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:

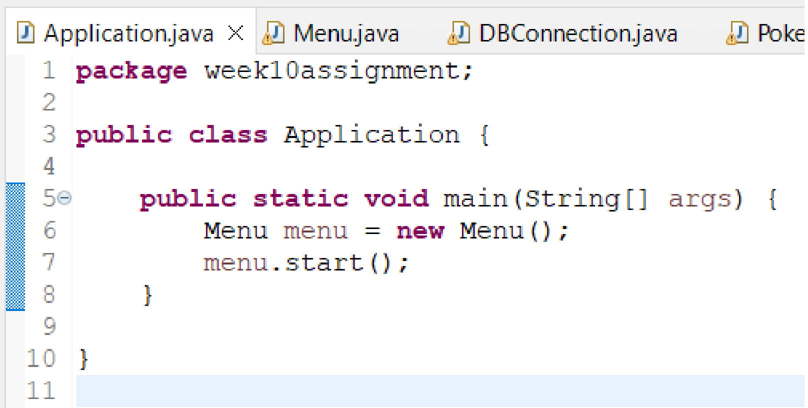
The application does not need to be as complex as the example in the video curriculum.

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

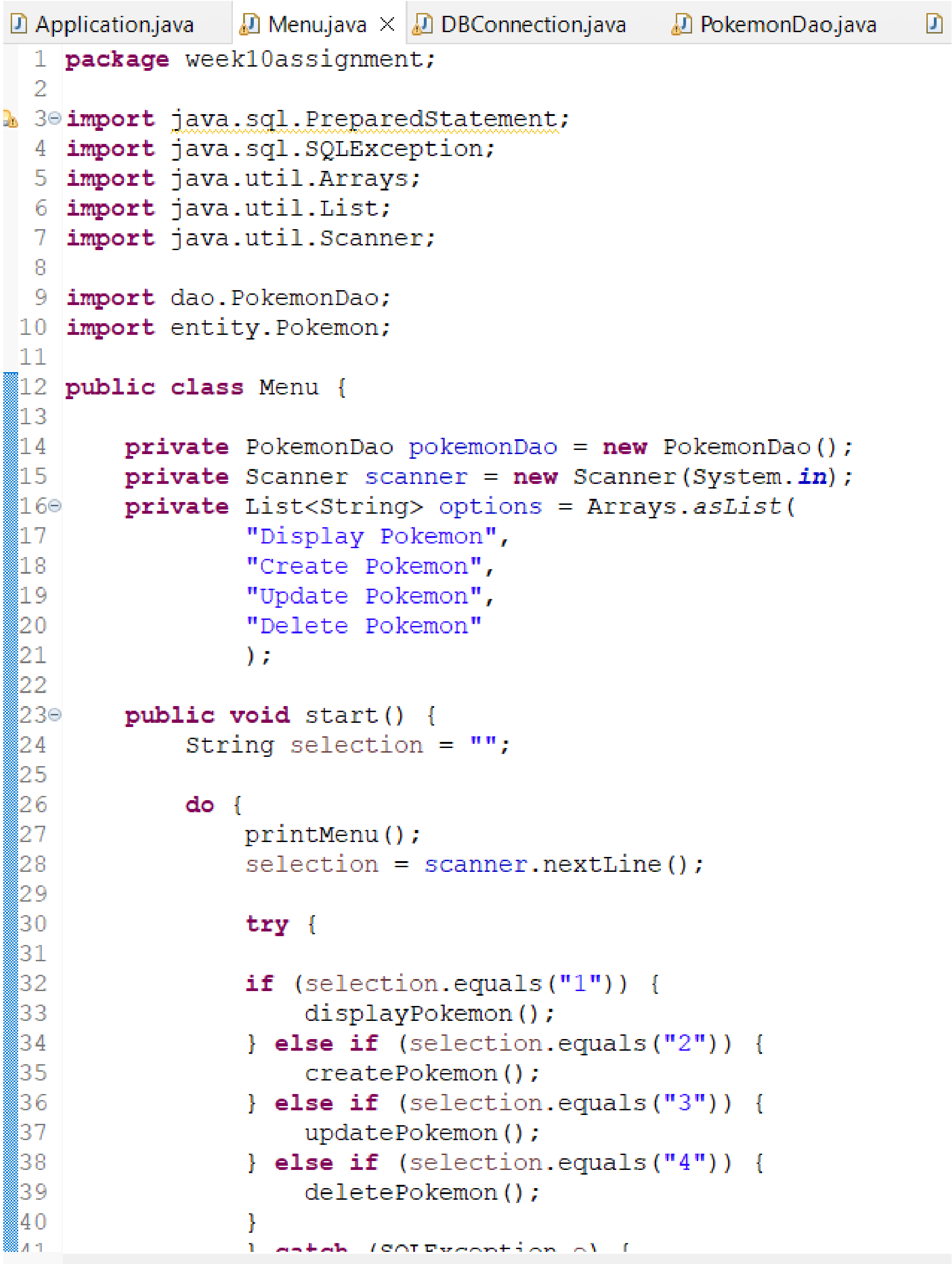
Remember that PreparedStatment.executeQuery() is only for Reading data and .executeUpdate() is used for Creating, Updating, and Deleting data.

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

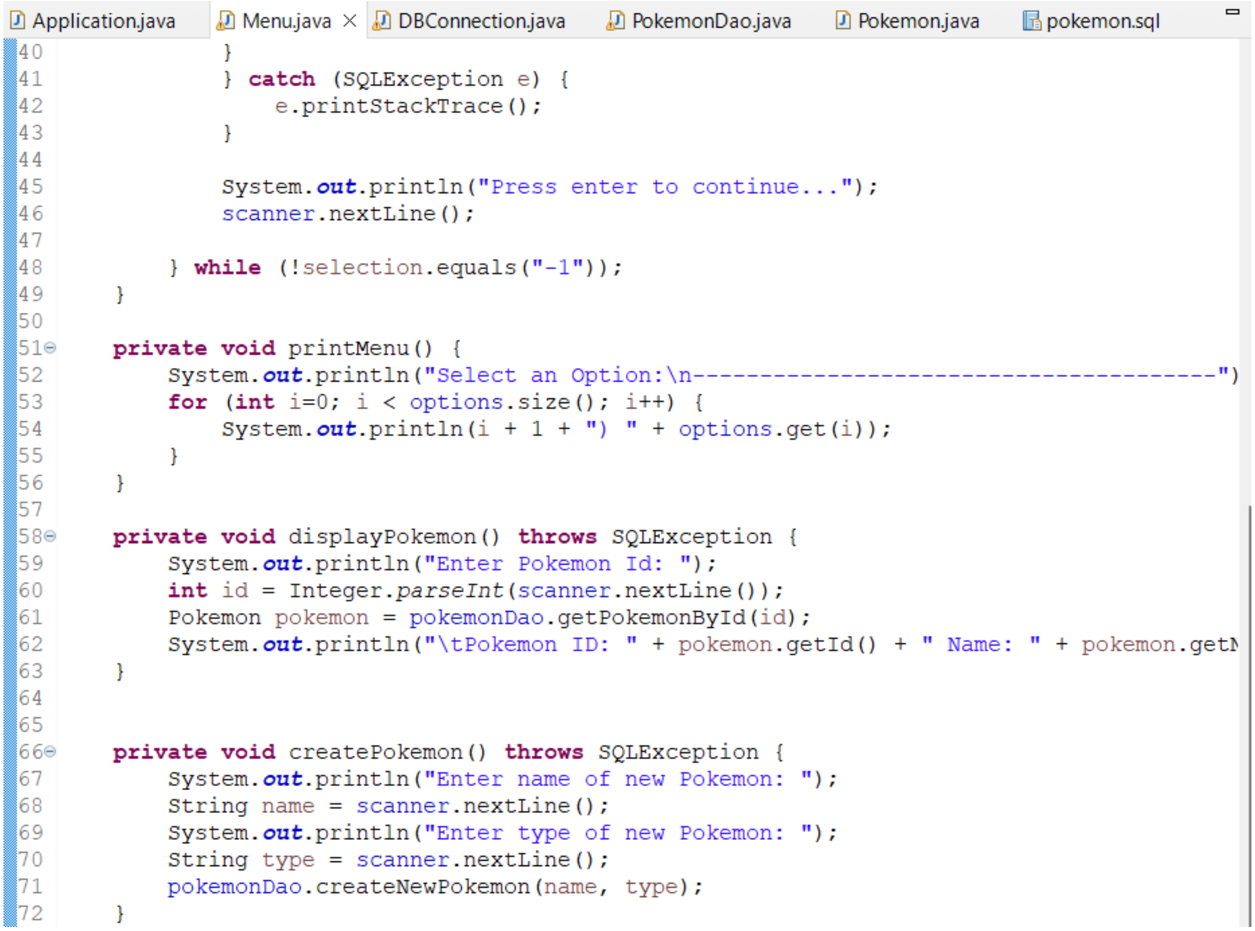
Screenshots of Code:



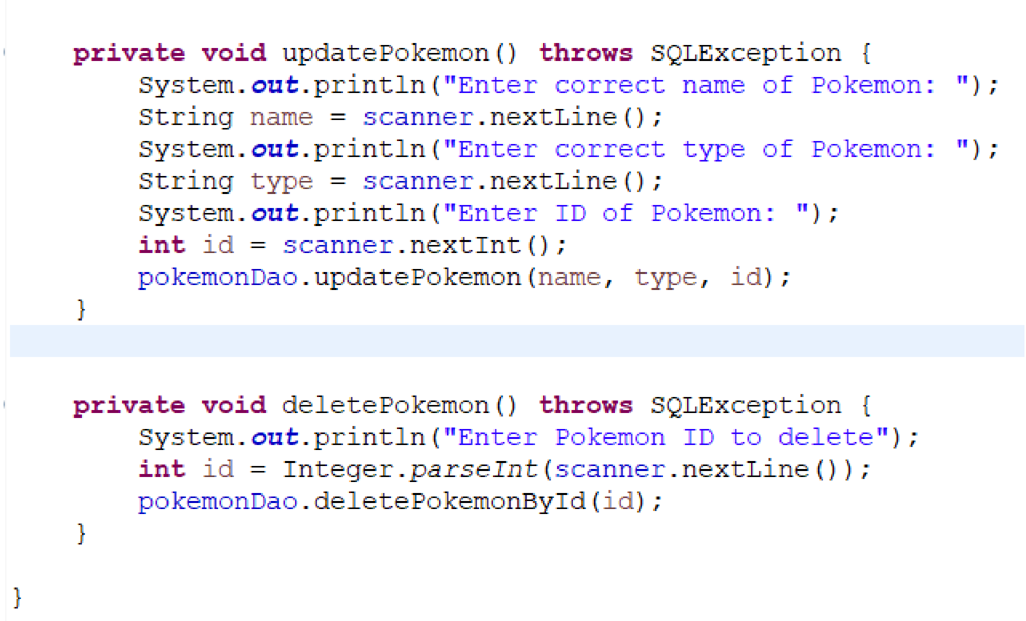
```java
package week10assignment;

public class Application {

	public static void main(String[] args) {
		Menu menu = new Menu();
		menu.start();
	}

}

```



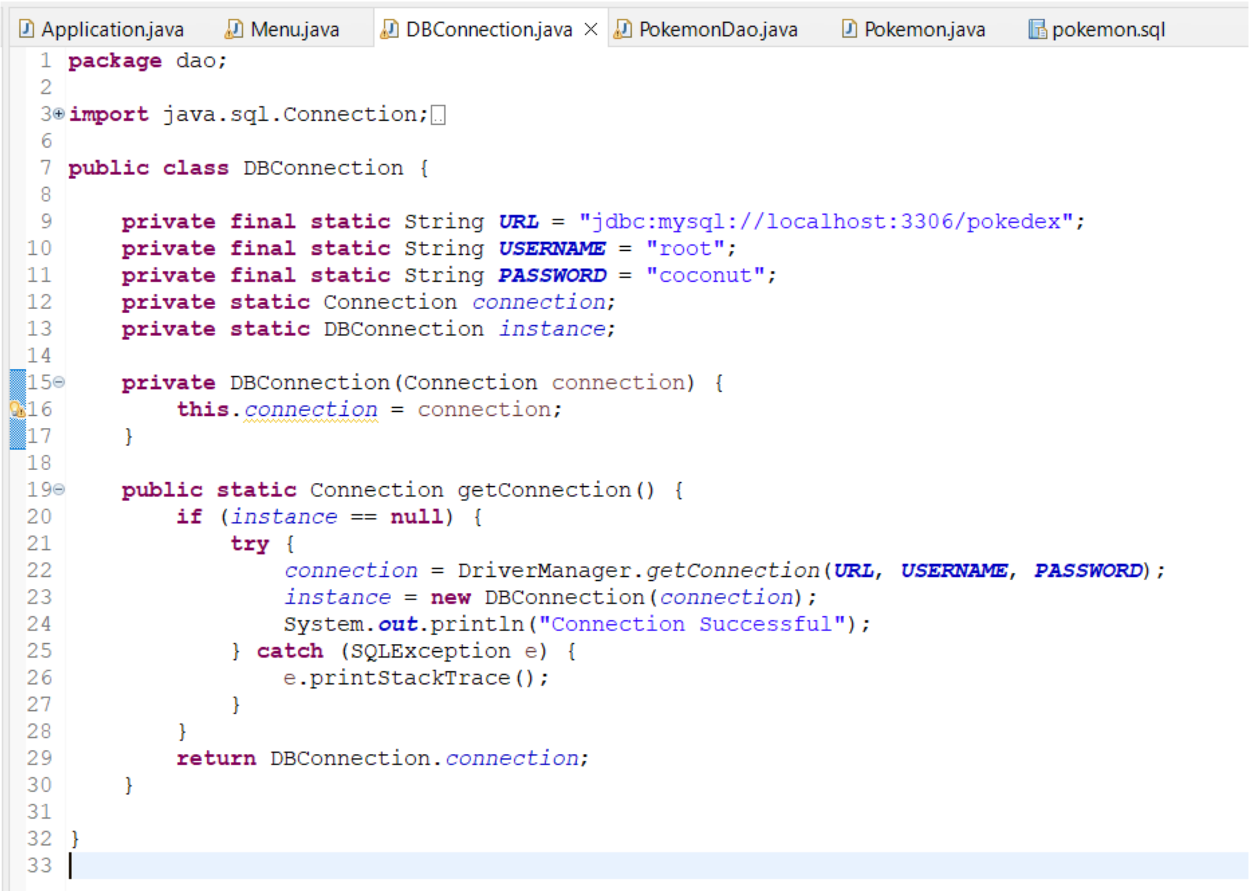
```java
package week10assignment;

import java.sql.PreparedStatement;
import java.sql.SQLException;
import java.util.Arrays;
import java.util.List;
import java.util.Scanner;

import dao.PokemonDao;
import entity.Pokemon;

public class Menu {

    private PokemonDao pokemonDao = new PokemonDao();
    private Scanner scanner = new Scanner(System.in);
    private List<String> options = Arrays.asList(
            "Display Pokemon",
            "Create Pokemon",
            "Update Pokemon",
            "Delete Pokemon"
            );

    public void start() {
        String selection = "";

        do {
            printMenu();
            selection = scanner.nextLine();

            try {

            if (selection.equals("1")) {
                displayPokemon();
            } else if (selection.equals("2")) {
                createPokemon();
            } else if (selection.equals("3")) {
                updatePokemon();
            } else if (selection.equals("4")) {
                deletePokemon();
            }
            } catch (SQLException e) {
```



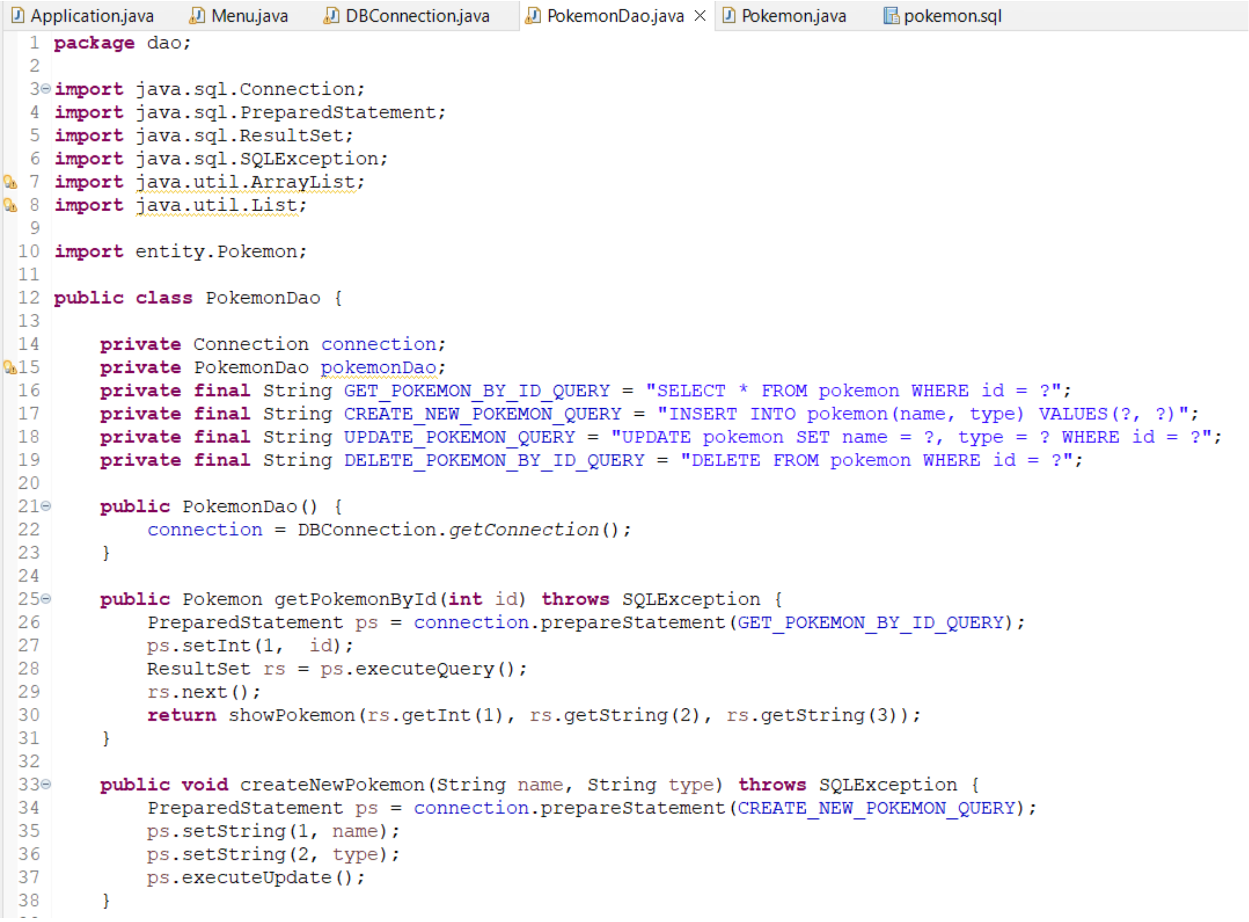
```
            }
            } catch (SQLException e) {
                e.printStackTrace();
            }

            System.out.println("Press enter to continue...");
            scanner.nextLine();

        } while (!selection.equals("-1"));
    }

    private void printMenu() {
        System.out.println("Select an Option:\n---------------------------------------")
        for (int i=0; i < options.size(); i++) {
            System.out.println(i + 1 + ") " + options.get(i));
        }
    }

    private void displayPokemon() throws SQLException {
        System.out.println("Enter Pokemon Id: ");
        int id = Integer.parseInt(scanner.nextLine());
        Pokemon pokemon = pokemonDao.getPokemonById(id);
        System.out.println("\tPokemon ID: " + pokemon.getId() + " Name: " + pokemon.getN
    }


    private void createPokemon() throws SQLException {
        System.out.println("Enter name of new Pokemon: ");
        String name = scanner.nextLine();
        System.out.println("Enter type of new Pokemon: ");
        String type = scanner.nextLine();
        pokemonDao.createNewPokemon(name, type);
    }
```



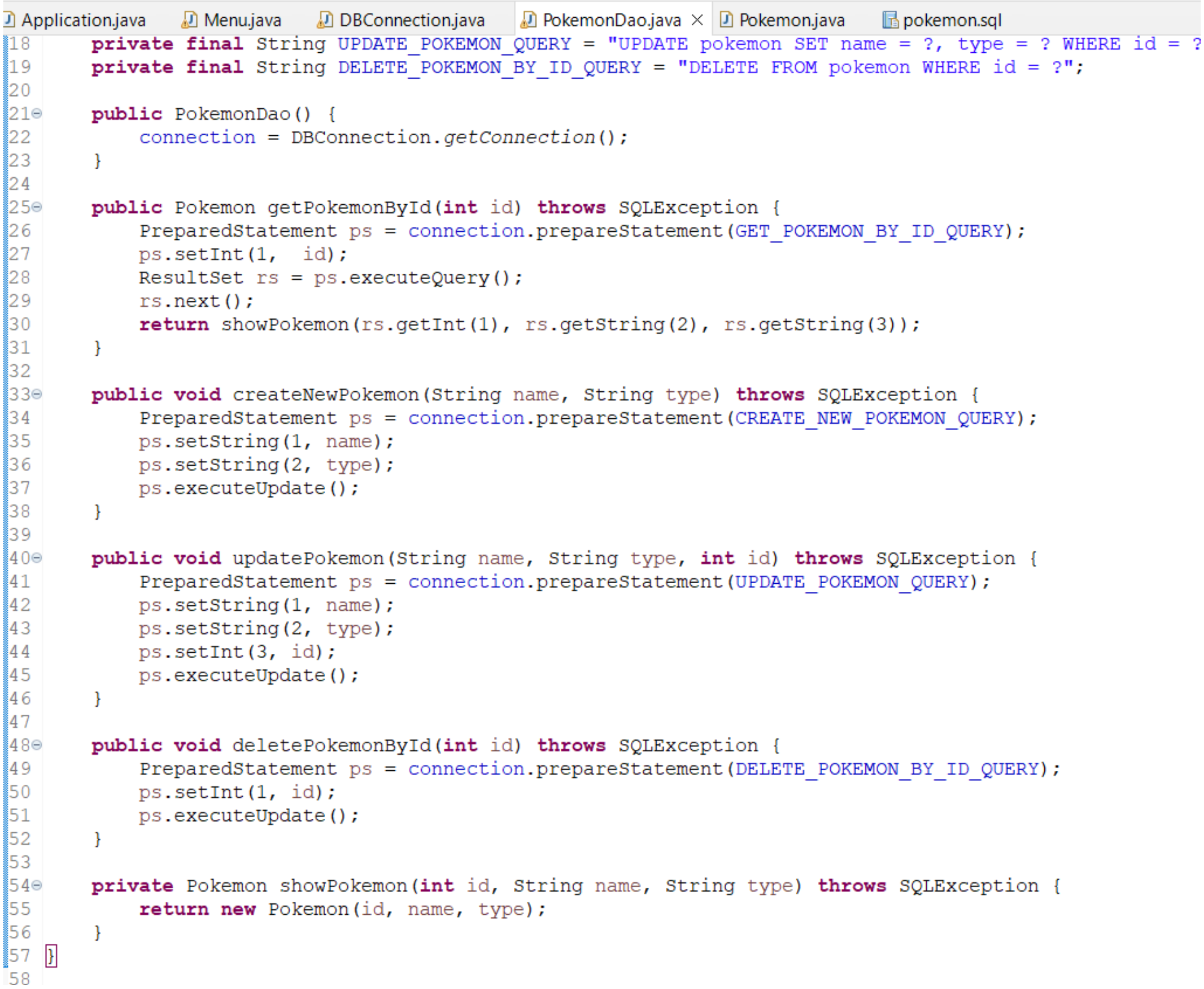
```
    private void updatePokemon() throws SQLException {
        System.out.println("Enter correct name of Pokemon: ");
        String name = scanner.nextLine();
        System.out.println("Enter correct type of Pokemon: ");
        String type = scanner.nextLine();
        System.out.println("Enter ID of Pokemon: ");
        int id = scanner.nextInt();
        pokemonDao.updatePokemon(name, type, id);
    }

    private void deletePokemon() throws SQLException {
        System.out.println("Enter Pokemon ID to delete");
        int id = Integer.parseInt(scanner.nextLine());
        pokemonDao.deletePokemonById(id);
    }

}
```



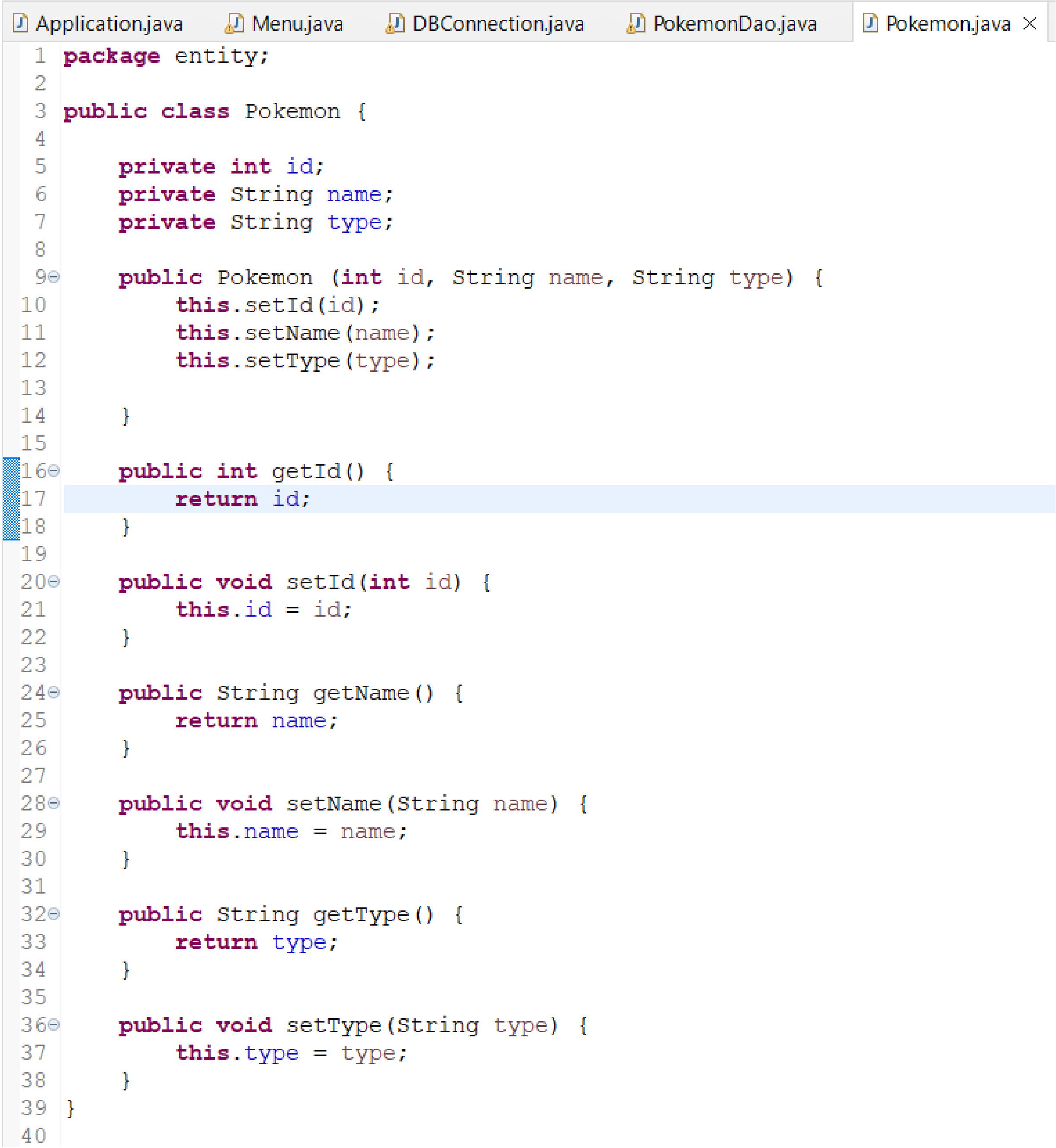
```java
package dao;

import java.sql.Connection;

public class DBConnection {

    private final static String URL = "jdbc:mysql://localhost:3306/pokedex";
    private final static String USERNAME = "root";
    private final static String PASSWORD = "coconut";
    private static Connection connection;
    private static DBConnection instance;

    private DBConnection(Connection connection) {
        this.connection = connection;
    }

    public static Connection getConnection() {
        if (instance == null) {
            try {
                connection = DriverManager.getConnection(URL, USERNAME, PASSWORD);
                instance = new DBConnection(connection);
                System.out.println("Connection Successful");
            } catch (SQLException e) {
                e.printStackTrace();
            }
        }
        return DBConnection.connection;
    }

}
```



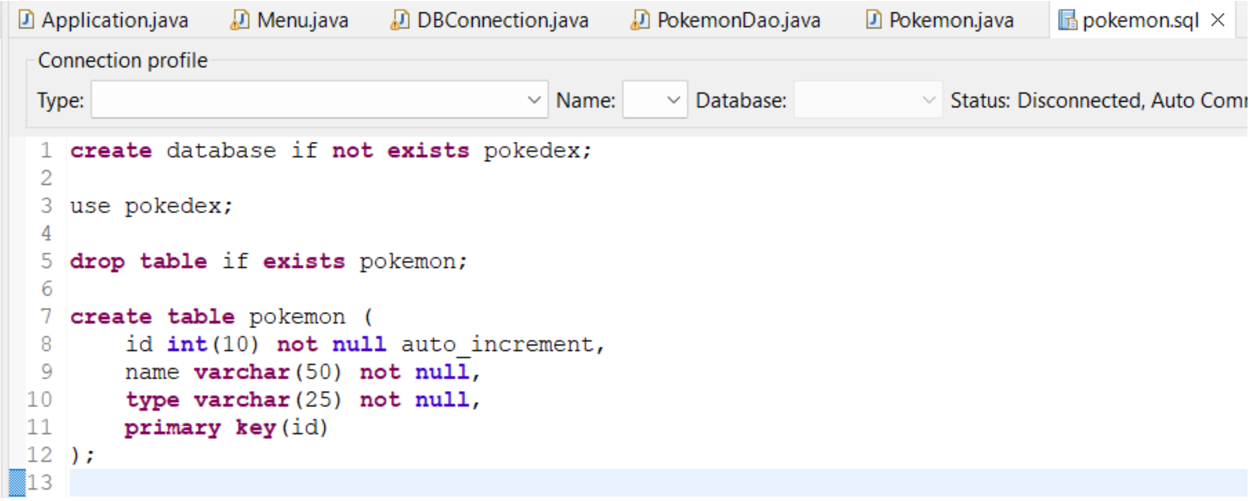
```java
package dao;

import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.ArrayList;
import java.util.List;

import entity.Pokemon;

public class PokemonDao {

    private Connection connection;
    private PokemonDao pokemonDao;
    private final String GET_POKEMON_BY_ID_QUERY = "SELECT * FROM pokemon WHERE id = ?";
    private final String CREATE_NEW_POKEMON_QUERY = "INSERT INTO pokemon(name, type) VALUES(?, ?)";
    private final String UPDATE_POKEMON_QUERY = "UPDATE pokemon SET name = ?, type = ? WHERE id = ?";
    private final String DELETE_POKEMON_BY_ID_QUERY = "DELETE FROM pokemon WHERE id = ?";

    public PokemonDao() {
        connection = DBConnection.getConnection();
    }

    public Pokemon getPokemonById(int id) throws SQLException {
        PreparedStatement ps = connection.prepareStatement(GET_POKEMON_BY_ID_QUERY);
        ps.setInt(1,  id);
        ResultSet rs = ps.executeQuery();
        rs.next();
        return showPokemon(rs.getInt(1), rs.getString(2), rs.getString(3));
    }

    public void createNewPokemon(String name, String type) throws SQLException {
        PreparedStatement ps = connection.prepareStatement(CREATE_NEW_POKEMON_QUERY);
        ps.setString(1, name);
        ps.setString(2, type);
        ps.executeUpdate();
    }
```



```java
    private final String UPDATE_POKEMON_QUERY = "UPDATE pokemon SET name = ?, type = ? WHERE id = ?
    private final String DELETE_POKEMON_BY_ID_QUERY = "DELETE FROM pokemon WHERE id = ?";

    public PokemonDao() {
        connection = DBConnection.getConnection();
    }

    public Pokemon getPokemonById(int id) throws SQLException {
        PreparedStatement ps = connection.prepareStatement(GET_POKEMON_BY_ID_QUERY);
        ps.setInt(1,  id);
        ResultSet rs = ps.executeQuery();
        rs.next();
        return showPokemon(rs.getInt(1), rs.getString(2), rs.getString(3));
    }

    public void createNewPokemon(String name, String type) throws SQLException {
        PreparedStatement ps = connection.prepareStatement(CREATE_NEW_POKEMON_QUERY);
        ps.setString(1, name);
        ps.setString(2, type);
        ps.executeUpdate();
    }

    public void updatePokemon(String name, String type, int id) throws SQLException {
        PreparedStatement ps = connection.prepareStatement(UPDATE_POKEMON_QUERY);
        ps.setString(1, name);
        ps.setString(2, type);
        ps.setInt(3, id);
        ps.executeUpdate();
    }

    public void deletePokemonById(int id) throws SQLException {
        PreparedStatement ps = connection.prepareStatement(DELETE_POKEMON_BY_ID_QUERY);
        ps.setInt(1, id);
        ps.executeUpdate();
    }

    private Pokemon showPokemon(int id, String name, String type) throws SQLException {
        return new Pokemon(id, name, type);
    }
}

```

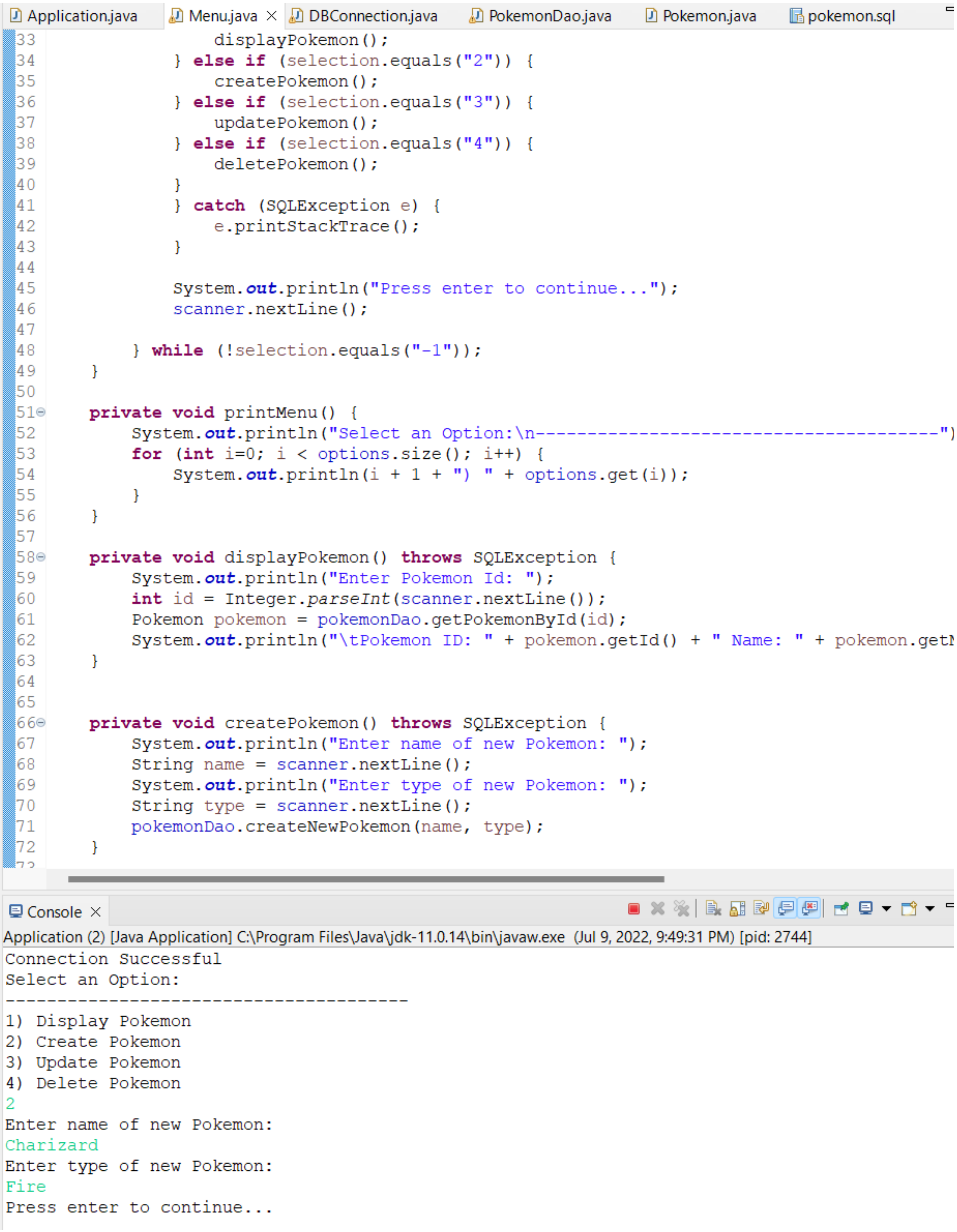


```java
package entity;

public class Pokemon {

    private int id;
    private String name;
    private String type;

    public Pokemon (int id, String name, String type) {
        this.setId(id);
        this.setName(name);
        this.setType(type);

    }

    public int getId() {
        return id;
    }

    public void setId(int id) {
        this.id = id;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getType() {
        return type;
    }

    public void setType(String type) {
        this.type = type;
    }
}

```



```sql
create database if not exists pokedex;

use pokedex;

drop table if exists pokemon;

create table pokemon (
    id int(10) not null auto_increment,
    name varchar(50) not null,
    type varchar(25) not null,
    primary key(id)
);

```

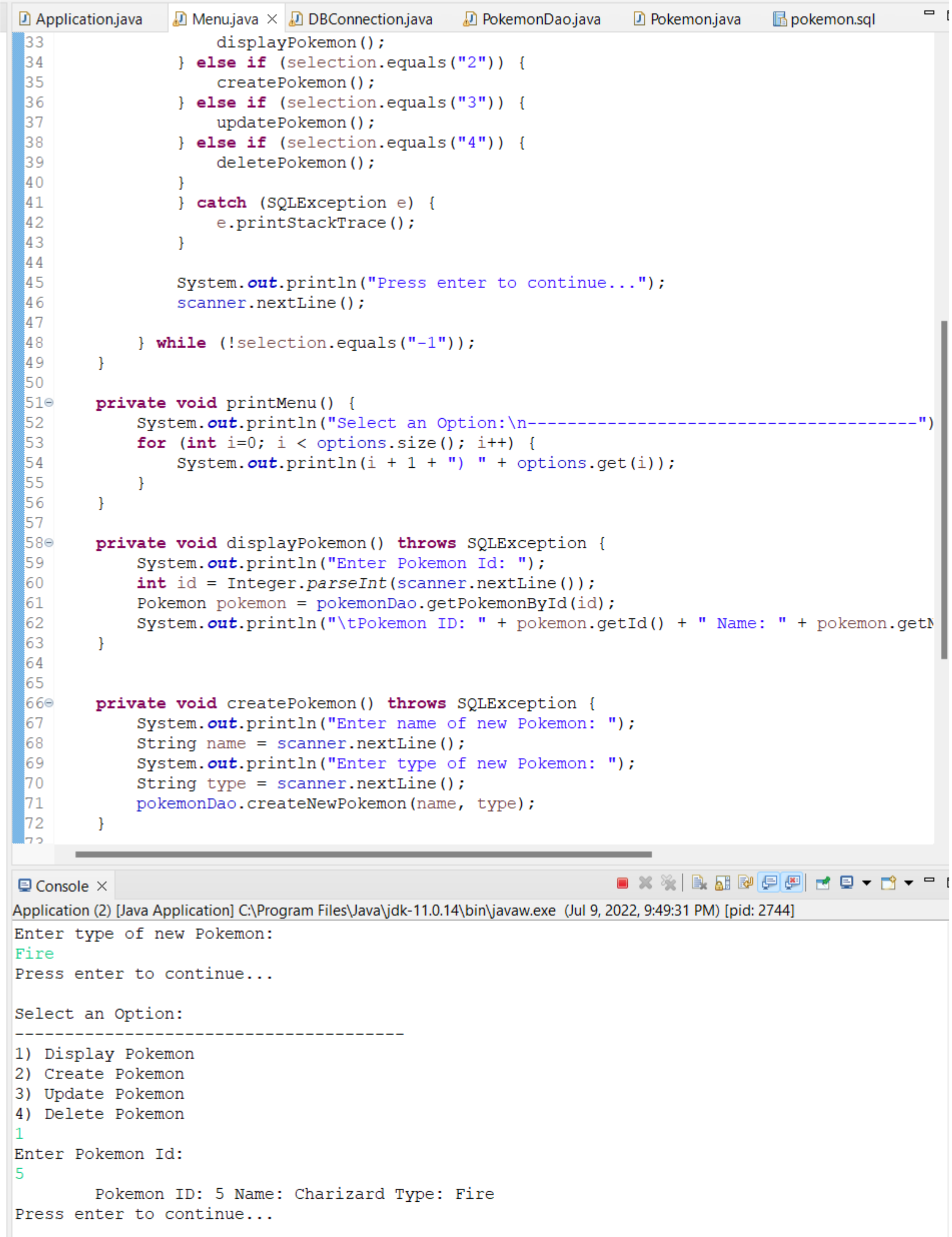
Screenshots of Running Application:



```
                displayPokemon();
            } else if (selection.equals("2")) {
                createPokemon();
            } else if (selection.equals("3")) {
                updatePokemon();
            } else if (selection.equals("4")) {
                deletePokemon();
            }
            } catch (SQLException e) {
                e.printStackTrace();
            }

            System.out.println("Press enter to continue...");
            scanner.nextLine();

        } while (!selection.equals("-1"));
    }

    private void printMenu() {
        System.out.println("Select an Option:\n---------------------------------------")
        for (int i=0; i < options.size(); i++) {
            System.out.println(i + 1 + ") " + options.get(i));
        }
    }

    private void displayPokemon() throws SQLException {
        System.out.println("Enter Pokemon Id: ");
        int id = Integer.parseInt(scanner.nextLine());
        Pokemon pokemon = pokemonDao.getPokemonById(id);
        System.out.println("\tPokemon ID: " + pokemon.getId() + " Name: " + pokemon.getN
    }


    private void createPokemon() throws SQLException {
        System.out.println("Enter name of new Pokemon: ");
        String name = scanner.nextLine();
        System.out.println("Enter type of new Pokemon: ");
        String type = scanner.nextLine();
        pokemonDao.createNewPokemon(name, type);
    }
```

Application (2) [Java Application] C:\Program Files\Java\jdk-11.0.14\bin\javaw.exe (Jul 9, 2022, 9:49:31 PM) [pid: 2744]

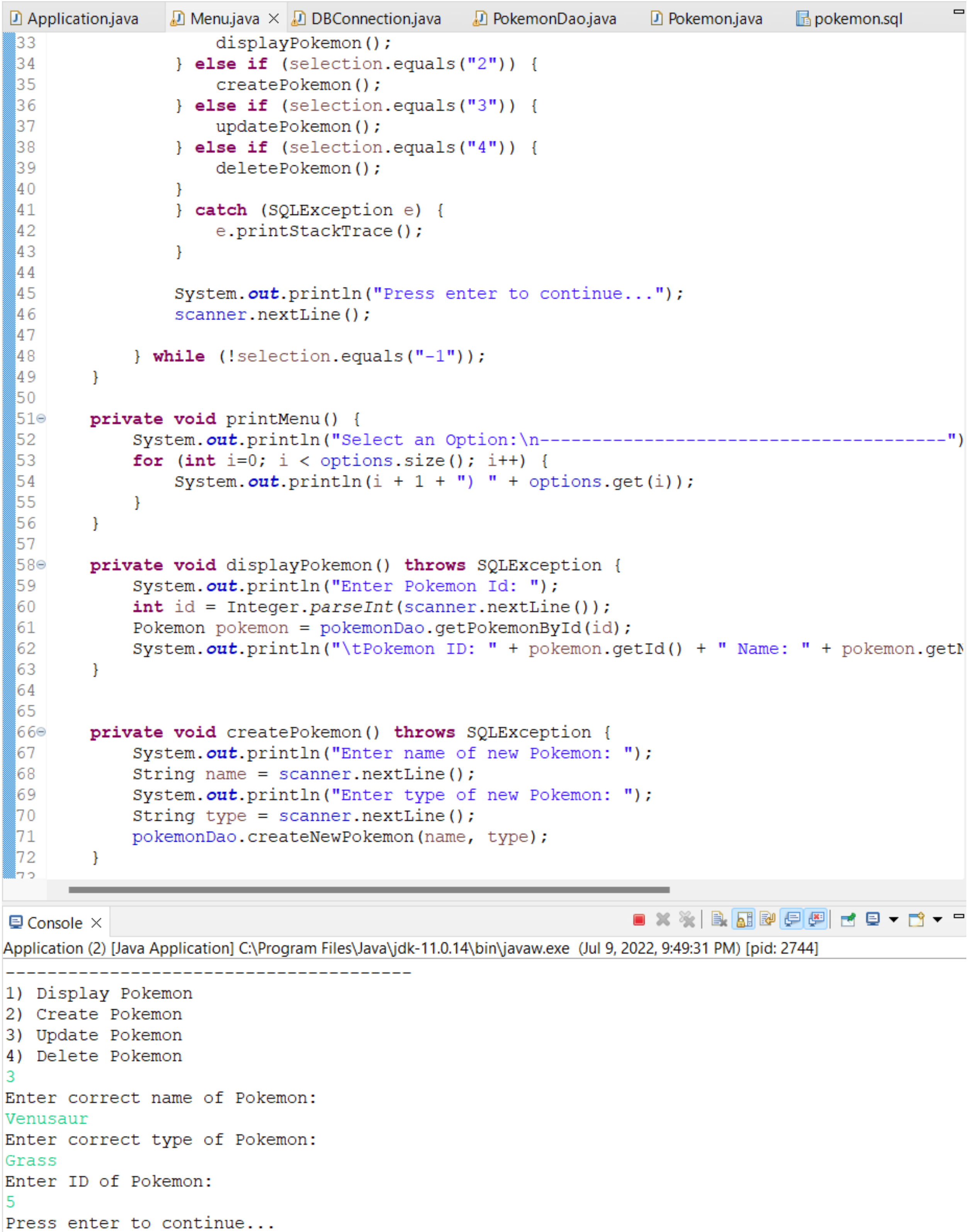
```
Connection Successful
Select an Option:
---------------------------------------
1) Display Pokemon
2) Create Pokemon
3) Update Pokemon
4) Delete Pokemon
2
Enter name of new Pokemon:
Charizard
Enter type of new Pokemon:
Fire
Press enter to continue...
```



```java
                displayPokemon();
            } else if (selection.equals("2")) {
                createPokemon();
            } else if (selection.equals("3")) {
                updatePokemon();
            } else if (selection.equals("4")) {
                deletePokemon();
            }
            } catch (SQLException e) {
                e.printStackTrace();
            }

            System.out.println("Press enter to continue...");
            scanner.nextLine();

        } while (!selection.equals("-1"));
    }

    private void printMenu() {
        System.out.println("Select an Option:\n---------------------------------------")
        for (int i=0; i < options.size(); i++) {
            System.out.println(i + 1 + ") " + options.get(i));
        }
    }

    private void displayPokemon() throws SQLException {
        System.out.println("Enter Pokemon Id: ");
        int id = Integer.parseInt(scanner.nextLine());
        Pokemon pokemon = pokemonDao.getPokemonById(id);
        System.out.println("\tPokemon ID: " + pokemon.getId() + " Name: " + pokemon.getN
    }


    private void createPokemon() throws SQLException {
        System.out.println("Enter name of new Pokemon: ");
        String name = scanner.nextLine();
        System.out.println("Enter type of new Pokemon: ");
        String type = scanner.nextLine();
        pokemonDao.createNewPokemon(name, type);
    }
```

Application (2) [Java Application] C:\Program Files\Java\jdk-11.0.14\bin\javaw.exe (Jul 9, 2022, 9:49:31 PM) [pid: 2744]

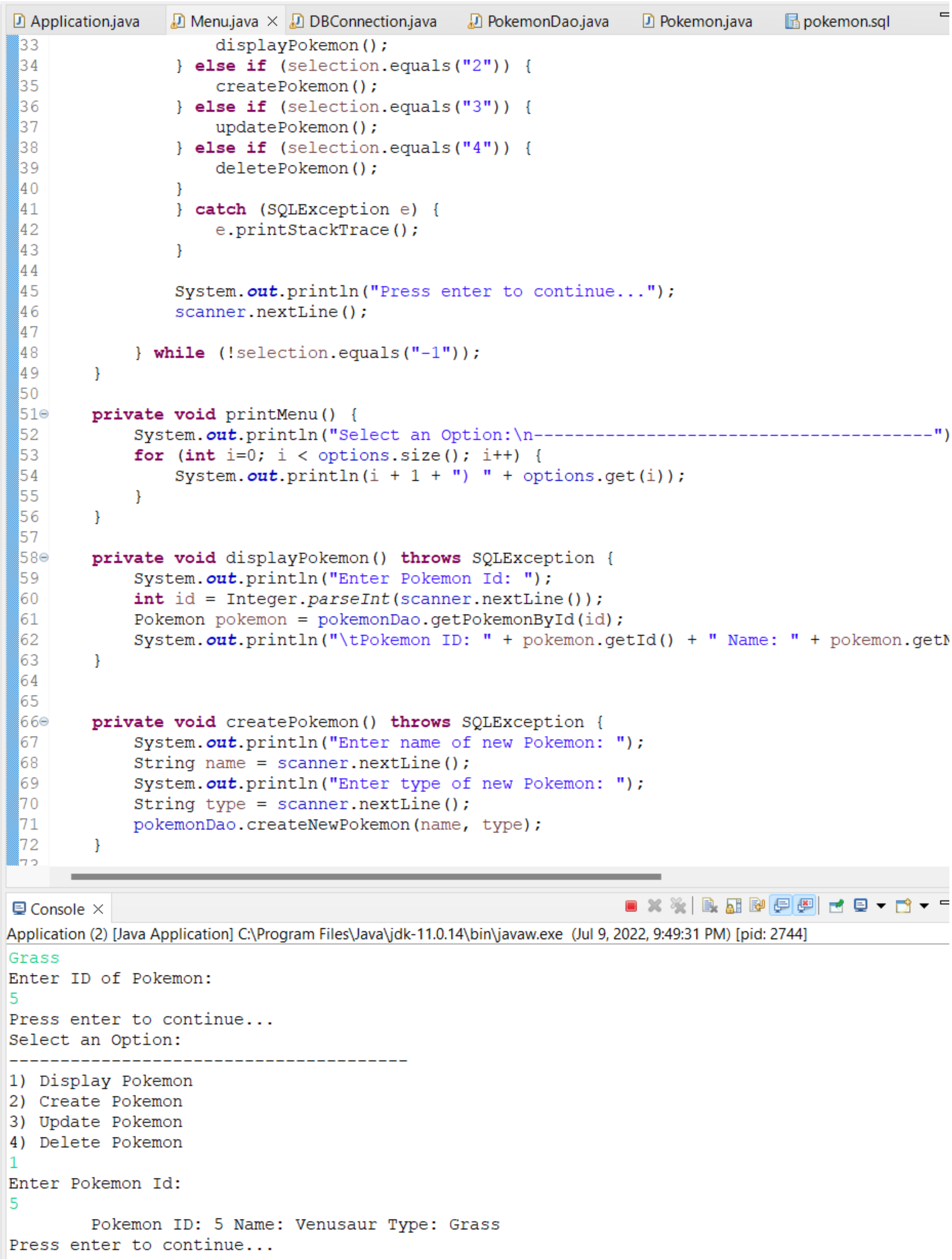
```
Enter type of new Pokemon:
Fire
Press enter to continue...

Select an Option:
---------------------------------------
1) Display Pokemon
2) Create Pokemon
3) Update Pokemon
4) Delete Pokemon
1
Enter Pokemon Id:
5
        Pokemon ID: 5 Name: Charizard Type: Fire
Press enter to continue...
```



```java
                displayPokemon();
            } else if (selection.equals("2")) {
                createPokemon();
            } else if (selection.equals("3")) {
                updatePokemon();
            } else if (selection.equals("4")) {
                deletePokemon();
            }
            } catch (SQLException e) {
                e.printStackTrace();
            }

            System.out.println("Press enter to continue...");
            scanner.nextLine();

        } while (!selection.equals("-1"));
    }

    private void printMenu() {
        System.out.println("Select an Option:\n---------------------------------------")
        for (int i=0; i < options.size(); i++) {
            System.out.println(i + 1 + ") " + options.get(i));
        }
    }

    private void displayPokemon() throws SQLException {
        System.out.println("Enter Pokemon Id: ");
        int id = Integer.parseInt(scanner.nextLine());
        Pokemon pokemon = pokemonDao.getPokemonById(id);
        System.out.println("\tPokemon ID: " + pokemon.getId() + " Name: " + pokemon.getN
    }


    private void createPokemon() throws SQLException {
        System.out.println("Enter name of new Pokemon: ");
        String name = scanner.nextLine();
        System.out.println("Enter type of new Pokemon: ");
        String type = scanner.nextLine();
        pokemonDao.createNewPokemon(name, type);
    }
```

Application (2) [Java Application] C:\Program Files\Java\jdk-11.0.14\bin\javaw.exe (Jul 9, 2022, 9:49:31 PM) [pid: 2744]

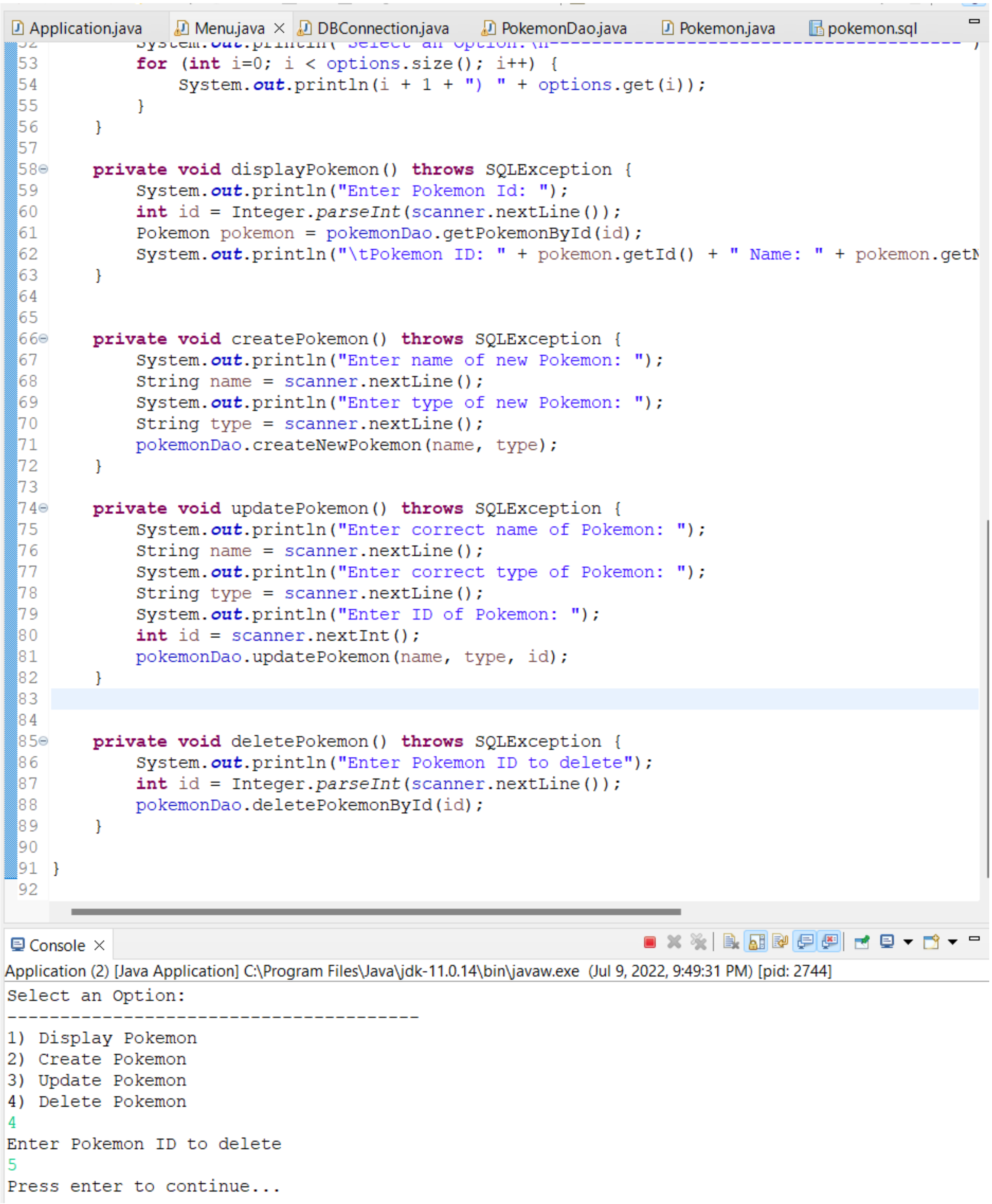
```
---------------------------------------
1) Display Pokemon
2) Create Pokemon
3) Update Pokemon
4) Delete Pokemon
3
Enter correct name of Pokemon:
Venusaur
Enter correct type of Pokemon:
Grass
Enter ID of Pokemon:
5
Press enter to continue...
```



```java
                displayPokemon();
            } else if (selection.equals("2")) {
                createPokemon();
            } else if (selection.equals("3")) {
                updatePokemon();
            } else if (selection.equals("4")) {
                deletePokemon();
            }
            } catch (SQLException e) {
                e.printStackTrace();
            }

            System.out.println("Press enter to continue...");
            scanner.nextLine();

        } while (!selection.equals("-1"));
    }

    private void printMenu() {
        System.out.println("Select an Option:\n---------------------------------------")
        for (int i=0; i < options.size(); i++) {
            System.out.println(i + 1 + ") " + options.get(i));
        }
    }

    private void displayPokemon() throws SQLException {
        System.out.println("Enter Pokemon Id: ");
        int id = Integer.parseInt(scanner.nextLine());
        Pokemon pokemon = pokemonDao.getPokemonById(id);
        System.out.println("\tPokemon ID: " + pokemon.getId() + " Name: " + pokemon.getN
    }


    private void createPokemon() throws SQLException {
        System.out.println("Enter name of new Pokemon: ");
        String name = scanner.nextLine();
        System.out.println("Enter type of new Pokemon: ");
        String type = scanner.nextLine();
        pokemonDao.createNewPokemon(name, type);
    }
```

Application (2) [Java Application] C:\Program Files\Java\jdk-11.0.14\bin\javaw.exe (Jul 9, 2022, 9:49:31 PM) [pid: 2744]

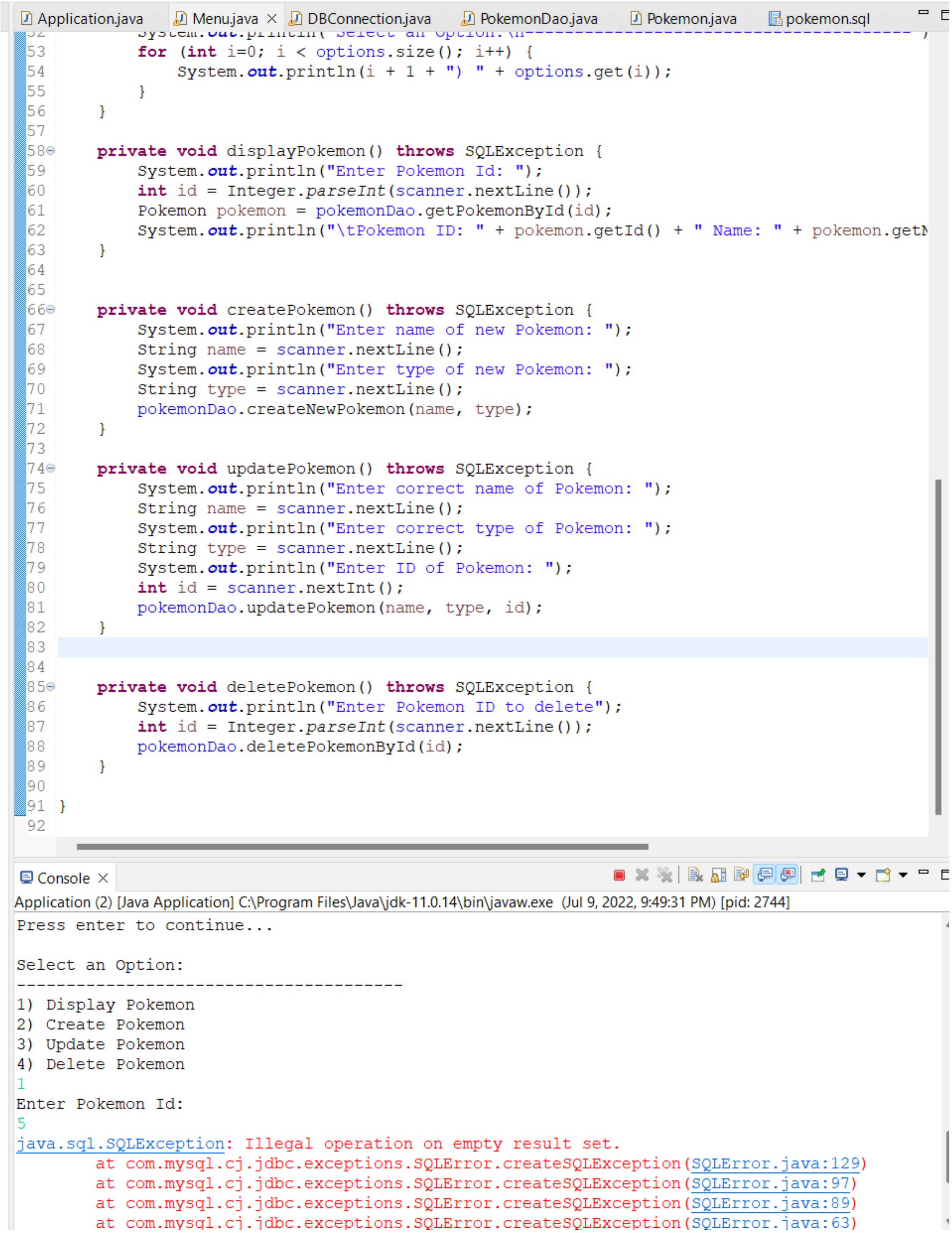
```
Grass
Enter ID of Pokemon:
5
Press enter to continue...
Select an Option:
---------------------------------------
1) Display Pokemon
2) Create Pokemon
3) Update Pokemon
4) Delete Pokemon
1
Enter Pokemon Id:
5
        Pokemon ID: 5 Name: Venusaur Type: Grass
Press enter to continue...
```



```java
        System.out.println("Select an Option:\n----------------------------------------");
        for (int i=0; i < options.size(); i++) {
            System.out.println(i + 1 + ") " + options.get(i));
        }
    }

    private void displayPokemon() throws SQLException {
        System.out.println("Enter Pokemon Id: ");
        int id = Integer.parseInt(scanner.nextLine());
        Pokemon pokemon = pokemonDao.getPokemonById(id);
        System.out.println("\tPokemon ID: " + pokemon.getId() + " Name: " + pokemon.getN
    }


    private void createPokemon() throws SQLException {
        System.out.println("Enter name of new Pokemon: ");
        String name = scanner.nextLine();
        System.out.println("Enter type of new Pokemon: ");
        String type = scanner.nextLine();
        pokemonDao.createNewPokemon(name, type);
    }

    private void updatePokemon() throws SQLException {
        System.out.println("Enter correct name of Pokemon: ");
        String name = scanner.nextLine();
        System.out.println("Enter correct type of Pokemon: ");
        String type = scanner.nextLine();
        System.out.println("Enter ID of Pokemon: ");
        int id = scanner.nextInt();
        pokemonDao.updatePokemon(name, type, id);
    }


    private void deletePokemon() throws SQLException {
        System.out.println("Enter Pokemon ID to delete");
        int id = Integer.parseInt(scanner.nextLine());
        pokemonDao.deletePokemonById(id);
    }

}
```

Application (2) [Java Application] C:\Program Files\Java\jdk-11.0.14\bin\javaw.exe (Jul 9, 2022, 9:49:31 PM) [pid: 2744]

```
Select an Option:
---------------------------------------
1) Display Pokemon
2) Create Pokemon
3) Update Pokemon
4) Delete Pokemon
4
Enter Pokemon ID to delete
5
Press enter to continue...
```



```
        System.out.println("Select an Option:\n-----------------------------------------");
        for (int i=0; i < options.size(); i++) {
            System.out.println(i + 1 + ") " + options.get(i));
        }
    }

    private void displayPokemon() throws SQLException {
        System.out.println("Enter Pokemon Id: ");
        int id = Integer.parseInt(scanner.nextLine());
        Pokemon pokemon = pokemonDao.getPokemonById(id);
        System.out.println("\tPokemon ID: " + pokemon.getId() + " Name: " + pokemon.getN
    }


    private void createPokemon() throws SQLException {
        System.out.println("Enter name of new Pokemon: ");
        String name = scanner.nextLine();
        System.out.println("Enter type of new Pokemon: ");
        String type = scanner.nextLine();
        pokemonDao.createNewPokemon(name, type);
    }

    private void updatePokemon() throws SQLException {
        System.out.println("Enter correct name of Pokemon: ");
        String name = scanner.nextLine();
        System.out.println("Enter correct type of Pokemon: ");
        String type = scanner.nextLine();
        System.out.println("Enter ID of Pokemon: ");
        int id = scanner.nextInt();
        pokemonDao.updatePokemon(name, type, id);
    }


    private void deletePokemon() throws SQLException {
        System.out.println("Enter Pokemon ID to delete");
        int id = Integer.parseInt(scanner.nextLine());
        pokemonDao.deletePokemonById(id);
    }

}
```

Application (2) [Java Application] C:\Program Files\Java\jdk-11.0.14\bin\javaw.exe (Jul 9, 2022, 9:49:31 PM) [pid: 2744]

```
Press enter to continue...

Select an Option:
---------------------------------------
1) Display Pokemon
2) Create Pokemon
3) Update Pokemon
4) Delete Pokemon
1
Enter Pokemon Id:
5
java.sql.SQLException: Illegal operation on empty result set.
        at com.mysql.cj.jdbc.exceptions.SQLError.createSQLException(SQLError.java:129)
        at com.mysql.cj.jdbc.exceptions.SQLError.createSQLException(SQLError.java:97)
        at com.mysql.cj.jdbc.exceptions.SQLError.createSQLException(SQLError.java:89)
        at com.mysql.cj.jdbc.exceptions.SQLError.createSQLException(SQLError.java:63)
```

URL to GitHub Repository:

https://github.com/CoconutMacaron/Week-10-Menu-App.git