

# CSCI 3410 – First Java DB Programs

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## A First Program

```
1  import java.sql.*;
2
3  public class FirstProg {
4      public static void main(String[] args) {
5          try (
6              Connection conn =
6                  ↪ DriverManager.getConnection("jdbc:mysql://localhost:3306/HW_ebookshop",
6                  ↪ "testuser","password");
7              Statement stmt = conn.createStatement();
8          ) {
9              String strSelect = "SELECT title, price, qty FROM books WHERE qty > 40";
10             System.out.print("The SQL query is: " + strSelect + "\n");
11             ResultSet rset = stmt.executeQuery(strSelect);
12
13             System.out.println("The records selected are:");
14             int rowCount = 0;
15             String title;
16             double price;
17             int qty;
18
19             while(rset.next()) {
20                 title = rset.getString("title");
21                 price = rset.getDouble("price");
22                 qty = rset.getInt("qty");
23                 System.out.println(title + ", " + price + ", " + qty);
24                 rowCount++;
25             }
26
27             System.out.println("Total number of records = " + rowCount);
28             conn.close();
29
30         } catch(SQLException ex) {
31             ex.printStackTrace();
32         }
33     }
34 }
```

## The Database

```

1 MariaDB [HW_ebookshop]> SELECT * FROM books;
2 +-----+-----+-----+-----+-----+
3 | id   | title                               | author       | price | qty |
4 +-----+-----+-----+-----+-----+
5 | 1001 | Java for dummies                   | Tan Ah Teck  | 11.11 | 11 |
6 | 1002 | More Java for dummies              | Tan Ah Teck  | 22.22 | 22 |
7 | 1003 | More Java for more dummies         | Mohammad Ali | 33.33 | 33 |
8 | 1004 | A Cup of Java                      | Kumar        | 44.44 | 44 |
9 | 1005 | A Teaspoon of Java                 | Kevin Jones  | 55.55 | 55 |
10 +-----+-----+-----+-----+-----+
11 5 rows in set (0.00 sec)

```

## The Result

If you store the program in `FirstProg.java`, compile it, with

```
javac FirstProg.java
```

and then execute it, with

```
java -cp ./mysql-connector-java-5.1.44/mysql-connector-java-5.1.44-bin.jar FirstProg
```

then you would obtain:

```

1 The SQL query is: select title, price, qty from books where qty > 40
2 The records selected are:
3 A Cup of Java, 44.44, 44
4 A Teaspoon of Java, 55.55, 55
5 Total number of records = 2

```

## Mapping Datatypes

SQL	JAVA
INT	int
CHARACTER(n)	String
VARCHAR(n)	String
REAL	float
DOUBLE	double
DECIMAL(t,d)	java.math.BigDecimal
DATE	java.sql.date
BOOLEAN	boolean
BIT(1)	byte

## A Variation

If you were to replace the body of `try` in the previous program with

```

1 String strSelect = "SELECT * FROM books";
2 ResultSet rset = stmt.executeQuery(strSelect);
3
4 System.out.println("The records selected are:");
5
6 ResultSetMetaData rsmd = rset.getMetaData();
7 int columnsNumber = rsmd.getColumnCount();
8 String columnValue;
9 while (rset.next()) {
10     for (int i = 1; i <= columnsNumber; i++) {
11         if (i > 1) System.out.print(", ");
12         columnValue = rset.getString(i);
13         System.out.print(columnValue + " " + rsmd.getColumnName(i));
14     }
15     System.out.println();
16 }
17 conn.close();

```

You would obtain:

```

1 The records selected are:
2 1001 id, Java for dummies title, Tan Ah Teck author, 11.11 price, 11 qty
3 1002 id, More Java for dummies title, Tan Ah Teck author, 22.22 price, 22 qty
4 1003 id, More Java for more dummies title, Mohammad Ali author, 33.33 price, 33 qty
5 1004 id, A Cup of Java title, Kumar author, 44.44 price, 44 qty
6 1005 id, A Teaspoon of Java title, Kevin Jones author, 55.55 price, 55 qty

```

## Differences Between `executeQuery`, `executeUpdate` and `execute`

Name	<code>executeQuery</code>	<code>executeUpdate</code>	<code>execute</code>
Used for	SELECT	INSERT, UPDATE, DELETE	Any type
Input Type	string	string	string
Return Type	ResultSet	int, the number of rows affected by the query	boolean, true if the query returned a ResultSet, false if the query returned an int or nothing

To retrieve the `ResultSet` obtained by an `execute` statement, you need to use `getResultSet` or `getUpdateCount`. For more details, consult <https://docs.oracle.com/javase/7/docs/api/java/sql/Statement.html>.