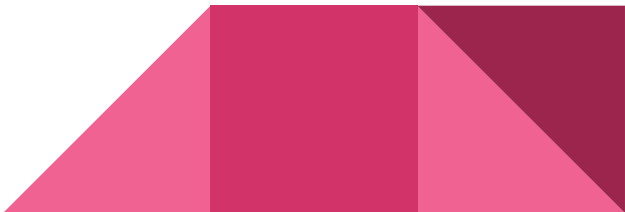


Flow Control Statements in MySQL

Instructor: Sriya Ivaturi

What are Flow Control Statements in MySQL

- Flow control statements in MySQL allow us to run blocks of code repeatedly based on conditions.
 - Types:
 - LOOP: Basic infinite loop with exit condition inside.
 - WHILE: Runs as long as the condition is TRUE.
 - REPEAT: Runs at least once, checks condition after execution.
 - These are similar to control structures in programming languages.
 - Use Case: Looping through values, validations, conditional logic in business rules.
- 

Syntax for LOOP

```
[loop_label]: LOOP  
  
    -- Statements to execute repeatedly  
  
    IF exit_condition THEN  
  
        LEAVE [loop_label]; -- Exit the loop  
  
    END IF;  
  
END LOOP [loop_label];
```

Using LOOP in a Stored Procedure

```
DELIMITER $$
CREATE PROCEDURE SumFiveNumbers()
BEGIN
    DECLARE total INT DEFAULT 0;
    DECLARE counter INT DEFAULT 1;

    loop_label: LOOP
        SET total = total + counter;
        SET counter = counter + 1;

        IF counter > 5 THEN
            LEAVE loop_label;
        END IF;
    END LOOP loop_label;

    SELECT total AS SumResult;
END $$
DELIMITER ;

CALL SumFiveNumbers();
```

Syntax Of WHILE

```
[while_label]: WHILE search_condition DO  
    -- Statements to execute while the condition is TRUE  
END WHILE [while_label];
```

Using WHILE in a Stored Procedure

```
DELIMITER $$
CREATE PROCEDURE FactorialCalc(IN num INT)
BEGIN
    DECLARE result INT DEFAULT 1;
    DECLARE i INT DEFAULT 1;

    WHILE i <= num DO
        SET result = result * i;
        SET i = i + 1;
    END WHILE;

    SELECT result AS Factorial;
END $$
DELIMITER ;

CALL FactorialCalc(5);
```

Syntax Of REPEAT

```
[repeat_label]: REPEAT  
    -- Statements to execute  
UNTIL search_condition  
END REPEAT [repeat_label];
```

Using REPEAT in a Stored Procedure

```
DELIMITER $$  
CREATE PROCEDURE RepeatExample()  
BEGIN  
    DECLARE i INT DEFAULT 1;  
  
    REPEAT  
        SELECT CONCAT('Current Value: ', i);  
        SET i = i + 1;  
    UNTIL i > 5  
    END REPEAT;  
END $$  
DELIMITER ;  
  
CALL RepeatExample();
```


Flow Control in a FUNCTION (WHILE)

```
DELIMITER $$
CREATE FUNCTION IsPrime(n INT)
RETURNS VARCHAR(20)
DETERMINISTIC
BEGIN
    DECLARE i INT DEFAULT 2;

    IF n < 2 THEN
        RETURN 'Not Prime';
    END IF;

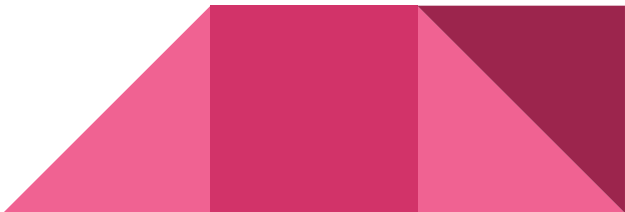
    WHILE i <= SQRT(n) DO
        IF MOD(n, i) = 0 THEN
            RETURN 'Not Prime';
        END IF;
        SET i = i + 1;
    END WHILE;

    RETURN 'Prime';
END $$
DELIMITER ;

SELECT IsPrime(7); -- Output: Prime
```

Question Slide

Q: What is the main difference between WHILE and REPEAT loops in MySQL?

- A) WHILE checks condition before execution, REPEAT checks after.
 - B) REPEAT runs only once.
 - C) WHILE always runs at least once.
 - D) Both behave the same.
- 

Answer Slide

Answer: A) WHILE checks condition before execution,
REPEAT checks after.

Explanation:

- WHILE loop might never run if the condition is FALSE at the start.
- REPEAT loop will always run at least once.



Question Slide

```
DELIMITER $$  
CREATE PROCEDURE TestLoop()  
BEGIN  
    DECLARE counter INT DEFAULT 1;  
    DECLARE text_out VARCHAR(100) DEFAULT '';  
  
    WHILE counter < 5 DO  
        SET text_out = CONCAT(text_out, counter);  
        SET counter = counter + 2;  
    END WHILE;  
  
    SELECT text_out;  
END $$  
DELIMITER ;  
  
CALL TestLoop();
```

Options:

A) 1234

B) 135

C) 13

D) 12

Answer Slide

Answer: C) 13

Explanation:

- counter starts at 1
- First loop: text_out = "1", counter = 3
- Second loop: text_out = "13", counter = 5 (loop stops)



Summary and Use Cases

- Summary of Flow Control Statements:
 - LOOP: Flexible, exit using LEAVE.
 - WHILE: Entry-controlled loop, good for known logic checks.
 - REPEAT: Exit-controlled loop, runs at least once.
 - Best used in:
 - Calculations like factorials
 - Summation problems
 - Validations
 - Repetitive DB checks or conditions
 - Keep logic simple inside loops to avoid infinite executions.
- 