

## 1.User Defined Function:

```
mysql> DELIMITER //
mysql> CREATE FUNCTION validate_email(p_email VARCHAR(100))
  -> RETURNS VARCHAR(10)
  -> DETERMINISTIC
  -> BEGIN
  ->     IF p_email LIKE '%@%.%' THEN
  ->         RETURN 'VALID';
  ->     ELSE
  ->         RETURN 'INVALID';
  ->     END IF;
  -> END //
Query OK, 0 rows affected (0.01 sec)

mysql> DELIMITER ;
mysql> SELECT name, email, validate_email(email) AS email_status
  -> FROM users;
+-----+-----+-----+
| name | email           | email_status |
+-----+-----+-----+
| Kiran | kiran@gmail.com | VALID        |
+-----+-----+-----+
1 row in set (0.00 sec)
```

```
mysql> SELECT DATABASE();
+-----+
| DATABASE() |
+-----+
| applyfolio |
+-----+
1 row in set (0.00 sec)

mysql> DELIMITER //
mysql> CREATE PROCEDURE insert_user_safe(
  ->     IN p_user_id INT,
  ->     IN p_name VARCHAR(100),
  ->     IN p_email VARCHAR(100),
  ->     IN p_role VARCHAR(20)
  -> )
  -> BEGIN
  ->     DECLARE EXIT HANDLER FOR SQLEXCEPTION
  ->     BEGIN
  ->         ROLLBACK;
  ->     END;
  ->
  ->     START TRANSACTION;
  ->
  ->     INSERT INTO users(user_id, name, email, role)
  ->     VALUES(p_user_id, p_name, p_email, p_role);
  ->
  ->     COMMIT;
  -> END //
Query OK, 0 rows affected (0.04 sec)
```

```

mysql> DELIMITER //
mysql> CREATE FUNCTION total_applications(p_user_id INT)
  -> RETURNS INT
  -> DETERMINISTIC
  -> BEGIN
  ->     DECLARE total INT;
  ->
  ->     SELECT COUNT(*)
  ->     INTO total
  ->     FROM applications
  ->     WHERE user_id = p_user_id;
  ->
  ->     RETURN total;
  -> END //
Query OK, 0 rows affected (0.02 sec)

mysql> DELIMITER ;
mysql> SELECT user_id, total_applications(user_id) AS total_apps
  -> FROM users;
+-----+-----+
| user_id | total_apps |
+-----+-----+
|      10 |          0 |
+-----+-----+
1 row in set (0.03 sec)

mysql> |

```

## 2. Triggers

```

mysql> DELIMITER //
mysql> CREATE TRIGGER before_user_insert
  -> BEFORE INSERT ON users
  -> FOR EACH ROW
  -> BEGIN
  ->     SET NEW.role = LOWER(NEW.role);
  -> END //
Query OK, 0 rows affected (0.03 sec)

mysql> DELIMITER ;
mysql> INSERT INTO users(user_id,name,email,role)
  -> VALUES(50,'TestUser','test@gmail.com','ADMIN');
Query OK, 1 row affected (0.01 sec)

mysql> SELECT user_id,name,role FROM users WHERE user_id=50;
+-----+-----+-----+
| user_id | name      | role  |
+-----+-----+-----+
|      50 | TestUser  | admin |
+-----+-----+-----+
1 row in set (0.00 sec)

```

```
mysql> SHOW TABLES;
+-----+
| Tables_in_applyfolio |
+-----+
| applications         |
| user_audit           |
| users                |
+-----+
3 rows in set (0.01 sec)

mysql> DELIMITER //
mysql> CREATE TRIGGER after_user_insert
  -> AFTER INSERT ON users
  -> FOR EACH ROW
  -> BEGIN
  ->     INSERT INTO user_audit(user_id)
  ->     VALUES (NEW.user_id);
  -> END //
Query OK, 0 rows affected (0.01 sec)

mysql> DELIMITER ;
mysql> INSERT INTO users(user_id,name,email,role)
  -> VALUES(60,'AuditUser','audit@gmail.com','student');
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM user_audit;
+-----+-----+-----+
| audit_id | user_id | action_time          |
+-----+-----+-----+
|         1 |        60 | 2026-02-24 10:56:49 |
+-----+-----+-----+
1 row in set (0.00 sec)
```

### 3. Advanced SQL Clauses

```
mysql> USE applyfolio;
Database changed
mysql> SELECT role, COUNT(*) AS total_users
  -> FROM users
  -> GROUP BY role
  -> HAVING COUNT(*) > 1;
+-----+-----+
| role   | total_users |
+-----+-----+
| student |          2 |
+-----+-----+
1 row in set (0.01 sec)
```

  

```
mysql> SELECT name,
  -> CASE
  ->     WHEN role = 'admin' THEN 'Full Access'
  ->     WHEN role = 'recruiter' THEN 'Hiring Access'
  ->     ELSE 'Limited Access'
  -> END AS access_level
  -> FROM users;
+-----+-----+
| name   | access_level |
+-----+-----+
| Kiran  | Limited Access |
| TestUser | Full Access |
| AuditUser | Limited Access |
+-----+-----+
3 rows in set (0.00 sec)
```

```
mysql> SELECT name
  -> FROM users
  -> WHERE user_id IN
  -> (
  ->     SELECT user_id
  ->     FROM applications
  ->     WHERE status = 'Selected'
  -> );
Empty set (0.00 sec)
```

  

```
mysql> SELECT name
  -> FROM users u
  -> WHERE EXISTS
  -> (
  ->     SELECT 1
  ->     FROM applications a
  ->     WHERE a.user_id = u.user_id
  -> );
Empty set (0.00 sec)
```