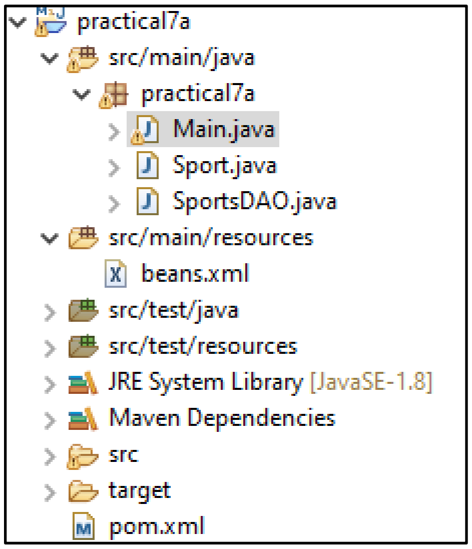
Name of Student: Pushkar Sane		
Roll Number: 45	**Lab Assignment Number: 7**	
Title of Lab Assignment: Assignment based on Spring JDBC.		
DOP: 24-10-2023	**DOS: 28-10-2023**	
CO Mapped: **CO5**	**PO Mapped:** **PO1, PO2, PO3, PO11, PSO1**	**Signature:**

Practical No. 7

Aim:

1. Create table sports (name, type, no of players). Use spring jdbc to insert 3 records in the sports table. Delete one record from the table using the same concept.

File Structure:



```
practical7a
  src/main/java
    practical7a
      Main.java
      Sport.java
      SportsDAO.java
  src/main/resources
    beans.xml
  src/test/java
  src/test/resources
  JRE System Library [JavaSE-1.8]
  Maven Dependencies
  src
  target
  pom.xml
```

Code:

Main.java

```
package practical7a;

import org.springframework.context.ApplicationContext;
import org.springframework.context.support.ClassPathXmlApplicationContext;

public class Main {
	public static void main(String[] args) {
		ApplicationContext context = new
ClassPathXmlApplicationContext("beans.xml");
		SportsDAO sportsDAO = (SportsDAO) context.getBean("sportsDAO");

		System.out.println("inserting 3 records \n" + "Football " + "Team " + 11 +
"\n" + "Basketball " + "Team " + 5
```

```
                                        + "\n" + "Tennis " + "Singles " + 2);

                    // Insert records
                    sportsDAO.insertSportsRecord("Football", "Team", 11);
                    sportsDAO.insertSportsRecord("Basketball", "Team", 5);
                    sportsDAO.insertSportsRecord("Tennis", "Singles", 2);

                    // Display records after inserting
                    System.out.println("\ndisplay table after inserting 3 records");
                    sportsDAO.displayAllSportsRecords();

                    // Update a record
                    sportsDAO.updateSportsRecord(1, "Cricket", "Team", 11);

                    // Display records after updating
                    System.out.println("\ndisplay table after updating Football -> Cricket");
                    sportsDAO.displayAllSportsRecords();

                    // Delete a record
                    sportsDAO.deleteSportsRecord(1);

                    // Display records after deleting
                    System.out.println("\ndisplay table after deleting id = 1 ");
                    sportsDAO.displayAllSportsRecords();
          }
}
```

SportsDAO.java

```
package practical7a;
import org.springframework.jdbc.core.JdbcTemplate;
import java.util.List;
import org.springframework.jdbc.core.BeanPropertyRowMapper;

public class SportsDAO {
	private JdbcTemplate jdbcTemplate;
	public void setJdbcTemplate(JdbcTemplate jdbcTemplate) {
		this.jdbcTemplate = jdbcTemplate;
	}

	public void insertSportsRecord(String name, String type, int noOfPlayers) {
		String sql = "INSERT INTO sports (name, type, no_of_players) VALUES
(?, ?, ?)";
		jdbcTemplate.update(sql, name, type, noOfPlayers);
	}

	public void deleteSportsRecord(int id) {
		String sql = "DELETE FROM sports WHERE id = ?";
		jdbcTemplate.update(sql, id);
	}

	public void updateSportsRecord(int id, String name, String type, int noOfPlayers)
{
		String sql = "UPDATE sports SET name = ?, type = ?, no_of_players = ?
WHERE id = ?";
		jdbcTemplate.update(sql, name, type, noOfPlayers, id);
	}

	public List<Sport> getAllSportsRecords() {
		String sql = "SELECT * FROM sports";
		return jdbcTemplate.query(sql, new
BeanPropertyRowMapper<>(Sport.class));
	}

	public void displayAllSportsRecords() {
		List<Sport> sports = this.getAllSportsRecords();
		for (Sport sport : sports) {
			System.out.println("Sport " + sport.getId() + " Name: " +
sport.getName() + " Type: " + sport.getType()
```

```
                                        + " Number of players " + sport.getNoOfPlayers());
                }
        }

}
```

Sport.java

```
package practical7a;
public class Sport {
        private int id;
        private String name;
        private String type;
        private int noOfPlayers;

        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;
        }

        public int getNoOfPlayers() {
                return noOfPlayers;
        }

        public void setNoOfPlayers(int noOfPlayers) {
                this.noOfPlayers = noOfPlayers;
        }
}
```

beans.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xmlns:context="http://www.springframework.org/schema/context"
        xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans.xsd
  http://www.springframework.org/schema/context
http://www.springframework.org/schema/context/spring-context.xsd">
        <!-- bean definitions here -->
        <!-- Define the DataSource bean for MySQL -->
        <bean id="dataSource"

        class="org.springframework.jdbc.datasource.DriverManagerDataSource">
                <property name="driverClassName"
                        value="com.mysql.cj.jdbc.Driver" />
                <property name="url"
                        value="jdbc:mysql://localhost:3306/student" />
                <property name="username" value="root" />
                <property name="password" value="Root@123" />
        </bean>
        <!-- Define the JdbcTemplate bean that uses the DataSource -->
        <bean id="jdbcTemplate"
                class="org.springframework.jdbc.core.JdbcTemplate">
                <property name="dataSource" ref="dataSource" />
        </bean>
        <bean id="sportsDAO" class="practical7a.SportsDAO">
                <property name="jdbcTemplate" ref="jdbcTemplate" />
        </bean>
</beans>
```

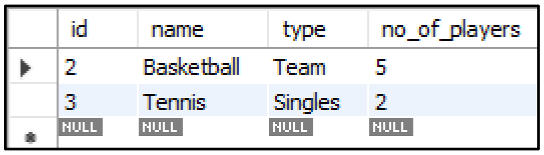
pom.xml

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
https://maven.apache.org/xsd/maven-4.0.0.xsd">
        <modelVersion>4.0.0</modelVersion>
        <groupId>practical7a</groupId>
        <artifactId>practical7a</artifactId>
        <version>0.0.1-SNAPSHOT</version>
        <dependencies>
                <dependency>
                        <groupId>org.springframework</groupId>
                        <artifactId>spring-context</artifactId>
                        <version>5.3.9</version>
                </dependency>

                <dependency>
                        <groupId>org.springframework</groupId>
                        <artifactId>spring-core</artifactId>
                        <version>5.3.9</version>
                </dependency>

                <dependency>
                <groupId>org.springframework</groupId>
                <artifactId>spring-jdbc</artifactId>
                <version>5.3.9</version>
            </dependency>
            <!-- MySQL Connector -->
            <dependency>
                <groupId>mysql</groupId>
                <artifactId>mysql-connector-java</artifactId>
                <version>8.0.26</version>
            </dependency>
        </dependencies>
</project>
```

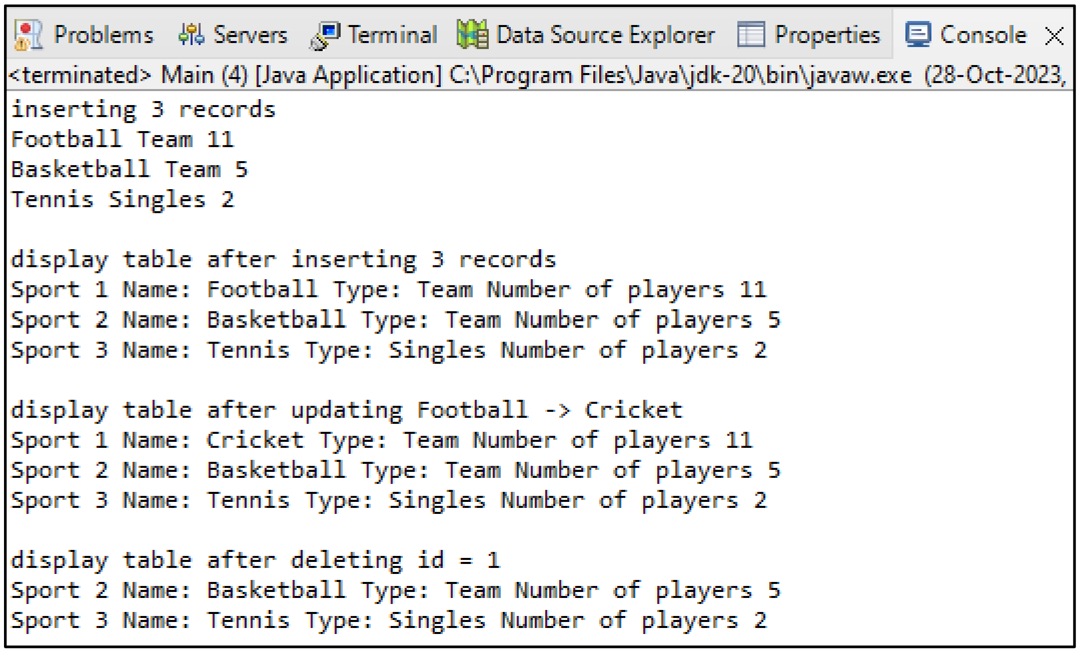
SQL Query:

```
use student;
CREATE TABLE sports (
   id INT AUTO_INCREMENT PRIMARY KEY,
   name VARCHAR(255),
   type VARCHAR(255),
   no_of_players INT
);
```

Output:



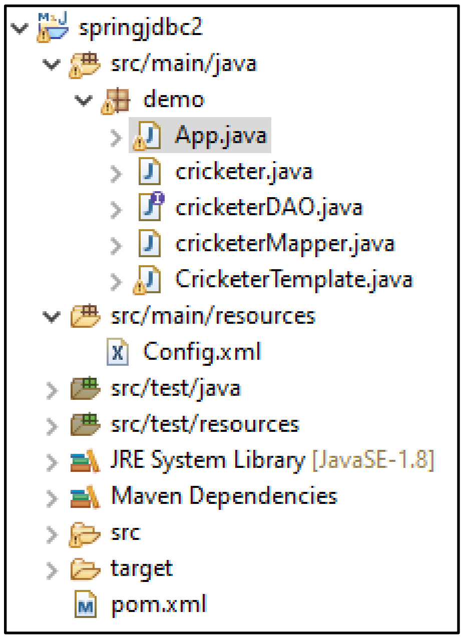
id	name	type	no_of_players
2	Basketball	Team	5
3	Tennis	Singles	2
NULL	NULL	NULL	NULL



```
<terminated> Main (4) [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-Oct-2023,
inserting 3 records
Football Team 11
Basketball Team 5
Tennis Singles 2

display table after inserting 3 records
Sport 1 Name: Football Type: Team Number of players 11
Sport 2 Name: Basketball Type: Team Number of players 5
Sport 3 Name: Tennis Type: Singles Number of players 2

display table after updating Football -> Cricket
Sport 1 Name: Cricket Type: Team Number of players 11
Sport 2 Name: Basketball Type: Team Number of players 5
Sport 3 Name: Tennis Type: Singles Number of players 2

display table after deleting id = 1
Sport 2 Name: Basketball Type: Team Number of players 5
Sport 3 Name: Tennis Type: Singles Number of players 2
```

2. Create a table cricketer (name, runs, best score), insert 5 records from the backend. Use spring jdbc concept to display all 5 records. Use Rowmapper Interface.

File Structure:



```
springjdbc2
  src/main/java
    demo
      App.java
      cricketer.java
      cricketerDAO.java
      cricketerMapper.java
      CricketerTemplate.java
  src/main/resources
    Config.xml
  src/test/java
  src/test/resources
  JRE System Library [JavaSE-1.8]
  Maven Dependencies
  src
  target
  pom.xml
```

Codes:

App.java

```
package demo;
import java.util.List;
import org.springframework.context.ApplicationContext;
import org.springframework.context.support.ClassPathXmlApplicationContext;

public class App {
	public static void main(String[] args) {
		ApplicationContext context = new
ClassPathXmlApplicationContext("config.xml");
		CricketerTemplate cricketerTemplate = (CricketerTemplate)
context.getBean("cricketerTemplate");
		System.out.println("inserting 5 records");
		cricketerTemplate.insert("Pushkar", 50, 100);
		cricketerTemplate.insert("Prasad", 45, 100);
		cricketerTemplate.insert("Anish", 70, 110);
		cricketerTemplate.insert("Shreya", 30, 200);
		cricketerTemplate.insert("Mrudula", 60, 80);
		System.out.println("Listing Records...");
		List<cricketer> cricketers = cricketerTemplate.listCricketers();
		for (cricketer record : cricketers) {
			System.out.print("Name : " + record.getName());
			System.out.print(", Runs : " + record.getRuns());
			System.out.println(", Best score : " + record.getBestRuns());
		}
	}
}
```

cricketer.java

```
package demo;
public class cricketer {
	String name;
	Integer runs;
	Integer bestRuns;
	public String getName() {
		return name;
	}
	public void setName(String name) {
		this.name = name;
	}
	public Integer getRuns() {
		return runs;
	}
	public void setRuns(Integer runs) {
		this.runs = runs;
	}
	public Integer getBestRuns() {
		return bestRuns;
	}
	public void setBestRuns(Integer bestRuns) {
		this.bestRuns = bestRuns;
	}
}
```

cricketerDAO.java

```
package demo;
import java.util.List;
import javax.sql.DataSource;

public interface cricketerDAO {
	public void setDataSource(DataSource ds);
	public void insert(String name, Integer runs, Integer bestRuns);
	public List<cricketer> listCricketers();
}
```

cricketerMapper.java

```
package demo;
import java.sql.ResultSet;
import java.sql.SQLException;
import org.springframework.jdbc.core.RowMapper;

public class cricketerMapper implements RowMapper<cricketer> {
	@Override
	public cricketer mapRow(ResultSet rs, int rowNum) throws SQLException {
		cricketer c = new cricketer();
		c.setName(rs.getString("name"));
		c.setRuns(rs.getInt("runs"));
		c.setBestRuns(rs.getInt("bestScore"));
		return c;
	}
}
```

CricketerTemplate.java

```
package demo;
import java.util.List;
import javax.sql.DataSource;
import org.springframework.jdbc.core.JdbcTemplate;

public class CricketerTemplate implements cricketerDAO {
	private DataSource ds;
	private JdbcTemplate jdbcTemplate;
	@Override
	public void setDataSource(DataSource ds) {
		this.ds = ds;
		this.jdbcTemplate = new JdbcTemplate(ds);
	}
@Override
public void insert(String name, Integer runs, Integer bestRuns) {
String SQL = "INSERT INTO cricketer(name, runs, bestScore) VALUES(?,?,?)";
jdbcTemplate.update(SQL, name, runs, bestRuns);
System.out.println("Created Record Name = " + name + " runs = " + runs + " Best Score
= " + bestRuns);
}
        @Override
        public List<cricketer> listCricketers() {
                String SQL = "SELECT * FROM cricketer";
                List<cricketer> cricketers = jdbcTemplate.query(SQL, new
cricketerMapper());
                return cricketers;
        }
}
```

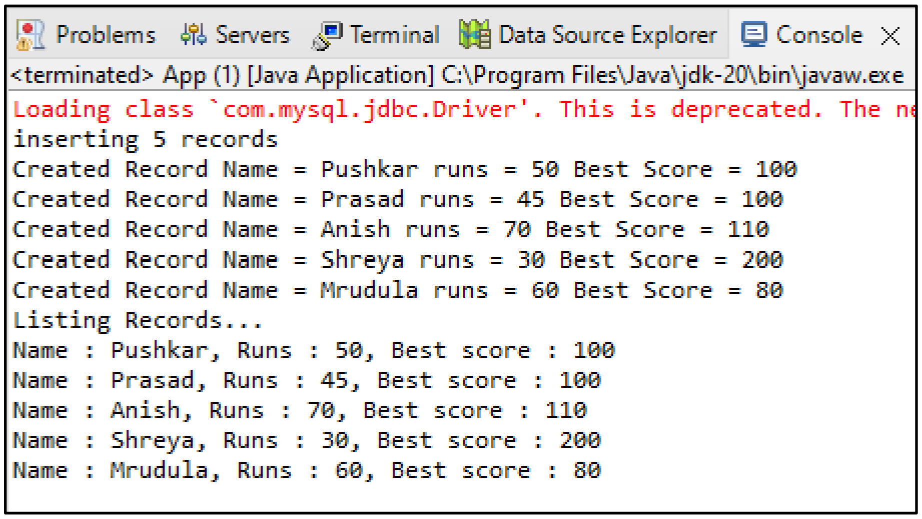
config.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans-3.0.xsd ">
        <bean id="dataSource"

        class="org.springframework.jdbc.datasource.DriverManagerDataSource">
                <property name="driverClassName"
                        value="com.mysql.jdbc.Driver" />
                <property name="url"
                        value="jdbc:mysql://localhost:3306/student" />
                <property name="username" value="root" />
                <property name="password" value="Root@123" />
        </bean>
        <bean id="cricketerTemplate" class="demo.CricketerTemplate">
                <property name="dataSource" ref="dataSource" />
        </bean>
</beans>
```

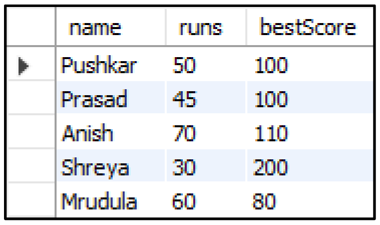
Pom.xml

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
        <modelVersion>4.0.0</modelVersion>
        <groupId>springjdbc</groupId>
        <artifactId>springjdbc</artifactId>
        <version>0.0.1-SNAPSHOT</version>
        <packaging>jar</packaging>
        <name>springjdbc</name>
        <url>http://maven.apache.org</url>
        <properties>
                <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        </properties>

        <dependencies>
                <dependency>
                        <groupId>junit</groupId>
                        <artifactId>junit</artifactId>
                        <version>3.8.1</version>
                        <scope>test</scope>
                </dependency>
                <dependency>
                        <groupId>org.springframework</groupId>
                        <artifactId>spring-jdbc</artifactId>
                        <version>5.3.5</version>
                </dependency>
                <dependency>
                        <groupId>mysql</groupId>
                        <artifactId>mysql-connector-java</artifactId>
                        <version>8.0.18</version>
                </dependency>
                <dependency>
                <groupId>org.springframework</groupId>
                <artifactId>spring-context</artifactId>
                <version>5.3.5</version>
            </dependency>
        </dependencies>
</project>
```

Output:



```
<terminated> App (1) [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe
Loading class `com.mysql.jdbc.Driver'. This is deprecated. The ne
inserting 5 records
Created Record Name = Pushkar runs = 50 Best Score = 100
Created Record Name = Prasad runs = 45 Best Score = 100
Created Record Name = Anish runs = 70 Best Score = 110
Created Record Name = Shreya runs = 30 Best Score = 200
Created Record Name = Mrudula runs = 60 Best Score = 80
Listing Records...
Name : Pushkar, Runs : 50, Best score : 100
Name : Prasad, Runs : 45, Best score : 100
Name : Anish, Runs : 70, Best score : 110
Name : Shreya, Runs : 30, Best score : 200
Name : Mrudula, Runs : 60, Best score : 80
```



name	runs	bestScore
Pushkar	50	100
Prasad	45	100
Anish	70	110
Shreya	30	200
Mrudula	60	80