WEEK 8

MORE SQL – STORED PROCEDURES

STUDENT OBJECTIVES

- Upon completion of this video, you should be able to:
  - Explain the purpose of a stored procedure
  - List at least 2 advantages and 2 disadvantages of a stored procedure
  - Write a simple stored procedure in MySQL

STORED PROCEDURES

- A precompiled application program, written in any language such as C, C++, COBOL, Java, … that is executed in response to a SINGLE SQL CALL statement
- May contain SQL statements as well as other logic statements
- Little program that with SQL statements in and code, can pass in parameters
- Encapsulates Business Logic
- Takes complicated SQL logic and makes it easier to execute
- Useful mainly in CLIENT/SERVER applications

SITUATION: Suppose you need to update the salary of all 100,000 employees in your database, by 6.25%. You are working in Sydney, Australia with a java application on your desktop, the database is in New York City. What problems can you foresee?

QUESTION: What do you do to solve this problem?

ANSWER: Use a **Stored Procedure!**

ADVANTAGES OF STORED PROCEDURES

- Typically faster, because the code for the stored procedure is compiled
- Reduce traffic between application and database because it only has to send the name of procedure, not long and multiple SQL statements
- Reusable
- Secure – DBA can grant permissions to them without giving permissions to the underlying tables.

DISADVANTAGES OF STORED PROCEDURES

- Over usage (using MANY stored procedures) can actually slow down the application (increased load on database server).
- Sometimes doesn't allow for complex business logic
- Hard to debug
- Migrating to another Database System can be tricky.

EXAMPLES FROM MYSQL – LET'S TRY IT OUT

```
mysql> delimiter //

mysql> CREATE PROCEDURE simpleproc (OUT param1 INT)
    -> BEGIN
    ->    SELECT COUNT(*) INTO param1 FROM t;
    -> END//
Query OK, 0 rows affected (0.00 sec)

mysql> delimiter ;

mysql> CALL simpleproc(@a);
Query OK, 0 rows affected (0.00 sec)

mysql> SELECT @a;
+------+
| @a   |
+------+
| 3    |
+------+
1 row in set (0.00 sec)
```

```
01  DELIMITER //
02
03  CREATE PROCEDURE `proc_WHILE` (IN param1 INT)
04  BEGIN
05      DECLARE variable1, variable2 INT;
06      SET variable1 = 0;
07
08      WHILE variable1 < param1 DO
09          INSERT INTO table1 VALUES (param1);
10          SELECT COUNT(*) INTO variable2 FROM table1;
11          SET variable1 = variable1 + 1;
12      END WHILE;
13  END //
```

```
01  DELIMITER //
02
03  CREATE PROCEDURE `p2` ()
04  LANGUAGE SQL
05  DETERMINISTIC
06  SQL SECURITY DEFINER
07  COMMENT 'A procedure'
08  BEGIN
09      SELECT 'Hello World !';
10  END//
```