

## 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)
```