

Relational Databases with MySQL Week 10 Assignment

Points possible: 70

Category	Criteria	% of Grade
Functionality	Does the code work?	25
Organization	Is the code clean and organized? Proper use of white space, syntax, and consistency are utilized. Names and comments are concise and clear.	25
Creativity	Student solved the problems presented in the assignment using creativity and out of the box thinking.	25
Completeness	All requirements of the assignment are complete.	25

Instructions: In Eclipse, or an IDE of your choice, write the code that accomplishes the objectives listed below. Ensure that the code compiles and runs as directed. Take screenshots of the code and of the running program (make sure to get screenshots of all required functionality) and paste them in this document where instructed below. Create a new repository on GitHub for this week's assignments and push this document to the repository. Additionally, push an .sql file with all your queries and your Java project code to the same repository. Add the URL for this week's repository to this document where instructed and submit this document to your instructor when complete.

Coding Steps:

In this week's coding activity, you will create a menu driven application backed by a MySQL database.

To start, choose one item that you like. It could be vehicles, sports, foods, etc....

Create a new Java project in Eclipse.

Create a SQL script in the project to create a database with one table. The table should be the item you picked.

Write a Java menu driven application that allows you to perform all four CRUD operations on your table.

Tips:

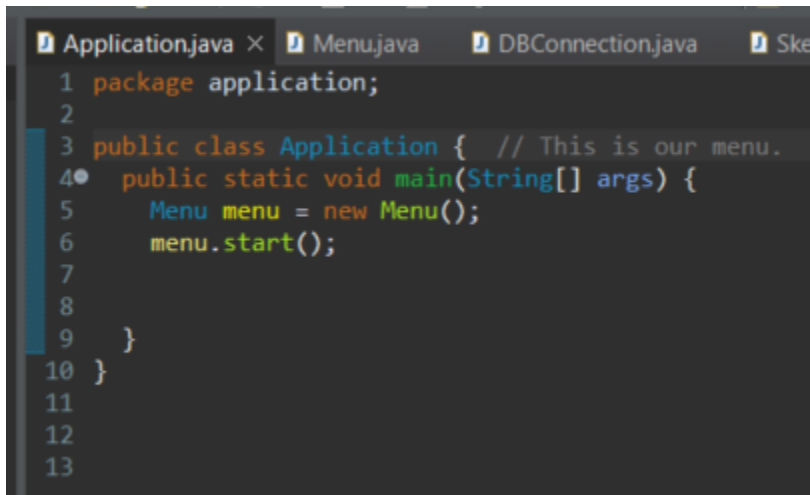
The application does not need to be as complex as the example in the video curriculum.

You need an option for each of the CRUD operations (Create, Read, Update, and Delete).

Remember that `PreparedStatement.executeQuery()` is only for Reading data and `.executeUpdate()` is used for Creating, Updating, and Deleting data.

Remember that both parameters on `PreparedStatements` and the `ResultSet` columns are based on indexes that start with 1, not 0.

Screenshots of Code:



```
Application.java × Menu.java DBConnection.java Ske
1 package application;
2
3 public class Application { // This is our menu.
4     public static void main(String[] args) {
5         Menu menu = new Menu();
6         menu.start();
7
8
9     }
10 }
11
12
13
```

```
Application.java  Menu.java ×  DBConnection.java  SkeinDao.java  Skein.java
1 package application;
2
3
4 import java.sql.SQLException;
10
11 public class Menu {
12
13     private SkeinDao skeinDao = new SkeinDao();
14     private Scanner scanner = new Scanner(System.in); //creates a scanner
15
16     private List<String> options = Arrays.asList(
17         "Display skeins",
18         "Display skein",
19         "Create skein",
20         "Delete skein",
21         "Update skein");
22
23
24     public void start() { // connects to the start menu in Application
25         String selection = "";
26
27         do {
28             printMenu();
29             selection = scanner.nextLine();
30
31             try {
32                 if (selection.equals("1")) {
33                     displaySkeins();
34                 } else if (selection.equals("2")) {
35                     displaySkein();
36
37                 } else if (selection.equals("3")) {
38                     createSkein();
39
40                 } else if (selection.equals("4")) {
41                     deleteSkein();
42
43                 } else if (selection.equals("5")) {
```

```
Application.java  Menu.java ×  DBConnection.java  SkeinDao.java  Skein.java
39
40     } else if (selection.equals("4")) {
41         deleteSkein();
42
43     } else if (selection.equals("5")) {
44         updateSkein();
45     }
46     } catch (SQLException e) {
47         e.printStackTrace();
48     }
49
50
51     System.out.println("Press enter to continue..."); //allows a pause
52     scanner.nextLine();
53 } while (!selection.equals("-1"));
54 }
55
56● private void displaySkeins() throws SQLException {
57     List<Skein> skeins = skeinDao.getSkeins();
58     for(Skein skein : skeins ) {
59         System.out.println(skein.getId() + ": " + skein.getBrand() + " " + skein.getColor());
60     }
61 }
62● private void displaySkein() throws SQLException {
63     System.out.print("Enter skein id: ");
64     int id = Integer.parseInt(scanner.nextLine()); //allows us to hit enter to continue
65     Skein skein = skeinDao.getSkeinById(id);
66     System.out.println(skein.getId() + "; " + skein.getBrand() + skein.getColor());
67
68 }
69● private void createSkein() throws SQLException {
70     System.out.print("Enter new skein brand: ");
71     String skeinBrand = scanner.nextLine();
72     System.out.print("Enter new skein color: ");
73     String skeinColor = scanner.nextLine();
74     skeinDao.createNewSkein(skeinBrand, skeinColor);
75 }
76
```

```
Application.java  Menu.java  DBConnection.java  SkeinDao.java  Skein.java
66     System.out.println(skein.getId() + "; " + skein.getBrand() + skein.getColor());
67
68 }
69 private void createSkein() throws SQLException {
70     System.out.print("Enter new skein brand: ");
71     String skeinBrand = scanner.nextLine();
72     System.out.print("Enter new skein color: ");
73     String skeinColor = scanner.nextLine();
74     skeinDao.createNewSkein(skeinBrand, skeinColor);
75 }
76
77
78 private void deleteSkein() throws SQLException {
79     System.out.print("Enter skein id to delete:");
80     int id = Integer.parseInt(scanner.nextLine());
81     skeinDao.deleteSkeinById(id);
82 }
83 private void updateSkein() throws SQLException {
84     System.out.print("Enter new skein brand: ");
85     String skeinBrand = scanner.nextLine();
86     System.out.print("Enter new skein color: ");
87     String skeinColor = scanner.nextLine();
88     System.out.print("Enter skein id to update: ");
89     int id = (scanner.nextInt());
90     System.out.println("Sucessfully updated to " + id + " " + skeinBrand + " " + skeinColor);
91     skeinDao.updateSkeinByIdQuery(skeinBrand,skeinColor,id);
92
93 }
94
95 private void printMenu() {
96     System.out.println("Select an Option:\n-----");
97     for (int i = 0; i < options.size(); i++) {
98         System.out.println(i + 1 + " " + options.get(i));
99     }
100 }
101
102 }
103
```

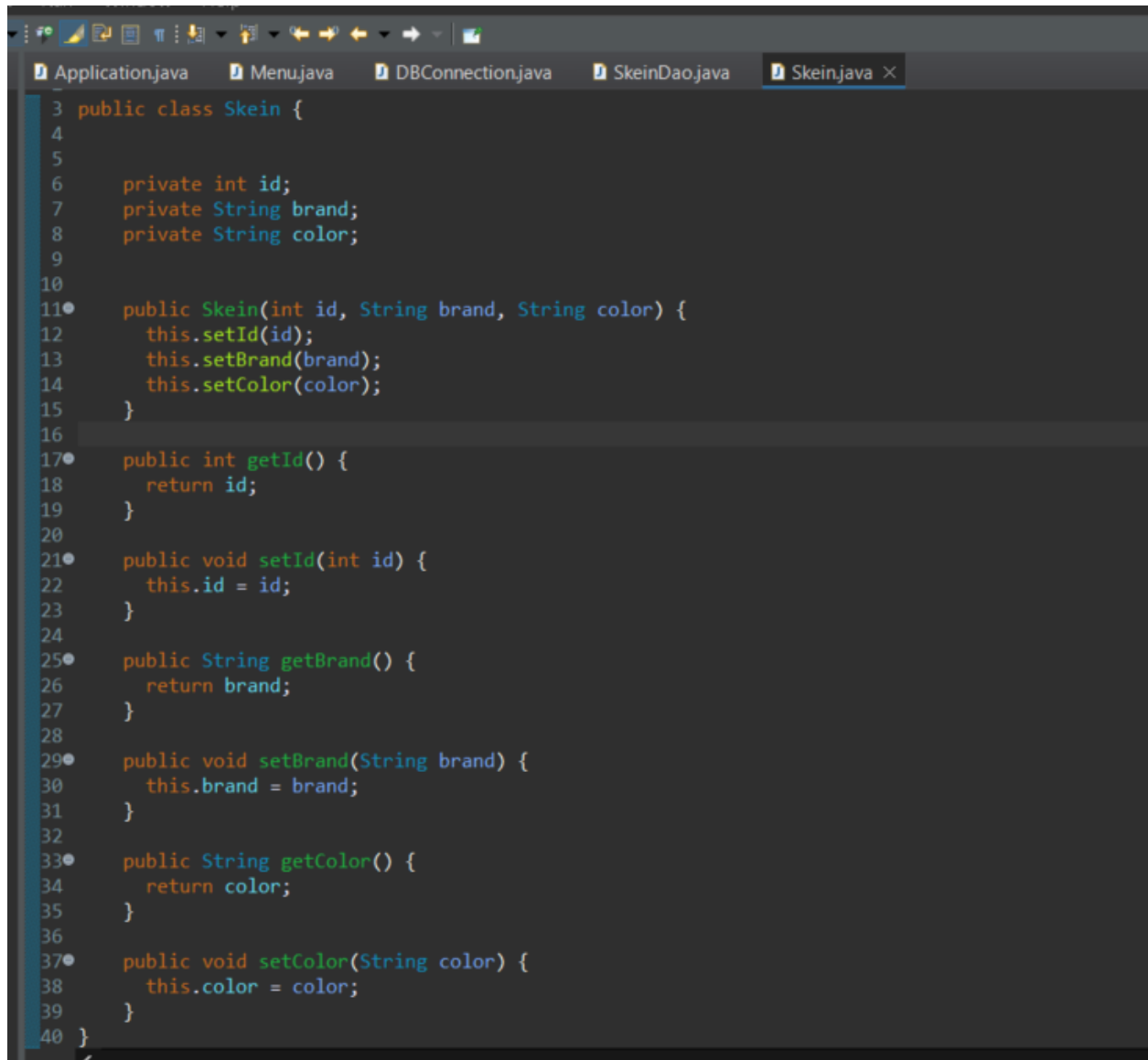
```
Application.java  Menu.java  DBConnection.java ×  SkeinDao.java  Skein.java
1 package dao;
2
3 import java.sql.Connection;
4
5
6
7 public class DBConnection {
8
9     private final static String URL = "jdbc:mysql://localhost:3306/yarn";
10    private final static String USERNAME = "root";
11    private final static String PASSWORD = "password";
12    private static Connection connection;
13    private static DBConnection instance;
14
15    private DBConnection(Connection connection) {
16
17    }
18    public static Connection getConnection() {
19        if (instance == null) {
20            try {
21                connection = DriverManager.getConnection(URL, USERNAME, PASSWORD);
22                instance = new DBConnection(connection);
23                System.out.println("Connection successful.");
24            } catch (SQLException e) {
25                e.printStackTrace();
26            }
27        }
28        return DBConnection.connection;
29    }
30 }
31 }
32
```

```
Application.java Menu.java DBConnection.java SkeinDao.java x Skein.java
1 package dao;
2
3 import java.sql.Connection;
4 import java.sql.PreparedStatement;
5 import java.sql.ResultSet;
6 import java.sql.SQLException;
7 import java.util.ArrayList;
8 import java.util.List;
9 import entity.Skein;
10
11 public class SkeinDao {
12
13     private Connection connection;
14
15
16     private final String GET_SKEINS_QUERY = "SELECT * FROM skeins";
17     private final String GET_SKEIN_BY_ID_QUERY = "SELECT * FROM skeins WHERE id = ?";
18     private final String CREATE_NEW_SKEIN_QUERY = "INSERT INTO skeins(brand, color) VALUES(?,?)";
19     private final String DELETE_SKEIN_BY_ID_QUERY = "DELETE FROM skeins WHERE id = ?";
20     private final String UPDATE_SKEIN_BY_ID_QUERY = "UPDATE skeins SET brand = ?, color = ? WHERE id = ? ";
21     public SkeinDao() {
22         connection = DBConnection.getConnection();
23     }
24
25
26     public List<Skein> getSkins() throws SQLException {
27         ResultSet rs = connection.prepareStatement(GET_SKEINS_QUERY).executeQuery();
28         List<Skein> skeins = new ArrayList<Skein>();
29
30         while (rs.next()) {
31             skeins.add(populateSkein(rs.getInt(1), rs.getString(2), rs.getString(3)));
32         }
33         return skeins;
34     }
35     public Skein getSkeinById(int id) throws SQLException {
36         PreparedStatement ps = connection.prepareStatement(GET_SKEIN_BY_ID_QUERY);
37         ps.setInt(1, id);
38         ResultSet rs = ps.executeQuery();
```

```
Application.java  Menu.java  DBConnection.java  SkeinDao.java ×  Skein.java
35 public Skein getSkeinById(int id) throws SQLException {
36     PreparedStatement ps = connection.prepareStatement(GET_SKEIN_BY_ID_QUERY);
37     ps.setInt(1, id);
38     ResultSet rs = ps.executeQuery();
39     rs.next();
40     return populateSkein(rs.getInt(1), rs.getString(2), rs.getString(3));
41 }
42
43 public void createNewSkein(String skeinBrand, String skeinColor) throws SQLException {
44     PreparedStatement ps = connection.prepareStatement (CREATE_NEW_SKEIN_QUERY);
45     ps.setString(1,skeinBrand);
46     ps.setString(2,skeinColor);
47     ps.executeUpdate();
48 }
49
50 public void deleteSkeinById(int id) throws SQLException {
51     PreparedStatement ps = connection.prepareStatement(DELETE_SKEIN_BY_ID_QUERY);
52     ps.setInt(1, id);
53     ps.executeUpdate();
54 }
55
56 public void updateSkeinByIdQuery(String skeinBrand, String skeinColor, int id) throws SQLException {
57     PreparedStatement ps = connection.prepareStatement(UPDATE_SKEIN_BY_ID_QUERY);
58     ps.setString(1,skeinBrand);
59     ps.setString(2,skeinColor);
60     ps.setInt(3,id);
61     ps.executeUpdate();
62 }
63
64 private Skein populateSkein(int id, String brand, String color) throws SQLException {
65     return new Skein(id,brand,color);
66 }
67
68
69
70
71
72 }
```



```
Application.java  Menu.java  DBConnection.java  SkeinDao.java  Skein.java ×
1 package entity;
2
3 public class Skein {
4
5
6     private int id;
7     private String brand;
8     private String color;
9
10
11     public Skein(int id, String brand, String color) {
12         this.setId(id);
13         this.setBrand(brand);
14         this.setColor(color);
15     }
16
17     public int getId() {
18         return id;
19     }
20
21     public void setId(int id) {
22         this.id = id;
23     }
24
25     public String getBrand() {
26         return brand;
27     }
28
29     public void setBrand(String brand) {
30         this.brand = brand;
31     }
32
33     public String getColor() {
34         return color;
35     }
36
37     public void setColor(String color) {
38         this.color = color;
39     }
40 }
```



```
3 public class Skein {
4
5
6     private int id;
7     private String brand;
8     private String color;
9
10
11     public Skein(int id, String brand, String color) {
12         this.setId(id);
13         this.setBrand(brand);
14         this.setColor(color);
15     }
16
17     public int getId() {
18         return id;
19     }
20
21     public void setId(int id) {
22         this.id = id;
23     }
24
25     public String getBrand() {
26         return brand;
27     }
28
29     public void setBrand(String brand) {
30         this.brand = brand;
31     }
32
33     public String getColor() {
34         return color;
35     }
36
37     public void setColor(String color) {
38         this.color = color;
39     }
40 }
```

Screenshots of Running Application:

Start...

```
Problems Javadoc Declaration Console ×
Application (3) [Java Application] C:\Users\jlcu\p2\pool\plugins\or
Connection successful.
Select an Option:
-----
1) Display skeins
2) Display skein
3) Create skein
4) Delete skein
5) Update skein
```

Create:

```
Problems Javadoc Declaration Console ×
Application (3) [Java Application] C:\Users\jlcu\p2\pool\pl
Connection successful.
Select an Option:
-----
1) Display skeins
2) Display skein
3) Create skein
4) Delete skein
5) Update skein
3
Enter new skein brand: Lion Brand
Enter new skein color: Pink
Press enter to continue...

Select an Option:
-----
1) Display skeins
2) Display skein
3) Create skein
4) Delete skein
5) Update skein
1
9: Lion Brand Pink
Press enter to continue...
```

Read:

```
Application (3) [Java Application] C:\Users\jilcur\p2\pool\pi
Connection successful.
Select an Option:
-----
1) Display skeins
2) Display skein
3) Create skein
4) Delete skein
5) Update skein
1
9: Lion Brand Pink
10: Red Heart yellow
Press enter to continue...

Select an Option:
-----
1) Display skeins
2) Display skein
3) Create skein
4) Delete skein
5) Update skein
2
Enter skein id: 9
9; Lion BrandPink
Press enter to continue...
```

Update:

```
Problems Javadoc Declaration Console ×
Application (3) [Java Application] C:\Users\jlcu\p2\pool\plugins\org.
Connection successful.
Select an Option:
-----
1) Display skeins
2) Display skein
3) Create skein
4) Delete skein
5) Update skein
1
9: Lion Brand Pink
10: Red Heart yellow
Press enter to continue...

Select an Option:
-----
1) Display skeins
2) Display skein
3) Create skein
4) Delete skein
5) Update skein
5
Enter new skein brand: Bernat
Enter new skein color: Green
Enter skein id to update: 10
Sucessfully updated to 10 Bernat Green
Press enter to continue...

Select an Option:
-----
1) Display skeins
2) Display skein
3) Create skein
4) Delete skein
5) Update skein
2
Enter skein id: 10
10; Bernat Green
Press enter to continue...
<
```

```
Application (3) [Java Application] C:\User
Connection successful.
Select an Option:
-----
1) Display skeins
2) Display skein
3) Create skein
4) Delete skein
5) Update skein
1
9: Lion Brand Pink
10: Bernat      Green
Press enter to continue...

Select an Option:
-----
1) Display skeins
2) Display skein
3) Create skein
4) Delete skein
5) Update skein
4
Enter skein id to delete:10
Press enter to continue...

Select an Option:
-----
1) Display skeins
2) Display skein
3) Create skein
4) Delete skein
5) Update skein
1
9: Lion Brand Pink
Press enter to continue...
```

Github URL:

<https://github.com/juliecurran3/Yarn-App.git>