Assignment No 9

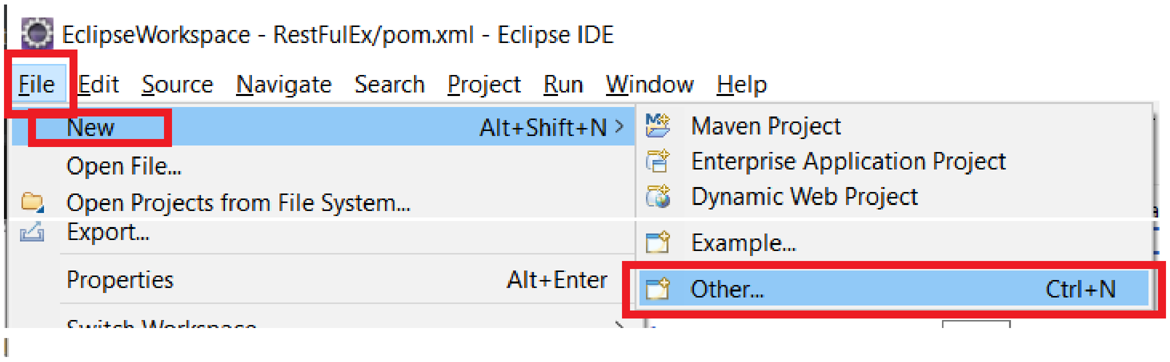
Spring JDBC

1. Write a program to insert, update and delete records from the given table.
2. Write a program to demonstrate PreparedStatement in Spring JdbcTemplate.
3. Write a program in Spring JDBC to demonstrate ResultSetExtractor Interface.
4. Write a program to demonstrate RowMapper interface to fetch the records from the database.

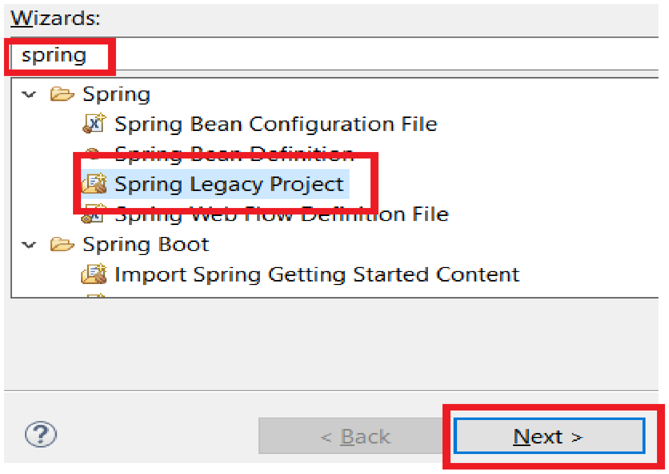
Steps to Create Spring Legacy Project

Step 1 : Creating Spring Legacy Project.

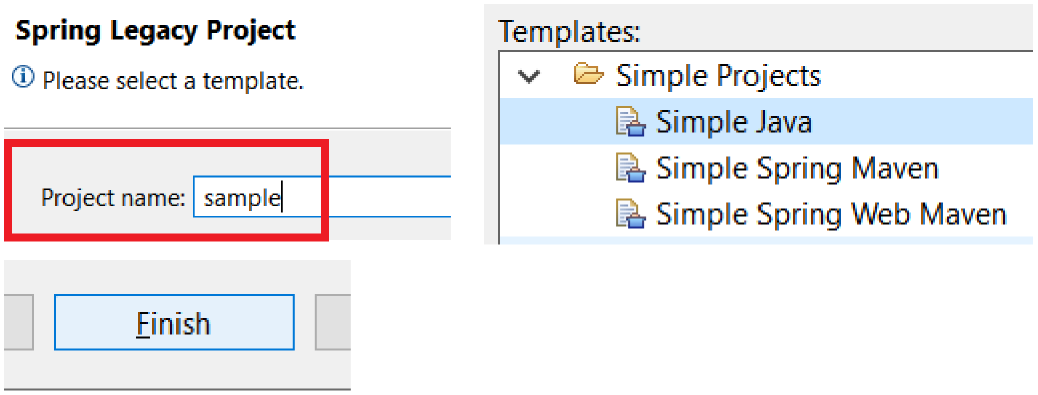
1.1 : Open Eclipse. Go To File > New > Other.


EclipseWorkspace - RestFulEx/pom.xml - Eclipse IDE
File Edit Source Navigate Search Project Run Window Help
New Alt+Shift+N >
Open File...
Open Projects from File System...
Export...
Properties Alt+Enter
Maven Project
Enterprise Application Project
Dynamic Web Project
Example...
Other... Ctrl+N

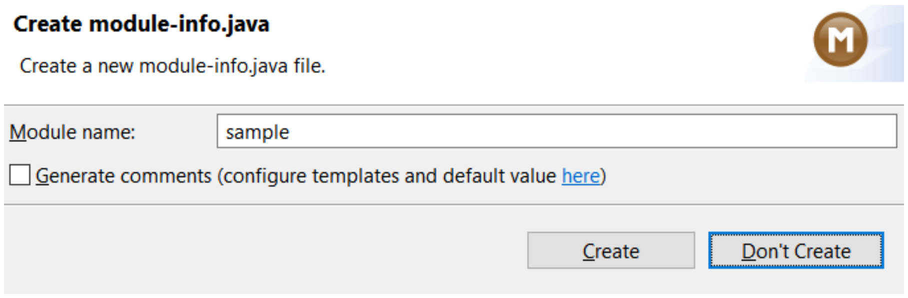
1.2 : Search for ‘spring’ and Select ‘Spring Legacy Project’. Then Click on Next.


Wizards:
spring
Spring
Spring Bean Configuration File
Spring Bean Definition
Spring Legacy Project
Spring Web Flow Definition File
Spring Boot
Import Spring Getting Started Content
< Back
Next >

1.3 : ChooseProject Name of your wish, below there select **Simple Java**& simply Finish.



1.4 : If asked for Creating module-info.java file, click on **Don’t Create**.


Create module-info.java

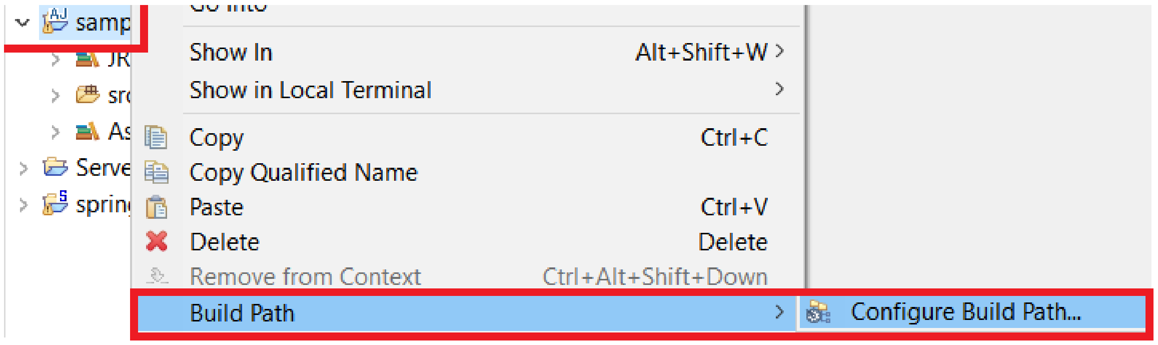
Create a new module-info.java file.

Module name: sample

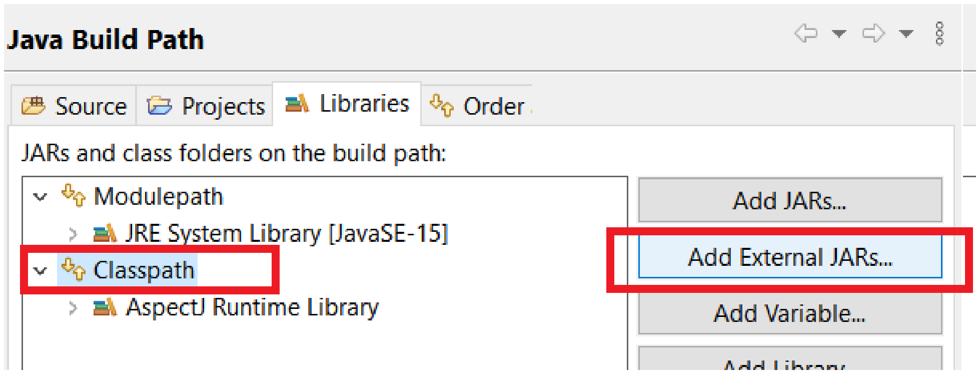
☐ Generate comments (configure templates and default value here)

Step 2 : Adding the Spring Libraries.

2.1 : Right click on your Newly created Spring Legacy project, Choose Build Path > Configure Build Path.



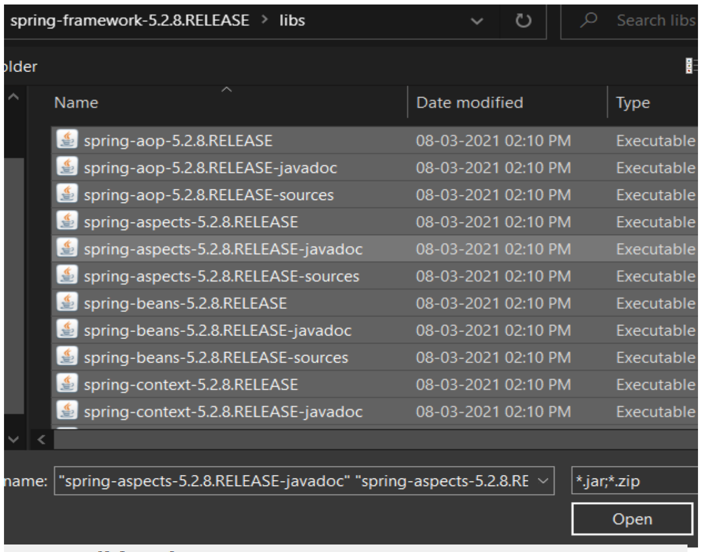
2.2 On Java Build Path wizard, Choose **Classpath** and then select **Add External JARs.**


Java Build Path

JARs and class folders on the build path:

- Modulepath
  - JRE System Library [JavaSE-15]
- Classpath
  - AspectJ Runtime Library

2.3 : Choose all the Spring Libraries you've downloaded, and click on OPEN. This will add all libraries to Classpath.


spring-framework-5.2.8.RELEASE > libs

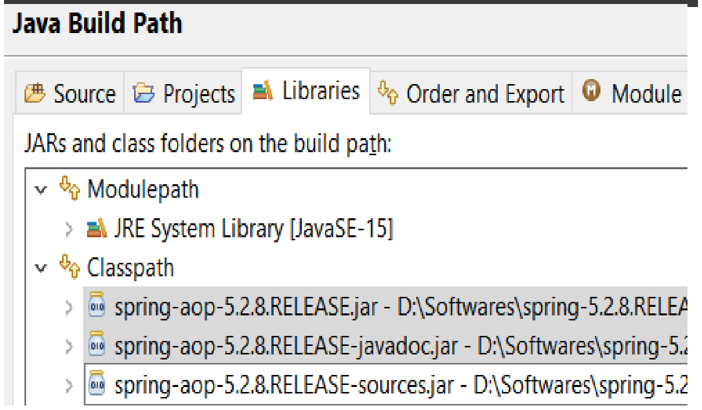
Search libs

Name	Date modified	Type
spring-aop-5.2.8.RELEASE	08-03-2021 02:10 PM	Executable
spring-aop-5.2.8.RELEASE-javadoc	08-03-2021 02:10 PM	Executable
spring-aop-5.2.8.RELEASE-sources	08-03-2021 02:10 PM	Executable
spring-aspects-5.2.8.RELEASE	08-03-2021 02:10 PM	Executable
spring-aspects-5.2.8.RELEASE-javadoc	08-03-2021 02:10 PM	Executable
spring-aspects-5.2.8.RELEASE-sources	08-03-2021 02:10 PM	Executable
spring-beans-5.2.8.RELEASE	08-03-2021 02:10 PM	Executable
spring-beans-5.2.8.RELEASE-javadoc	08-03-2021 02:10 PM	Executable
spring-beans-5.2.8.RELEASE-sources	08-03-2021 02:10 PM	Executable
spring-context-5.2.8.RELEASE	08-03-2021 02:10 PM	Executable
spring-context-5.2.8.RELEASE-javadoc	08-03-2021 02:10 PM	Executable

name: "spring-aspects-5.2.8.RELEASE-javadoc" "spring-aspects-5.2.8.RE

.jar;.zip

Open

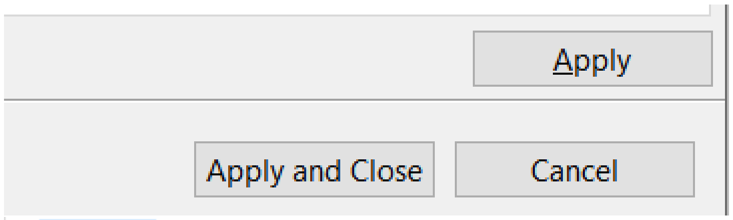

Java Build Path

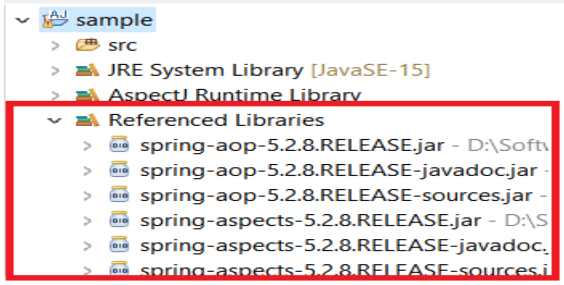
Source | Projects | Libraries | Order and Export | Module

JARs and class folders on the build path:

```
Modulepath
    JRE System Library [JavaSE-15]
Classpath
    spring-aop-5.2.8.RELEASE.jar - D:\Softwares\spring-5.2.8.RELEA
    spring-aop-5.2.8.RELEASE-javadoc.jar - D:\Softwares\spring-5.2
    spring-aop-5.2.8.RELEASE-sources.jar - D:\Softwares\spring-5.2
```

2.4 Finally click on Apply & Close, now you are ready to work with Spring Legacy Project.




```
sample
    src
    JRE System Library [JavaSE-15]
    AspectJ Runtime Library
    Referenced Libraries
        spring-aop-5.2.8.RELEASE.jar - D:\Softw
        spring-aop-5.2.8.RELEASE-javadoc.jar -
        spring-aop-5.2.8.RELEASE-sources.jar -
        spring-aspects-5.2.8.RELEASE.jar - D:\S
        spring-aspects-5.2.8.RELEASE-javadoc.
        spring-aspects-5.2.8.RELEASE-sources.j
```

Add postgres jar file also

Database:

Create Movies Table :

CREATE TABLE mymovies1 (

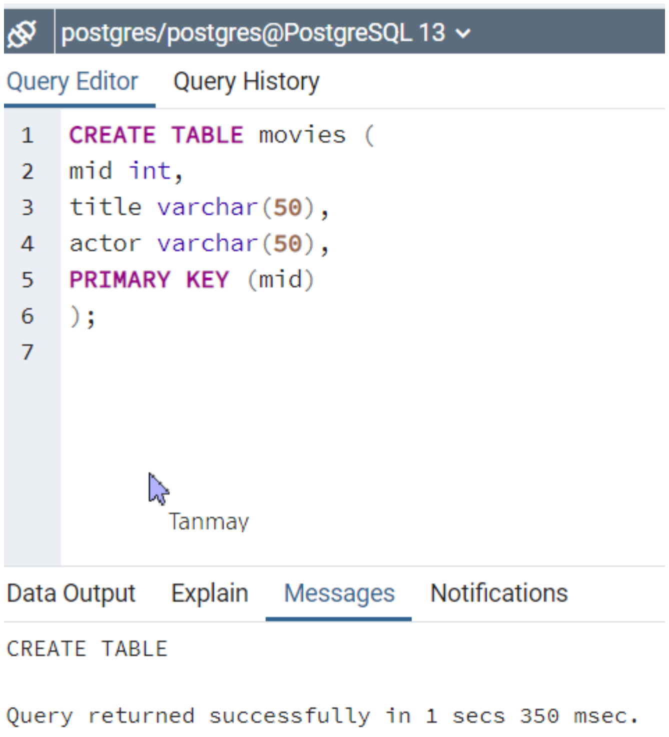
mid int,

title varchar(50),

actor varchar(50),

PRIMARY KEY (mid)

);



```
CREATE TABLE movies (
mid int,
title varchar(50),
actor varchar(50),
PRIMARY KEY (mid)
);
```

```
CREATE TABLE

Query returned successfully in 1 secs 350 msec.
```

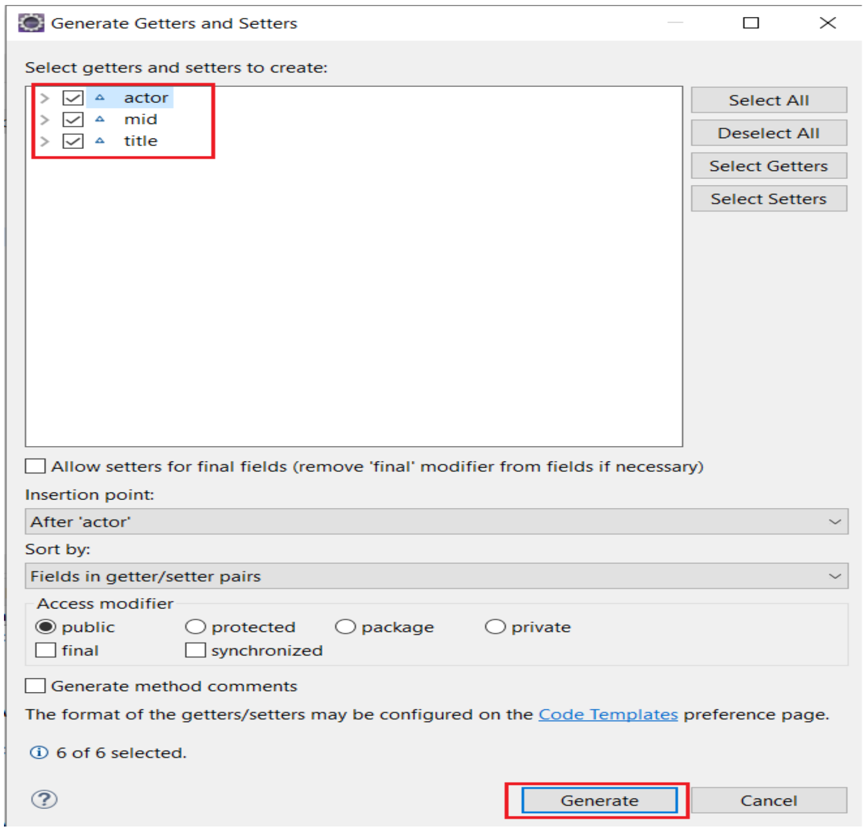
Problem Statement 1 : Write a program to insert, update and delete records from the given table.

Solution :

Solution:

How to generate getter and setter methods

Right click on file-> source-> Generate getters and setters methods.



☐ Allow setters for final fields (remove 'final' modifier from fields if necessary)

Insertion point: After 'actor'

Sort by: Fields in getter/setter pairs

Access modifier: [✓ public] protected package private; ☐ final ☐ synchronized

☐ Generate method comments

The format of the getters/setters may be configured on the Code Templates preference page.

6 of 6 selected.

Movie1.java

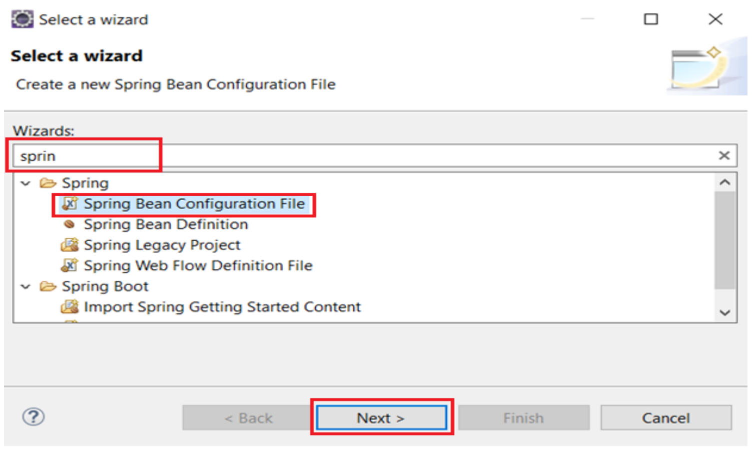
```
package org.me;

public class Movie1 {

        int mid;
        String title;
        String actor;
        public Movie1(int mid, String title, String actor) {
                super();
```

```
		this.mid = mid;
		this.title = title;
		this.actor = actor;
	}
	public Movie1() {
		super();
		// TODO Auto-generated constructor stub
	}
	public int getMid() {
		return mid;
	}
	public void setMid(int mid) {
		this.mid = mid;
	}
	public String getTitle() {
		return title;
	}
	public void setTitle(String title) {
		this.title = title;
	}
	public String getActor() {
		return actor;
	}
	public void setActor(String actor) {
		this.actor = actor;
	}


}
```

MovieDAO.java

```
package org.me;

import org.springframework.jdbc.core.*;
public class MovieDAO {
JdbcTemplate jdbcTemplate;

public void setJdbcTemplate(JdbcTemplate jdbcTemplate) {
	this.jdbcTemplate = jdbcTemplate;
}
public int insMovie(Movie1 m1)
{
	String insSql="insert into mymovies1
values("+m1.getMid()+",'"+m1.getTitle()+"','"+m1.getActor()+"')";
return jdbcTemplate.update(insSql);
}

public int updateMovie(Movie1 m1){
   String query="update mymovies1 set title='"+m1.getTitle()+"',actor='"+m1.getActor()+"'
where mid='"+m1.getMid()+"' ";
   return jdbcTemplate.update(query);
}

public int deleteMovie(Movie1 m1){
   String query="delete from mymovies1 where mid='"+m1.getMid()+"' ";
   return jdbcTemplate.update(query);
}
}
```

Create Xml file


Select a wizard

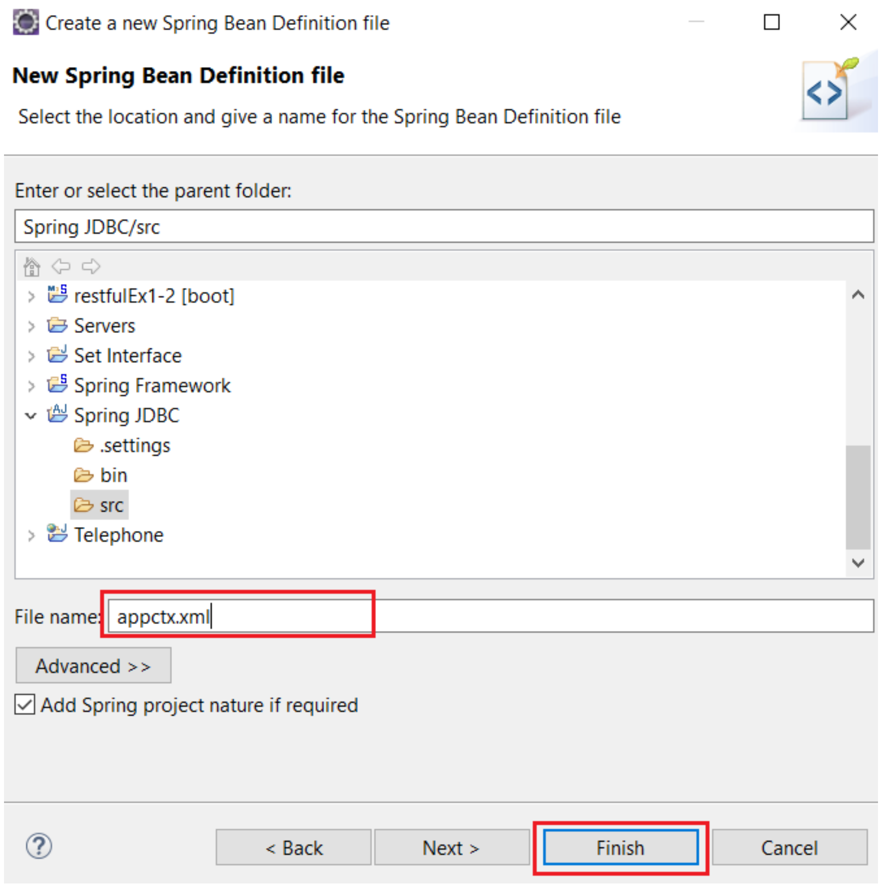
Select a wizard

Create a new Spring Bean Configuration File

Wizards:

sprin

- Spring
  - Spring Bean Configuration File
  - Spring Bean Definition
  - Spring Legacy Project
  - Spring Web Flow Definition File
- Spring Boot
  - Import Spring Getting Started Content



Create a new Spring Bean Definition file

New Spring Bean Definition file

Select the location and give a name for the Spring Bean Definition file

Enter or select the parent folder:

Spring JDBC/src

```
> restfulEx1-2 [boot]
> Servers
> Set Interface
> Spring Framework
v Spring JDBC
    .settings
    bin
    src
> Telephone
```

File name: appctx.xml

appctx.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.xsd">

<bean id="ds" class="org.springframework.jdbc.datasource.DriverManagerDataSource">
<property name="driverClassName" value="org.postgresql.Driver" />
<property name="url" value="jdbc:postgresql://localhost:5432/postgres" />
<property name="username" value="postgres" />
<property name="password" value="password" />
</bean>

<bean id="jdbcTemplate" class="org.springframework.jdbc.core.JdbcTemplate">
<property name="dataSource" ref="ds"></property>
</bean>
```

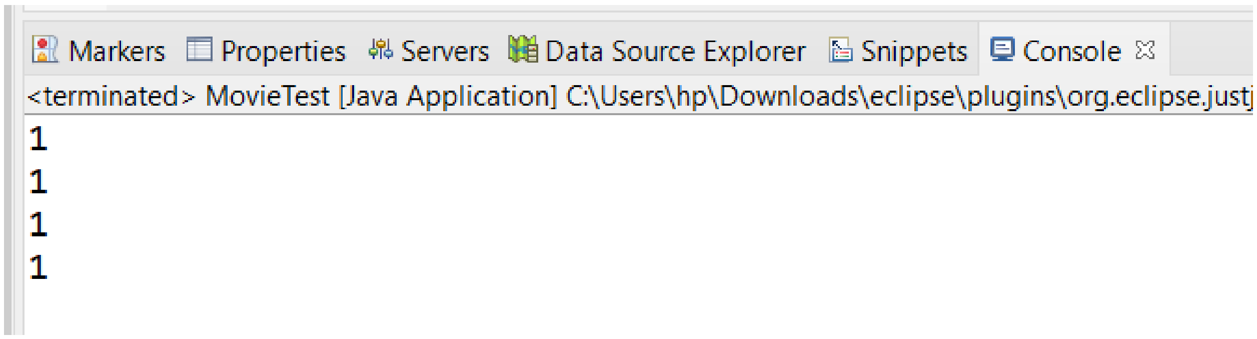
```
<bean id="mymovie" class="org.me.MovieDAO">
<property name="jdbcTemplate" ref="jdbcTemplate"></property>
</bean> </beans>
```

Create Main java File

Filename-MovieTest.java

```
import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

public class MovieTest {

        private static ApplicationContext appCon;

        public static void main(String[] args) {

                // TODO Auto-generated method stub

                appCon = new ClassPathXmlApplicationContext("appctx.xml");

                MovieDAO m1 = (MovieDAO) appCon.getBean("mymovie");

                // insert query

                Movie1 t1 = new Movie1(4, "17 Again", "Zac");

                System.out.println(m1.insMovie(t1));


                Movie1 t = new Movie1(5, "Interstellar", "Christopher");

                System.out.println(m1.insMovie(t));

                // update query

                int status = m1.updateMovie(new Movie1(1, "18 Again", "Zac"));

                System.out.println(status);

                // delete

                Movie1 t2=new Movie1();

                t2.setMid(3);

                int s=m1.deleteMovie(t2);

                System.out.println(s);
```

} }

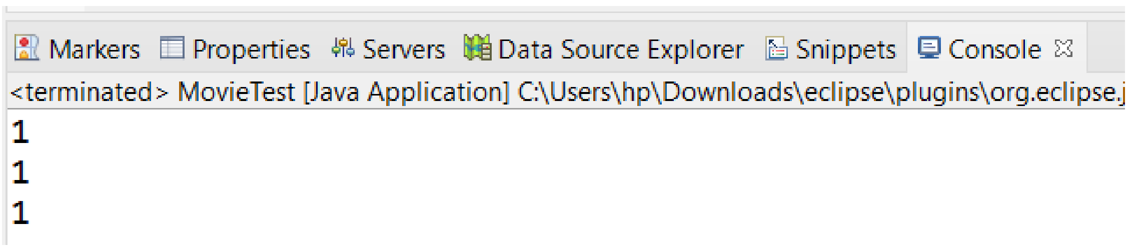


```
<terminated> MovieTest [Java Application] C:\Users\hp\Downloads\eclipse\plugins\org.eclipse.justj
1
1
1
1
```

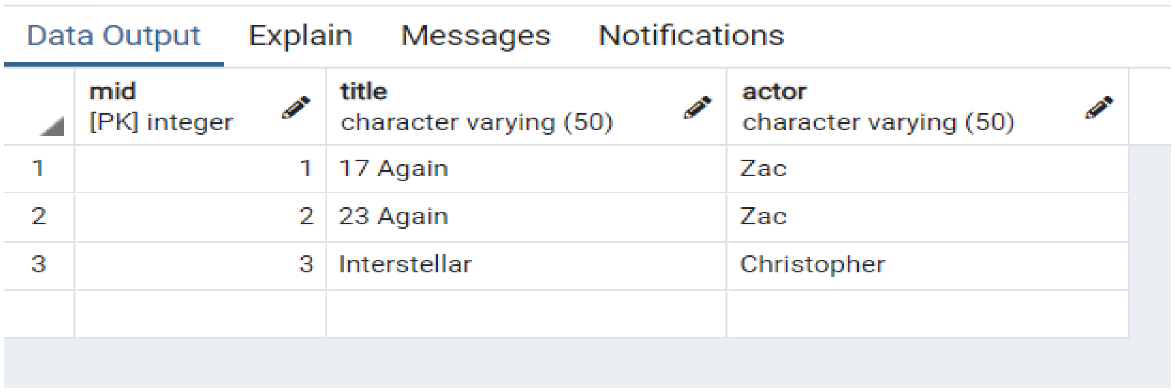
First we insert 3 records

// insert query

```
                Movie1 t1 = new Movie1(1, "17 Again", "Zac");
                System.out.println(m1.insMovie(t1));

                Movie1 t2 = new Movie1(2, "23 Again", "Zac");
                System.out.println(m1.insMovie(t));
        Movie1 t3 = new Movie1(3, "Interstellar", "Christopher");
                System.out.println(m1.insMovie(t));
```



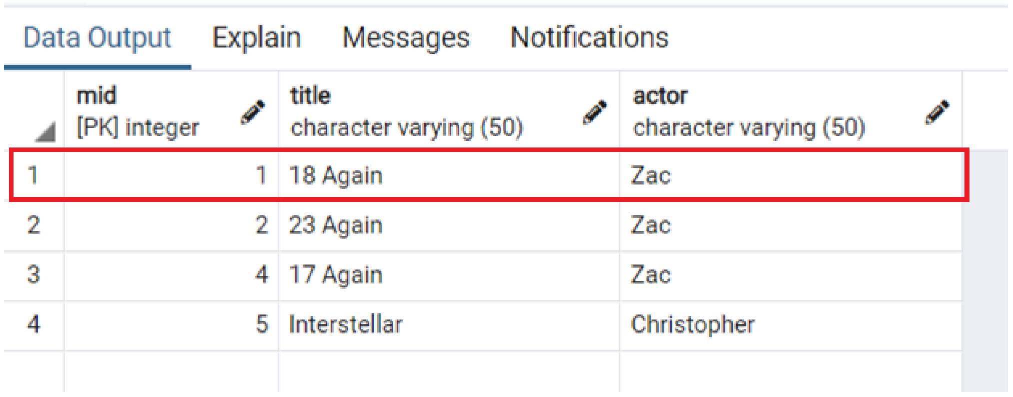
```
<terminated> MovieTest [Java Application] C:\Users\hp\Downloads\eclipse\plugins\org.eclipse.j
1
1
1
```


Data Output | Explain | Messages | Notifications

	mid [PK] integer	title character varying (50)	actor character varying (50)
1	1	17 Again	Zac
2	2	23 Again	Zac
3	3	Interstellar	Christopher

Update:

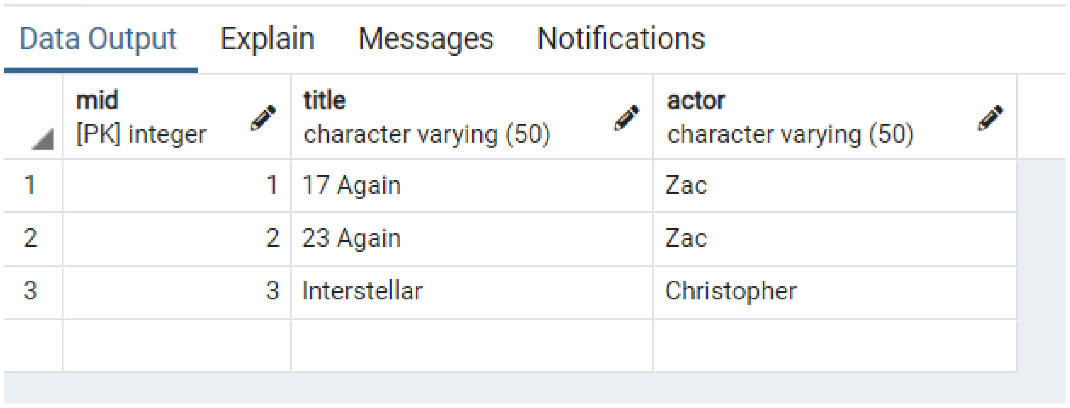
We update row 1


Data Output | Explain | Messages | Notifications

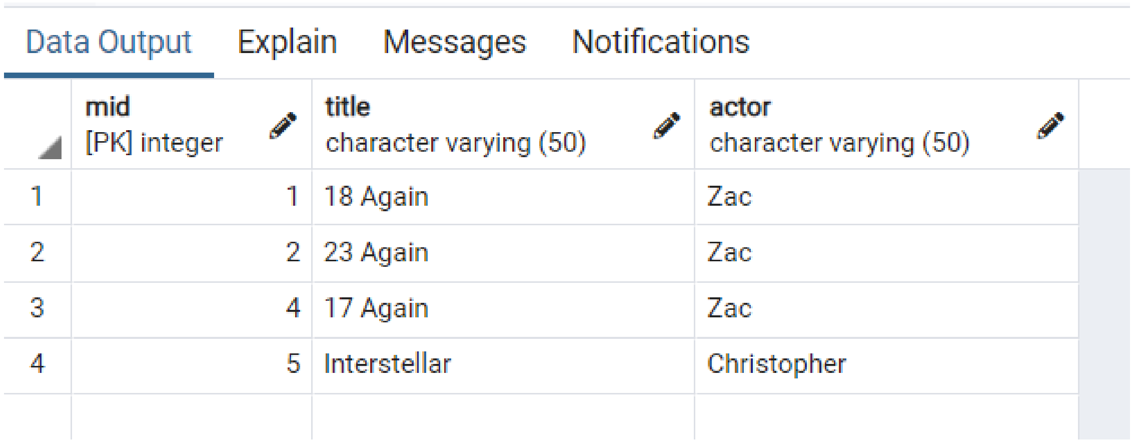
	mid [PK] integer	title character varying (50)	actor character varying (50)
1	1	18 Again	Zac
2	2	23 Again	Zac
3	4	17 Again	Zac
4	5	Interstellar	Christopher

Delete:

We deleted row no 3 So, After deleted row


Data Output | Explain | Messages | Notifications

	mid [PK] integer	title character varying (50)	actor character varying (50)
1	1	17 Again	Zac
2	2	23 Again	Zac
3	3	Interstellar	Christopher


Data Output | Explain | Messages | Notifications

	mid [PK] integer	title character varying (50)	actor character varying (50)
1	1	18 Again	Zac
2	2	23 Again	Zac
3	4	17 Again	Zac
4	5	Interstellar	Christopher

Statement 2: Write a program to demonstrate PreparedStatement in Spring JdbcTemplate.

Solution :

Movie1.java

```
package org.me;

public class Movie1 {

	int mid;
	String title;
	String actor;
	public Movie1(int mid, String title, String actor) {
		super();
		this.mid = mid;
		this.title = title;
		this.actor = actor;
	}
	public Movie1() {
		super();
	}
	public int getMid() {
		return mid;
	}
	public void setMid(int mid) {
		this.mid = mid;
	}
	public String getTitle() {
		return title;
	}
	public void setTitle(String title) {
		this.title = title;
	}
	public String getActor() {
		return actor;
	}
	public void setActor(String actor) {
		this.actor = actor;
	}

}
```

MovieDAO1.java

```
package org.me;
```

```
import java.sql.PreparedStatement;
import java.sql.SQLException;

import org.springframework.dao.DataAccessException;
import org.springframework.jdbc.core.JdbcTemplate;
import org.springframework.jdbc.core.PreparedStatementCallback;
public class MovieDAO1 {
        JdbcTemplate jdbcTemplate;

        public void setJdbcTemplate(JdbcTemplate jdbcTemplate) {
                this.jdbcTemplate = jdbcTemplate;
        }
        public Boolean saveMovieByPreparedStatement(final Movie1 e){
           String query="insert into movies values(?,?,?)";
           return jdbcTemplate.execute(query,new PreparedStatementCallback<Boolean>(){
           @Override
           public Boolean doInPreparedStatement(PreparedStatement ps)
                throws SQLException, DataAccessException {
              ps.setInt(1,e.getMid());
              ps.setString(2,e.getTitle());
              ps.setString(3,e.getActor());
              return ps.execute();
           }
           });
        }
}
```

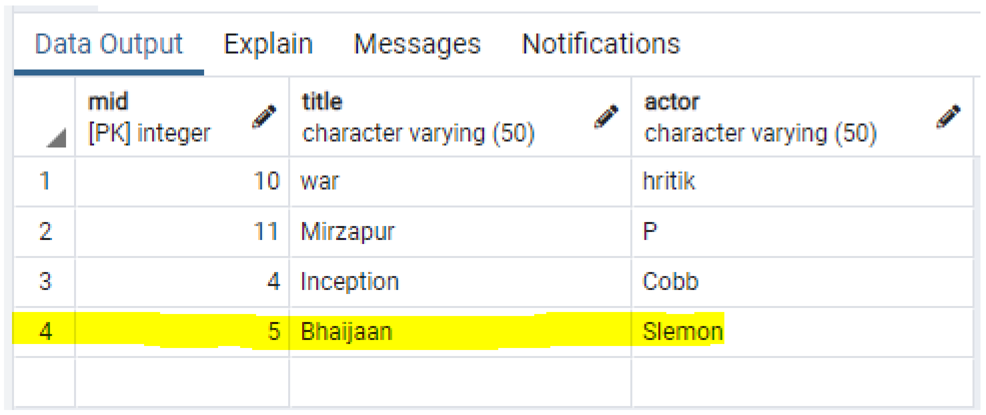
appctx1.java

```
<?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.xsd">

<bean id="ds" class="org.springframework.jdbc.datasource.DriverManagerDataSource">
<property name="driverClassName" value="org.postgresql.Driver" />
<property name="url" value="jdbc:postgresql://localhost:5432/postgres" />
<property name="username" value="postgres" />
<property name="password" value="password" />
</bean>

<bean id="jdbcTemplate" class="org.springframework.jdbc.core.JdbcTemplate">
<property name="dataSource" ref="ds"></property>
</bean>

<bean id="mymovie" class="org.me.MovieDAO1">
<property name="jdbcTemplate" ref="jdbcTemplate"></property>
</bean>
</beans>
```

MovieTest1.java

```
package org.me;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

public class MovieTest1 {


	private static ApplicationContext appCon;

	public static void main(String[] args) {

		// TODO Auto-generated method stub

		appCon = new ClassPathXmlApplicationContext("appctx1.xml");

		MovieDAO1 m1=(MovieDAO1)appCon.getBean("mymovie");

	   m1.saveMovieByPreparedStatement(new Movie1(5,"Bhaijaan","Slemon"));

	}

}
```

Output :



	mid [PK] integer	title character varying (50)	actor character varying (50)
1	10	war	hritik
2	11	Mirzapur	P
3	4	Inception	Cobb
4	5	Bhaijaan	Slemon

Problem Statement 3 : Write a program in Spring JDBC to demonstrate ResultSetExtractor Interface.

Solution :

Movie2.java

```
package org.me;

public class Movie2 {

	int mid;
	String title;
	String actor;
	public int getMid() {
		return mid;
	}
	public void setMid(int mid) {
		this.mid = mid;
	}
	public String getTitle() {
		return title;
	}
	public void setTitle(String title) {
		this.title = title;
	}
	public String getActor() {
		return actor;
	}
	public void setActor(String actor) {
		this.actor = actor;
	}
	public String toString(){
	   return mid+" "+title+" "+actor;

}
}
```

MovieDAO2.java

```
package org.me;

import java.sql.ResultSet;

import java.sql.SQLException;

import java.util.ArrayList;
import java.util.List;
import org.springframework.dao.DataAccessException;
import org.springframework.jdbc.core.JdbcTemplate;
import org.springframework.jdbc.core.ResultSetExtractor;
public class MovieDAO2 {
        JdbcTemplate jdbcTemplate;

        public void setJdbcTemplate(JdbcTemplate jdbcTemplate) {
                this.jdbcTemplate = jdbcTemplate;
        }
        public List<Movie2> getAllMovie(){
                 return jdbcTemplate.query("select * from mymovies1",new
ResultSetExtractor<List<Movie2>>(){
                   @Override
                    public List<Movie2> extractData(ResultSet rs) throws SQLException,
                         DataAccessException {

                      List<Movie2> list=new ArrayList<Movie2>();
                      while(rs.next()){
                         Movie2 e=new Movie2();
                         e.setMid(rs.getInt(1));
                         e.setTitle(rs.getString(2));
                         e.setActor(rs.getString(3));
                         list.add(e);
                      }
                      return list;
                      }
                   });
                  }
}
```

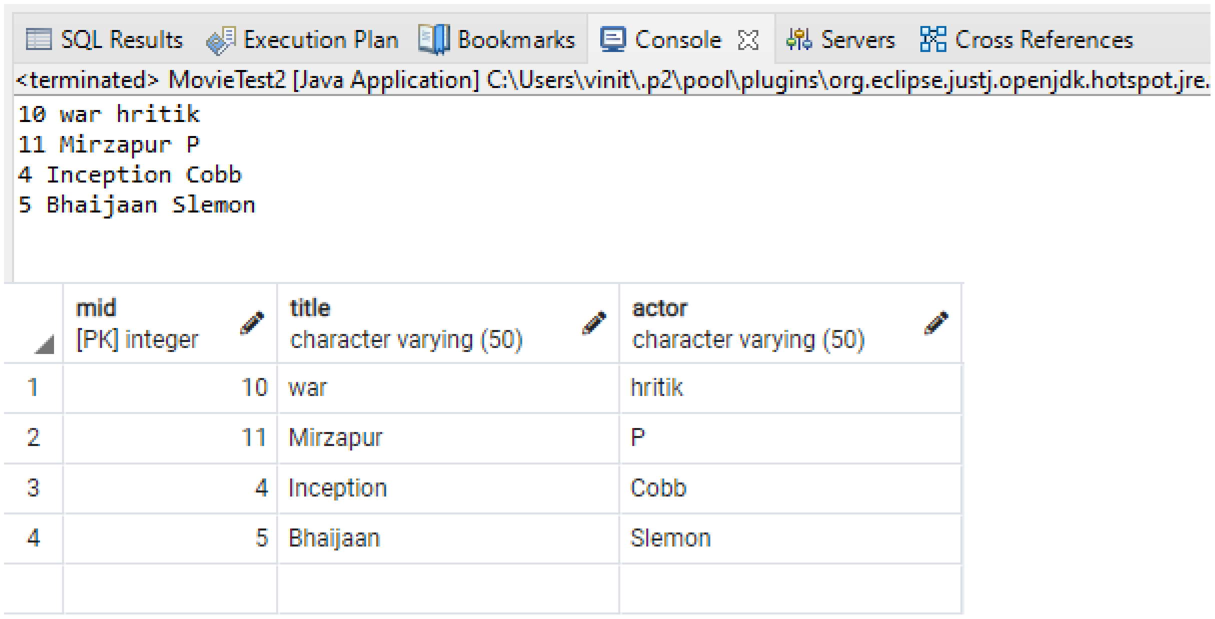
appctx2.java

```
<?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.xsd">

<bean id="ds" class="org.springframework.jdbc.datasource.DriverManagerDataSource">
<property name="driverClassName" value="org.postgresql.Driver" />
<property name="url" value="jdbc:postgresql://localhost:5432/postgres" />
<property name="username" value="postgres" />
<property name="password" value="password" />
</bean>

<bean id="jdbcTemplate" class="org.springframework.jdbc.core.JdbcTemplate">
<property name="dataSource" ref="ds"></property>
</bean>

<bean id="mymovie" class="org.me.MovieDAO2">
<property name="jdbcTemplate" ref="jdbcTemplate"></property>
</bean>
</beans>
```

MovieTest2.java

```
package org.me;

import java.util.List;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

public class MovieTest2 {

        private static ApplicationContext appCon;

        public static void main(String[] args) {

                appCon = new ClassPathXmlApplicationContext("appctx2.xml");

                MovieDAO2 m1=(MovieDAO2)appCon.getBean("mymovie");

                List<Movie2> list=m1.getAllMovie();
        for(Movie2 e:list)
            System.out.println(e);
    }
}
```

Output :



```
<terminated> MovieTest2 [Java Application] C:\Users\vinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.
10 war hritik
11 Mirzapur P
4 Inception Cobb
5 Bhaijaan Slemon
```

	mid [PK] integer	title character varying (50)	actor character varying (50)
1	10	war	hritik
2	11	Mirzapur	P
3	4	Inception	Cobb
4	5	Bhaijaan	Slemon

Problem Statement 9.4 : Write a program to demonstrate RowMapper interface to fetch the records from the database.

Solution :

Filename-Movie.java

```
public class Movie3 {
	int mid;
	String title;
	String actor;
	public Movie3(int mid, String title, String actor) {
		super();
		this.mid = mid;
		this.title = title;
		this.actor = actor;
	}

	public Movie3() {
		super();
		// TODO Auto-generated constructor stub
	}
	public int getMid() {
		return mid;
	}
	public void setMid(int mid) {
		this.mid = mid;
	}
	public String getTitle() {
		return title;
	}
	public void setTitle(String title) {
		this.title = title;
	}
	public String getActor() {
		return actor;
	}
	public void setActor(String actor) {
		this.actor = actor;
	}
}
```

Filename- MovieDAO3.java

```
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.List;
import org.springframework.jdbc.core.JdbcTemplate;
import org.springframework.jdbc.core.RowMapper;

public class MovieDAO3 {
	JdbcTemplate jdbcTemplate;



	public void setJdbcTemplate(JdbcTemplate jdbcTemplate) {
		this.jdbcTemplate = jdbcTemplate;
```

```
        }
        public List<Movie2> getAllEmployeesRowMapper(){
                return jdbcTemplate.query("select * from movies",new RowMapper<Movie2>(){
                 @Override
                 public Movie2 mapRow(ResultSet rs, int rownumber) throws SQLException {
                        Movie2 e=new Movie2();
                   e.setMid(rs.getInt(1));
                   e.setTitle(rs.getString(2));
                   e.setActor(rs.getString(3));
                   return e;
                 }
                 });              }
}
```

Filename- appctx3.xml

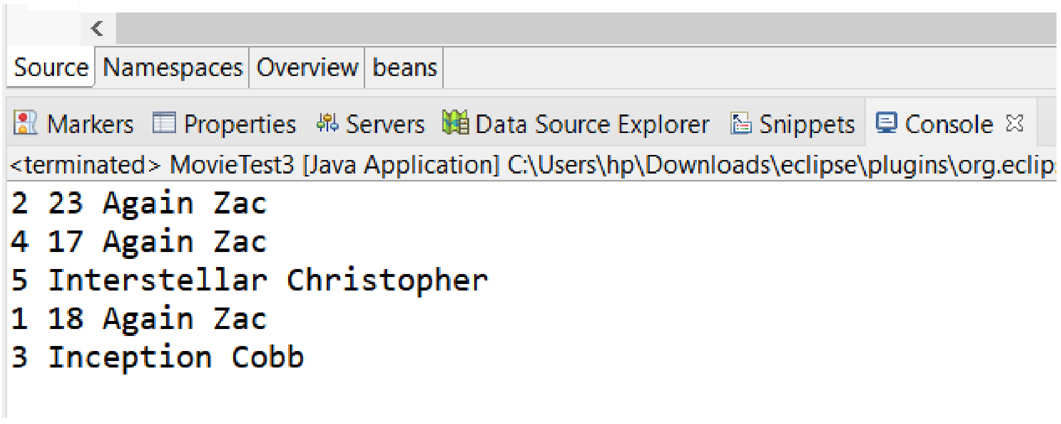
```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans.xsd">


<bean id="ds" class="org.springframework.jdbc.datasource.DriverManagerDataSource">
<property name="driverClassName" value="org.postgresql.Driver" />
<property name="url" value="jdbc:postgresql://localhost:5434/postgres" />
<property name="username" value="postgres" />
<property name="password" value="password" />
</bean>
<bean id="jdbcTemplate" class="org.springframework.jdbc.core.JdbcTemplate">
```

```
<property name="dataSource" ref="ds"></property>

</bean>

<bean id="mymovie" class="MovieDAO3">

<property name="jdbcTemplate" ref="jdbcTemplate"></property>

</bean>

</beans>
```

Filename- MovieTest3.java

```
import java.util.List;

import org.springframework.context.ApplicationContext;

import org.springframework.context.support.ClassPathXmlApplicationContext;

public class MovieTest3 {

        private static ApplicationContext appCon;

        public static void main(String[] args) {

                // TODO Auto-generated method stub

                appCon = new ClassPathXmlApplicationContext("appctx3.xml");

                MovieDAO3 m1=(MovieDAO3)appCon.getBean("mymovie");

                 List<Movie2> list=m1.getAllEmployeesRowMapper();


                    for(Movie2 e:list)

                        System.out.println(e);

        }}
```

OUTPUT-



```
<terminated> MovieTest3 [Java Application] C:\Users\hp\Downloads\eclipse\plugins\org.eclip
2 23 Again Zac
4 17 Again Zac
5 Interstellar Christopher
1 18 Again Zac
3 Inception Cobb
```