```
+-----------------------------------+
1 row in set (0.00 sec)

mysql> DELIMITER $$
mysql>
mysql> CREATE PROCEDURE GetCustomerLevel(
    ->     IN p_customer_number INT,
    ->     OUT p_customer_level VARCHAR(50)
    -> )
    -> BEGIN
    ->     DECLARE credit_limit DECIMAL(10, 2);
    ->
    ->     -- Get the credit limit from the customers table
    ->     SELECT creditLimit INTO credit_limit
    ->     FROM customers
    ->     WHERE customerNumber = p_customer_number;
    ->
    ->     -- Determine the customer level based on the credit limit
    ->     IF credit_limit >= 10000 THEN
    ->         SET p_customer_level = 'PLATINUM';
    ->     ELSEIF credit_limit >= 5000 THEN
    ->         SET p_customer_level = 'GOLD';
    ->     ELSE
    ->         SET p_customer_level = 'SILVER';
    ->     END IF;
    -> END$$
Query OK, 0 rows affected (0.02 sec)

mysql>
mysql> DELIMITER ;
mysql> CALL GetCustomerLevel(123, @customer_level);
ERROR 1146 (42S02): Table 'student.customers' doesn't exist
mysql> SELECT @customer_level;
+-----------------------------------+
| @customer_level                   |
+-----------------------------------+
| NULL                              |
+-----------------------------------+
1 row in set (0.00 sec)

mysql>
```
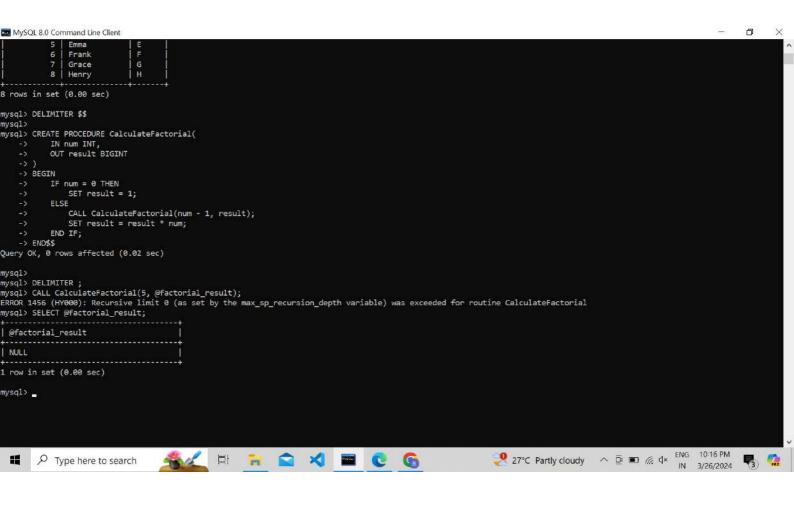
```
|          5 | Emma         | E      |
|          6 | Frank        | F      |
|          7 | Grace        | G      |
|          8 | Henry        | H      |
+------------+--------------+--------+
8 rows in set (0.00 sec)

mysql> DELIMITER $$
mysql>
mysql> CREATE PROCEDURE CalculateFactorial(
    ->     IN num INT,
    ->     OUT result BIGINT
    -> )
    -> BEGIN
    ->     IF num = 0 THEN
    ->         SET result = 1;
    ->     ELSE
    ->         CALL CalculateFactorial(num - 1, result);
    ->         SET result = result * num;
    ->     END IF;
    -> END$$
Query OK, 0 rows affected (0.02 sec)

mysql>
mysql> DELIMITER ;
mysql> CALL CalculateFactorial(5, @factorial_result);
ERROR 1456 (HY000): Recursive limit 0 (as set by the max_sp_recursion_depth variable) was exceeded for routine CalculateFactorial
mysql> SELECT @factorial_result;
+-------------------------------------+
| @factorial_result                   |
+-------------------------------------+
| NULL                                |
+-------------------------------------+
1 row in set (0.00 sec)

mysql>
```

```
MySQL 8.0 Command Line Client                                                    —    ☐    ✕

Your MySQL connection id is 37
Server version: 8.0.36 MySQL Community Server - GPL

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database balu;
ERROR 1007 (HY000): Can't create database 'balu'; database exists
mysql> use balu;
Database changed
mysql> delimiter //
mysql> create procedure dorepeat(p1 int)
    -> begin
    -> set @x=0;
    -> repeat set @x=@x+1;
    -> until @x>p1 end repeat;
    -> end
    -> //
Query OK, 0 rows affected (0.03 sec)

mysql> call dorepeat(4001)//
Query OK, 0 rows affected (0.03 sec)

mysql> select @x;
    -> //
+------+
| @x   |
+------+
| 4002 |
+------+
1 row in set (0.00 sec)

mysql>
```

```
MySQL 8.0 Command Line Client                                                    —    □    ×

mysql>
mysql> -- Insert more values into the Class table
mysql> INSERT INTO Class (student_id, student_name, grade) VALUES (5, 'Emma', 'E');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO Class (student_id, student_name, grade) VALUES (6, 'Frank', 'F');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO Class (student_id, student_name, grade) VALUES (7, 'Grace', 'G');
Query OK, 1 row affected (0.00 sec)

mysql>
mysql> -- Create another savepoint after the next three inserts
mysql> SAVEPOINT savepoint2;
Query OK, 0 rows affected (0.00 sec)

mysql>
mysql> -- Insert one more value into the Class table
mysql> INSERT INTO Class (student_id, student_name, grade) VALUES (8, 'Henry', 'H');
Query OK, 1 row affected (0.00 sec)

mysql>
mysql> -- Now let's rollback to savepoint1
mysql> ROLLBACK TO savepoint1;
ERROR 1305 (42000): SAVEPOINT savepoint1 does not exist
mysql>
mysql> -- Check the current contents of the Class table
mysql> SELECT * FROM Class;
+------------+--------------+-------+
| student_id | student_name | grade |
+------------+--------------+-------+
|          1 | Alice        | A     |
|          2 | Bob          | B     |
|          3 | Charlie      | C     |
|          4 | David        | D     |
|          5 | Emma         | E     |
|          6 | Frank        | F     |
|          7 | Grace        | G     |
|          8 | Henry        | H     |
+------------+--------------+-------+
8 rows in set (0.00 sec)
```

```
    ->      END CASE;
    ->
    ->      RETURN incomelevel;
    ->
    -> END; //
ERROR 1418 (HY000): This function has none of DETERMINISTIC, NO SQL, or READS SQL DATA in its declaration and binary logging is enabled (you *might* want to use the less sa
fe log_bin_trust_function_creators variable)
mysql>
mysql> SELECT incomelevel(5300);//
ERROR 1305 (42000): FUNCTION bala.incomelevel does not exist
mysql> create procedure test_mysql_while_loop()
    -> begin
    -> declare x int;
    -> declare str varchar(255);
    ->
    -> set x=1;
    -> set str='';
    ->
    -> while x<=5 do
    -> set str=concat(str,x,',');
    -> set x=x+1;
    -> end while;
    ->
    -> select str;
    -> end
    -> //
Query OK, 0 rows affected (0.01 sec)

mysql> call test_mysql_while_loop() //
+------------+
| str        |
+------------+
| 1,2,3,4,5, |
+------------+
1 row in set (0.01 sec)

Query OK, 0 rows affected (0.01 sec)

mysql>
```