D
1 row in set (0.00 sec)
```

```
mysql> create procedure 42CScalcAge(In dat date, Out retStr varchar(25))
    -> begin
    -> declare curDate date default CURRENT_DATE();
    -> declare tempDate date;
    -> declare year, month, date int default 0;
    -> declare str varchar(25) default "";
    -> set year = TIMESTAMPDIFF(YEAR, dat, curDate);
    -> set month = TIMESTAMPDIFF(MONTH, dat, curDate);
    -> set month = month - (year*12);
    -> set tempDate = DATE_ADD(dat, INTERVAL year YEAR);
    -> set tempDate = DATE_ADD(tempDate, INTERVAL month MONTH);
    -> set date = DATEDIFF(curDate, tempDate) + 1;
    -> set str = CONCAT(str, CAST(year as char(2)));
    \rightarrow set str = CONCAT(str, "Y");
    \rightarrow set str = CONCAT(str, CAST(month as char(2)));
    \rightarrow set str = CONCAT(str, "M");
    \rightarrow set str = CONCAT(str, CAST(date as char(2)));
    \rightarrow set str = CONCAT(str, "D ");
    -> set retStr = str;
    -\rangle end]
Query DK, 0 rows affected (0.01 sec)
mysql> call 42CScalcAge('1992-05-11',@age)]
Query DK, 0 rows affected (0.01 sec)
mysql> select @age]
+----+
l @age l
+----+
I 29Y 11M 19D I
+----+
1 row in set (0.00 sec)
```

```
mysql> create procedure 42CScalcAge(In dat date,Out retStr varchar(25))
    -> begin
   -> declare curDate date default CURRENT_DATE();
   -> declare tempDate date;
   -> declare year, month, date int default 0;
   -> declare str varchar(25) default "";
    -> set year = TIMESTAMPDIFF(YEAR,dat,curDate);
    -> set month = TIMESTAMPDIFF(MONTH, dat, curDate);
    -> set month = month - (year*12);
   -> set tempDate = DATE_ADD(dat,INTERVAL year YEAR);
   -> set tempDate = DATE_ADD(tempDate, INTERVAL month MONTH);
    -> set date = DATEDIFF(curDate, tempDate) + 1;
    -> set str = CONCAT(str,CAST(year as char(2)));
    -> set str = CONCAT(str,"Y ");
    -> set str = CONCAT(str,CAST(month as char(2)));
    -> set str = CONCAT(str, "M ");
   -> set str = CONCAT(str,CAST(date as char(2)));
    -> set str = CONCAT(str, "D ");
    -> set retStr = str;
    -> end]
Query OK, 0 rows affected (0.01 sec)
mysql> call 42CScalcAge('1992-05-11',@age)]
Query OK, 0 rows affected (0.01 sec)
mysql> select @age]
 @age
29Y 11M 19D
1 row in set (0.00 sec)
```

Q5. Write a SQL function and stored procedure to count the total number of employees table.

```
Function:
mysql> create function 42CStotalNoEmployees() returns int
    -> begin
    -> declare s int;
    -> select count(*) from employee into s;
    -> return s;
    -\rangle end]
Query DK, 0 rows affected (0.01 sec)
mysql> select 42CStotalNoEmployees()]
+----+
I 42CStotalNoEmployees() I
1 row in set (0.01 sec)
          mysql> create function 42CStotalNoEmployees() returns int
              -> begin
              -> declare s int;
              -> select count(*) from employee into s;
              -> return s;
              -> end]
          Query OK, 0 rows affected (0.01 sec)
           mysql> select 42CStotalNoEmployees()]
           +-----
           42CStotalNoEmployees()
             . - - - - - - - - - - - - - - - - +
           1 row in set (0.01 sec)
Procedure:
mysql> create procedure 42CStotalNoEmployees(Out count int)
    -> begin
    -> declare s int;
    -> select count(*) from employee into s;
    -> set count = s;
    -\rangle end]
Query DK, 0 rows affected (0.01 sec)
mysql> call 42CStotalNoEmployees(@result)]
Query DK, 1 row affected (0.01 sec)
mysql> select @result]
+----+
| @result |
+----+
I 8 I
+----+
1 row in set (0.00 sec)
```

Q6. Write a SQL function and stored procedure to calculate the budget of the department.

```
mysql> create function 42CScalcBudget(dept varchar(30)) returns int
   -> begin
   -> declare deptnumber varchar(5);
   -> declare budget int default 0;
   -> select Dnumber from department where Dname = dept into deptnumber;
   -> select sum(salary) from employee where Dno = deptnumber into budget;
   -> return budget;
   -\rangle end]
Query DK, 0 rows affected (0.01 sec)
mysql> select 42CScalcBudget('Research')]
+----+
I 42CScalcBudget('Research') |
+----+
                   133000 I
+----+
1 row in set (0,01 sec)
```

```
mysql> create procedure 42CScalcBudget(In dept varchar(30), Dut budget int)
    -> begin
    -> declare deptnumber varchar(5);
    -> declare sumSal int default 0;
    -> select Dnumber from department where Dname = dept into deptnumber;
    -> select sum(salary) from employee where Dno = deptnumber into sumSal;
    -> set budget = sumSal;
    -\rangle end]
Query DK, 0 rows affected (0.01 sec)
mysql> call 42CScalcBudget('Research',@Budget)]
Query DK, 1 row affected (0.00 sec)
mysql> select @Budget]
+----+
I @Budget |
+----+
I 133000 I
+----+
1 row in set (0.00 sec)
```

Q7. Write a SQL function and stored procedure to print the following message.

1 row in set (0.00 sec)

```
mysql> create procedure 42CSprintMsg(In name varchar(50), Out message varchar(100))
   -> begin
   -> declare msg varchar(100) default "Hello ";
   -> set msg = CONCAT(msg, name);
   -> set msg = CONCAT(msg, " How are you?");
   -> set message = msg;
   -> end]
Query DK, 0 rows affected (0.01 sec)
mysql> call 42CSprintMsg('Mohd Adil',@message)]
Query DK, 0 rows affected (0.00 sec)
mysql> select @message]
+----+
l @message
+----+
I Hello Mohd Adil How are you? I
+----+
```

1. Employee

```
mysql> create table Employee (
    -> Eid varchar (5) primary key,
    -> Ename varchar(50),
    -> Esal varchar(6));
Query DK, 0 rows affected (0.10 sec)
2. LogTable
mysql> create table LogTable(
    -> User varchar(50),
    -> Operation varchar(20),
    -> Time varchar(20),
    -> Peid varchar(5),
    -> Pename varchar(50),
    -> Pesal varchar(6),
    -> Neid varchar(5),
    -> Nename varchar(50),
    -> Nesal varchar(6));
Query DK, 0 rows affected (0.04 sec)
```

Insert Trigger

```
-> insert into LogTable values (user(), 'Insert', now(), '-', '-', '-
', new. Eid, new. Ename, new. Esal);
   \rightarrow end ]
Query DK, 0 rows affected (0.03 sec)
mysql> insert into Employee
   -> values ('E0001', 'Mohd Adil', '79901') ]
Query DK, 1 row affected (0.01 sec)
mysql> select * from LogTable]
+----+
         I □peration I Time
                               | Peid | Pename | Pesal | Neid | Nename | Nesal |
+----+
| root@localhost | Insert | 2022-04-30 15:01:47 | - | - | E0001 | Mohd Adil | 79901 |
+----+
1 row in set (0.00 sec)
Update Trigger
mysql> create trigger updateTrig after update on Employee for each row
  -> begin
  -> insert into LogTable
  -> values(user(), 'Update', now(), old. Eid, old. Ename, old. Esal, new. Eid, new. Ename, new. Esal);
  \rightarrow end ]
Query DK, 0 rows affected (0.01 sec)
mysql> update Employee set Esal='10010' where Eid='E0001' ]
Query DK, 1 row affected (0.02 sec)
Rows matched: 1 Changed: 1 Warnings: 0
mysql> select * from logTable]
+----+
l User
         I Πneration I Time
                               | Peid | Pename | Pesal | Neid | Nename | Nesal
 root@localhost | Insert | 2022-04-30 15:01:47 | - | - | | - | | E0001 | Mohd Adil | 79901
I root@localhost | Update | 2022-04-30 15:05:16 | E0001 | Mohd Adil | 79901 | E0001 | Mohd Adil | 10010
+----+
2 rows in set (0.00 sec)
```

```
Delete Trigger
mysql> create trigger deleteTrig after delete on Employee for each row
   -> begin
   -> insert into LogTable
   -> values (user(),'Delete', now(), old. Eid, old. Ename, old. Esal,'-','-');
   \rightarrow end ]
Query DK, 0 rows affected (0.01 sec)
mysql> delete from Employee where Eid='E0001' ]
Query DK, 1 row affected (0.01 sec)
mysql> select * from logTable]
+----+
         I □peration I Time
                               I Peid I Pename | Pesal | Neid | Nename | Nesal
 | root@localhost | Insert | 2022-04-30 15:01:47 | - | - | | E0001 | Mohd Adil | 79901
I root@localhost | Update | | 2022-04-30 | 15:05:16 | E0001 | Mohd Adil | 79901 | E0001 | Mohd Adil | 10010
| root@localhost | Delete | 2022-04-30 15:08:24 | E0001 | Mohd Adil | 10010 | - | | - | | -
+----+
3 rows in set (0.00 sec)
Cursor
mysql> select * from employee]
+----+
I Eid | Ename | Esal |
+----+
I E0002 | ABC | 30000 |
I E0003 | XYZ | 40000 |
I E0004 | DEF | 50000 |
+----+
```

mysql> create procedure mypro(out s varchar(6))

-> begin

3 rows in set (0.00 sec)

```
-> declare f int default 1;
   -> declare str longtext default "";
   -> declare cur cursor for select Esal from Employee;
   -> declare continue handler for not found set f=0;
   -> open cur;
   -> myloop: loop
   -> fetch cur into s;
   \rightarrow if f = 0 then
   -> leave myloop;
   -> else
   \rightarrow set str = CONCAT(str, " ", s);
   \rightarrow end if;
   -> end loop;
   -> close cur;
   -> select str;
   -> end ]
Query DK, 0 rows affected (0.01 sec)
mysql> call mypro(@s)]
+----+
l str
+----+
I 30000 40000 50000 I
+----+
1 row in set (0.00 sec)
Query DK, 0 rows affected (0.01 sec)
```

Thank You