МИНИСТЕРСТВО ОБРАЗОВАНИЯ РЕСПУБЛИКИ БЕЛАРУСЬ

УЧРЕЖДЕНИЕ ОБРАЗОВАНИЯ

 «БРЕСТСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ»

Кафедра ИИТ

ЛАБОРАТОРНАЯ РАБОТА №9

По дисциплине: «Современные платформы программирования»

Выполнил:

Студент ФЭИС

3-го курса, группы ПО-5

Прокопчик Е.А.

Проверил:

Крощенко А.А.

Брест 2022

Цель работы: приобрести практические навыки разработки баз данных и начальной интеграции БД с кодом Java с помощью JDBC

Общее задание:

Реализовать базу данных из не менее 5 таблиц на заданную тематику. При реализации продумать типизацию полей и внешние ключи в таблицах. Визуализировать разработанную БД с помощью схемы, на которой отображены все таблицы и связи между ними (пример, схема на рис. 1). На языке Java с использованием JDBC реализовать подключение к БД и выполнить основные типы запросов, продемонстрировать результаты преподавателю и включить тексты составленных запросов в отчет. Основные типы запросов – 1. На выборку/на выборку с упорядочиванием (SELECT); 2. На добавление (INSERT INTO); 3. На удаление (DELETE FROM); 4. На модификацию (UPDATE). Базу данные можно реализовать в любой СУБД (MySQL, PostgreSQL, SQLite и др.)

12) База данных «Европейские футбольные чемпионаты»

**Код программы**

**DBWorker.java**

package com.spplab9.database;  
  
import java.sql.Connection;  
import java.sql.DriverManager;  
import java.sql.SQLException;  
  
public class DBWorker {  
 private final String URL = "jdbc:mysql://localhost:3306/lab9spp";  
 private final String USERNAME = "root";  
 private final String PASSWORD = "root";  
  
 private Connection connection;  
  
 public Connection getConnection() {return connection;}  
 public void setConnection(Connection connection) {this.connection = connection;}  
  
 public DBWorker(){  
  
 try{  
  
 connection = DriverManager.*getConnection*(URL, USERNAME, PASSWORD);  
 } catch (SQLException e) {  
 e.printStackTrace();  
 }  
 }  
}

**Team.java**

package com.spplab9.database;  
  
public class Team {  
  
 private int team\_id;  
 private int league\_id;  
 private String team\_name;  
 private String country;  
  
 public Team() {  
 }  
  
 public Team(int league\_id, String team\_name, String country) {  
 this.league\_id = league\_id;  
 this.team\_name = team\_name;  
 this.country = country;  
 }  
  
 public Team(int team\_id, int league\_id, String team\_name, String country) {  
 this.team\_id = team\_id;  
 this.league\_id = league\_id;  
 this.team\_name = team\_name;  
 this.country = country;  
 }  
  
 public int getTeam\_id() {return team\_id;}  
 public void setTeam\_id(int team\_id) {this.team\_id = team\_id;}  
  
 public int getLeague\_id() {return league\_id;}  
 public void setLeague\_id(int league\_id) {this.league\_id = league\_id;}  
  
 public String getTeam\_name() {return team\_name;}  
 public void setTeam\_name(String team\_name) {this.team\_name = team\_name;}  
  
 public String getCountry() {return country;}  
 public void setCountry(String country) {this.country = country;}  
  
 @Override  
 public String toString() {  
 return getClass().getSimpleName() + "{id: " + team\_id  
 + ", league\_id: " + league\_id  
 + ", team\_name: " + team\_name  
 + ", country: " + country  
 + "}";  
 }  
}

**Match.java**

package com.spplab9.database;  
  
import java.sql.Date;  
  
public class Match {  
  
 private int match\_id;  
 private String league\_name;  
 private String stadium\_name;  
 private String team1\_name;  
 private String team2\_name;  
 private Date match\_date;  
  
 public Match(){  
  
 }  
  
 public Match(String league\_name, String stadium\_name, String team1\_name, String team2\_name, Date match\_date){  
  
 this.league\_name = league\_name;  
 this.stadium\_name = stadium\_name;  
 this.team1\_name = team1\_name;  
 this.team2\_name = team2\_name;  
 this.match\_date = match\_date;  
 }  
  
 public Match(int match\_id, String league\_name, String stadium\_name, String team1\_name, String team2\_name, Date match\_date ){  
  
 this.match\_id = match\_id;  
 this.league\_name = league\_name;  
 this.stadium\_name = stadium\_name;  
 this.team1\_name = team1\_name;  
 this.team2\_name = team2\_name;  
 this.match\_date = match\_date;  
 }  
  
 public int getMatch\_id() {return match\_id;}  
 public void setMatch\_id(int match\_id) {this.match\_id = match\_id;}  
  
 public String getLeague\_name() {return league\_name;}  
 public void setLeague\_name(String league\_name) {this.league\_name = league\_name;}  
  
 public String getStadium\_name() {return stadium\_name;}  
 public void setStadium\_name(String stadium\_name) {this.stadium\_name = stadium\_name;}  
  
 public String getTeam1\_name() {return team1\_name;}  
 public void setTeam1\_name(String team1\_name) {this.team1\_name = team1\_name;}  
  
 public String getTeam2\_name() {return team2\_name;}  
 public void setTeam2\_name(String team2\_name) {this.team2\_name = team2\_name;}  
  
 public Date getMatch\_date() {return match\_date;}  
 public void setMatch\_date(Date match\_date) {this.match\_date = match\_date;}  
  
 @Override  
 public String toString() {  
 return getClass().getSimpleName() + "{id: " + match\_id  
 + ", league\_name: " + league\_name  
 + ", stadium\_name: " + stadium\_name  
 + ", team1\_name: " + team1\_name  
 + ", team2\_name: " + team2\_name  
 + ", match\_date: " + match\_date  
 + "}";  
 }  
}

**Main.java**

package com.spplab9.database;  
  
import java.sql.ResultSet;  
import java.sql.SQLException;  
import java.sql.Statement;  
  
public class Main {  
  
 public static void main(String[] args) {  
 DBWorker worker = new DBWorker();  
  
 String querySSelect = "select \* from teams";  
 try {  
 Statement statement = worker.getConnection().createStatement();  
 ResultSet resultSet = statement.executeQuery(querySSelect);  
  
 while(resultSet.next()) {  
 Team team = new Team();  
 team.setTeam\_id(resultSet.getInt("team\_id"));  
 team.setLeague\_id(resultSet.getInt("league\_id"));  
 team.setTeam\_name(resultSet.getString("team\_name"));  
 team.setCountry(resultSet.getString("country"));  
  
 System.*out*.println(team);  
 }  
 System.*out*.println("------------------------------------------------------------");  
  
 }catch (SQLException e) {  
 e.printStackTrace();  
 }  
  
 try {  
 Statement statement = worker.getConnection().createStatement();  
 statement.execute("INSERT INTO matches(league\_name, stadium\_name, team1\_name, team2\_name, match\_date) VALUES('Belarusian Premier League', 'Barysaŭ-Arena', 'BATE', 'Dynamo Minsk', '2022.03.01')");  
 statement.execute("INSERT INTO matches(league\_name, stadium\_name, team1\_name, team2\_name, match\_date) VALUES('Belarusian Premier League', 'Barysaŭ-Arena', 'BATE', 'Dynamo Minsk', '2018.01.01')");  
 }catch (SQLException e) {  
 e.printStackTrace();  
 }  
  
 String querySelectSort = "select \* from matches order by match\_date";  
 try {  
 Statement statement = worker.getConnection().createStatement();  
 ResultSet resultSet = statement.executeQuery(querySelectSort);  
  
 while(resultSet.next()) {  
 Match match = new Match();  
 match.setMatch\_id(resultSet.getInt("match\_id"));  
 match.setLeague\_name(resultSet.getString("league\_name"));  
 match.setStadium\_name(resultSet.getString("stadium\_name"));  
 match.setTeam1\_name(resultSet.getString("team1\_name"));  
 match.setTeam2\_name(resultSet.getString("team2\_name"));  
 match.setMatch\_date(resultSet.getDate("match\_date"));  
  
 System.*out*.println(match);  
 }  
 System.*out*.println("------------------------------------------------------------");  
  
 }catch (SQLException e) {  
 e.printStackTrace();  
 }  
  
 try {  
 Statement statement = worker.getConnection().createStatement();  
 statement.execute("DELETE FROM matches WHERE match\_date = '2018.01.01'");  
 statement.execute("UPDATE matches SET match\_date = '2022.07.01' WHERE match\_date = '2022.03.01'");  
  
 ResultSet resultSet = statement.executeQuery(querySelectSort);  
  
 while(resultSet.next()) {  
 Match match = new Match();  
 match.setMatch\_id(resultSet.getInt("match\_id"));  
 match.setLeague\_name(resultSet.getString("league\_name"));  
 match.setStadium\_name(resultSet.getString("stadium\_name"));  
 match.setTeam1\_name(resultSet.getString("team1\_name"));  
 match.setTeam2\_name(resultSet.getString("team2\_name"));  
 match.setMatch\_date(resultSet.getDate("match\_date"));  
  
 System.*out*.println(match);  
 }  
 System.*out*.println("------------------------------------------------------------");  
  
 }catch (SQLException e) {  
 e.printStackTrace();  
 }  
 }  
}

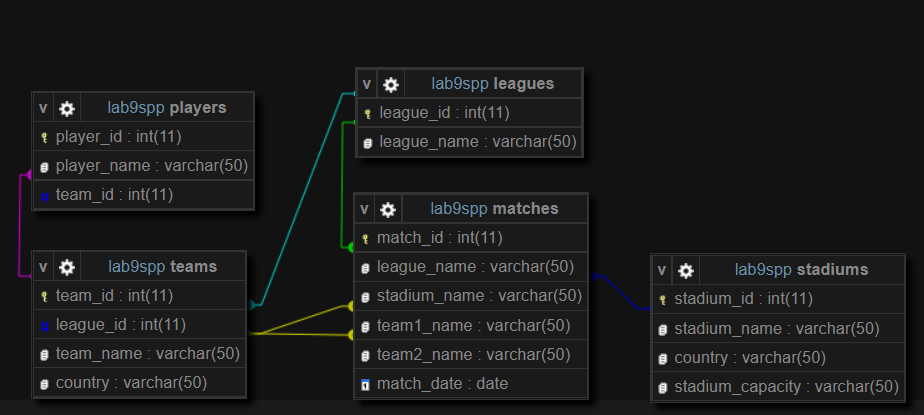
****

Схема БД

Вывод: приобрел практические навыки разработки баз данных и начальной интеграции БД с кодом Java с помощью JDBC