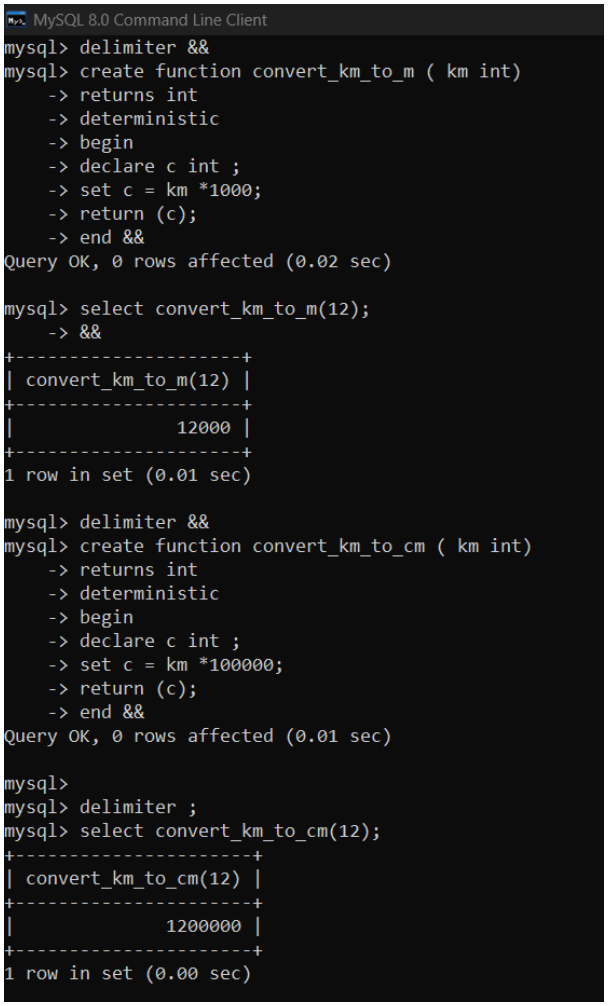
Question 1

```
delimiter &&
create function convert_km_to_m ( km int)
returns int
deterministic
begin
declare c int ;
set c = km *1000;
return (c);
end &&
create function convert_km_to_cm ( km int)
returns int
deterministic
begin
declare c int ;
set c = km *100000;
return (c);
end &&
```



Question 2

```
delimiter &&
create function convert_into_words( i int)
returns varchar(1000)
deterministic
begin
        declare k int;
        declare ii int default 0;
        declare ans varchar (1000) default '';
        while i!=0 do
                set ii =(10* ii) + (i mod 10);
                set i = i / 10;
        end while;
        set k=ii;
        while ii!=0 do
                set i = (ii mod 10);
```

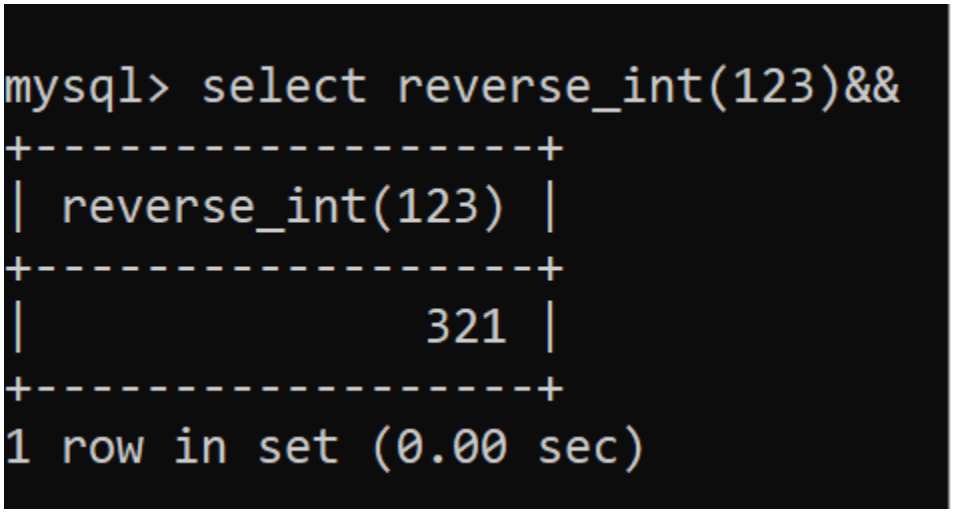
```
        set ii = ii/10;
        if i = 1 then
            set ans = concat(ans,' ','one');
        elseif i=2 then
            set ans = concat(ans,' ','two');
        elseif i=3 then
            set ans = concat(ans,' ','three');
        elseif i=4 then
            set ans = concat(ans,' ','four');
        elseif i=5 then
            set ans = concat(ans,' ','five');
        elseif i=6 then
            set ans = concat(ans,' ','six');
        elseif i=7 then
            set ans = concat(ans,' ','seven');
        elseif i=8 then
            set ans = concat(ans,' ','eight');
        elseif i=9 then
            set ans = concat(ans,' ','nine');
        else set ans = concat(ans,' ','zero');
        end if;
    end while;
    return ( ans) ;
end &&
```

```
mysql> select convert_into_words(123456);
    -> &&
+-------------------------------------+
| convert_into_words(123456)          |
+-------------------------------------+
|  one two four five seven seven one  |
+-------------------------------------+
1 row in set (0.00 sec)
```

Question 3

```
create function reverse_int( i int)
returns int
deterministic
begin
```

```
        declare ii int default 0;
        while i!=0 do
                set ii =(10* ii) + (i mod 10);
                set i = i / 10;
        end while;
        return (ii);
end&&
select reverse_int(123)&&
```



Question 4

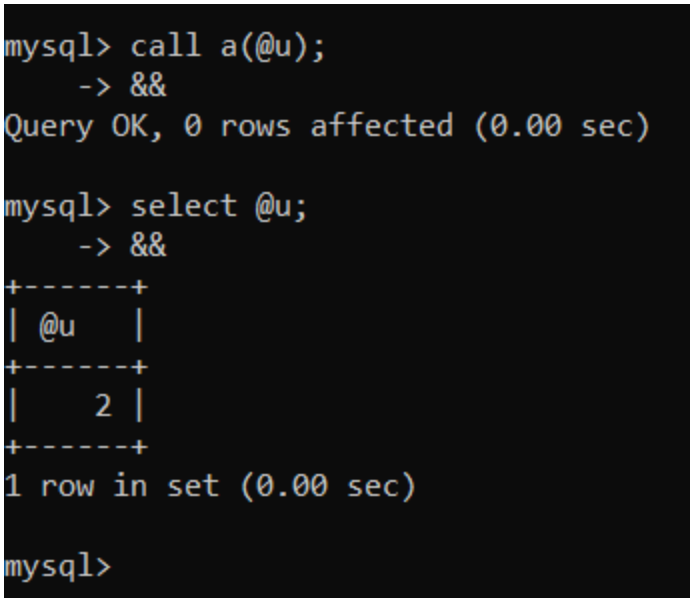
a)

```
create table customers (id int primary key , name varchar(20) ,address int , salary decimal(17,3)
);
alter table customers add column age int;
insert into customers (id,age) values (1,32),(2,25),(3,23),(4,25),(5,27),(6,22);

delimiter &&
create procedure ins (in nk varchar(20) ,in sal decimal(17,3),out i int)
begin
select count(*) into i from customers where id=5;
update customers set name=nk, salary=sal where id=5;
end&&
```

```
mysql>  call ins('u',4,@u);
    -> &&
Query OK, 1 row affected (0.01 sec)

mysql> select @u as affected_rows;
    -> &&
+---------------+
| affected_rows |
+---------------+
|             1 |
+---------------+
1 row in set (0.00 sec)

mysql> select * from customers;
    -> &&
+----+------+---------+--------+------+
| id | name | address | salary | age  |
+----+------+---------+--------+------+
|  1 | NULL |    NULL |   NULL |   32 |
|  2 | NULL |    NULL |   NULL |   25 |
|  3 | NULL |    NULL |   NULL |   23 |
|  4 | NULL |    NULL |   NULL |   25 |
|  5 | u    |    NULL |  4.000 |   27 |
|  6 | NULL |    NULL |   NULL |   22 |
+----+------+---------+--------+------+
6 rows in set (0.00 sec)

mysql>
```

B)

```
delimiter &&
create procedure a(out i int)
begin

        declare finish int default 0;
        declare k varchar (100);
        declare cur cursor for select name from customers where age>25;
        declare continue handler for not found set finish =1;
        set i =0;
        open cur;
        get_data : loop
                fetch cur into k;

                if finish=1 then leave get_data;
                end if;
                set i=i+1;
        end loop get_data;
        close cur;
end &&
```



Question 5

```
create table product ( p_code int primary key , price int ) ;
insert into product values (1,1234),(2,777),(3,1000);

create table product_logs ( p_code int , price int , update_data date ) ;

delimiter &&
create trigger b_u_p
before update on product for each row
begin
insert into product_logs values (old.p_code,old.price,sysdate());
end &&
```

```
mysql> update product set price =144444 where p_code=1;
    -> &&
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from product;
    -> &&
+--------+--------+
| p_code | price  |
+--------+--------+
|      1 | 144444 |
|      2 |    777 |
|      3 |   1000 |
+--------+--------+
3 rows in set (0.00 sec)

mysql> select * from product_logs ;
    -> &&
+--------+-------+-------------+
| p_code | price | update_data |
+--------+-------+-------------+
|      1 |  1234 | 2022-11-20  |
+--------+-------+-------------+
1 row in set (0.00 sec)

mysql>
```