Assignment-6 CS313

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1 Part A

1.1 Problem 1

Extracting and importing the project into the eclipse workspace using the Handout given with the project.

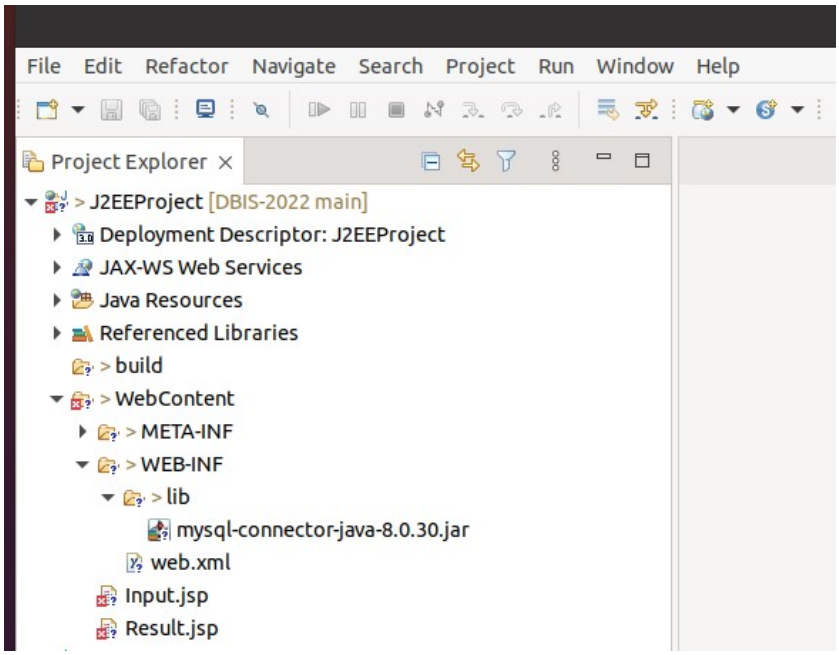

Figure 1: Importing the Project

1.2 Problem 2 and 3

The project has been written using jsp/servlet. It takes student details from the jsp file and adds to the database using servlet. Then displays the success message on the jsp file.

```
'

//getting input values from jsp page
String id = request.getParameter("id");
String name = request.getParameter("name");
String dept_name = request.getParameter("dept_name");
int tot_cred = Integer.parseInt(request.getParameter("tot_cred"));


Connection con = null;
String url = "jdbc:mysql://localhost:3306/university"; //MySQL URL and followed by the database name
String username = "root"; //MySQL username
String password = "MyPassword@123"; //MySQL password

Class.forName("com.mysql.jdbc.Driver");
con = DriverManager.getConnection(url, username, password); //attempting to connect to MySQL database
System.out.println("Printing connection object "+con);

//Prepared Statement to add student data
PreparedStatement st = con .prepareStatement("insert into student values(?, ?,?,?)");
st.setString(1,id);
st.setString(2,name);
st.setString(3,dept_name);
st.setInt(4,tot_cred);
int result=st.executeUpdate();

//Checks if insert is successful.If yes,then redirects to Result.jsp page
if(result>0)
```

Figure 2: Code Modification

The Execution flow is shown in the Figure 3 below.

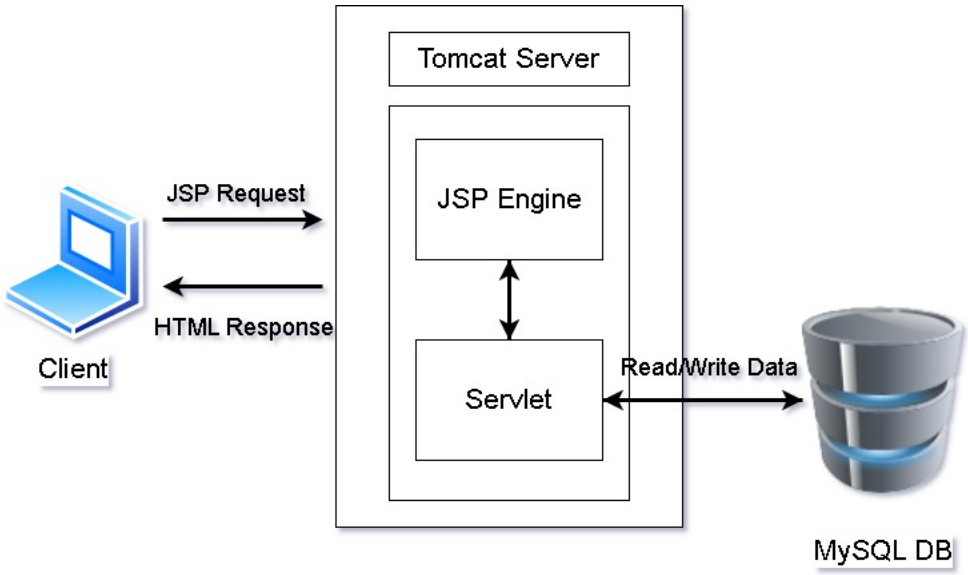

Figure 3: Execution FLow

Adding of student details and the result page is shown in Figure 4 below.

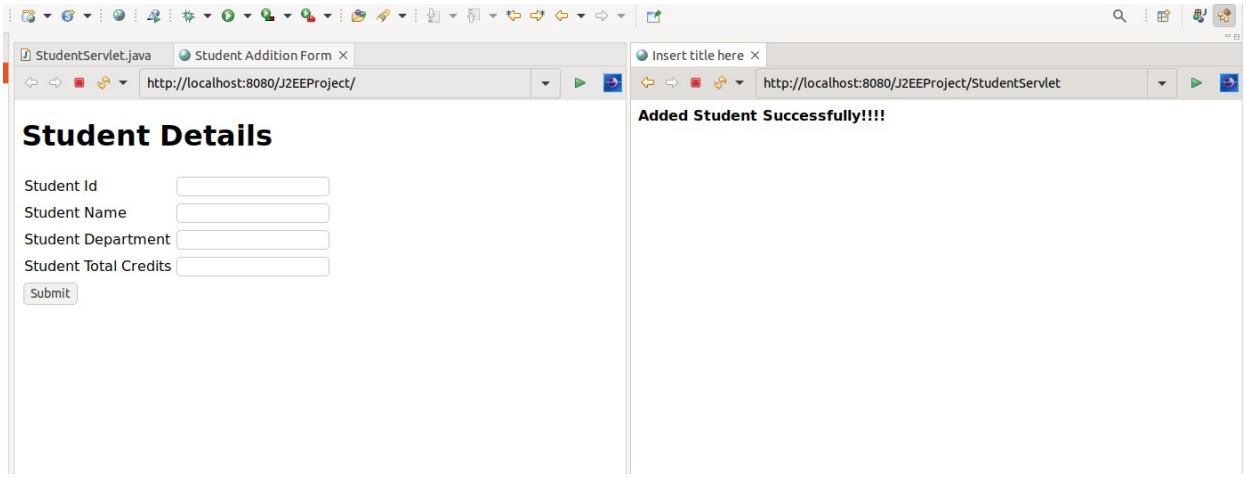

Figure 4: Execution

2 Part B

2.1 Problem 1

The objective of this part was to design a tables with appropriate schemas. The Schema is shown below.

```sql
create database library;
use library;

-- Create Book Table
create table book(
    book_id int,
    title varchar(50) not null,
    category varchar(20),
    author varchar(30) not null,
    primary key(book_id)
);


-- Create Student Table
create table student(
    student_id int,
    name varchar(30) not null,
    dept_name varchar(20),
    year int check(year > 1701 and year < 2100),
    semester varchar(6) check(semester in ('Fall', 'Winter', 'Spring', 'Summer')),
    primary key(student_id)
);

-- Create Issue table
create table issue(
    student_id int not null,
    book_id int not null,
    issue_date DATE not null,
    return_date DATE,
    primary key(student_id, book_id, issue_date),
    foreign key(student_id) references student(student_id) on delete cascade,
    foreign key(book_id) references book(book_id) on delete cascade
);
```

```
mysql> source task1.sql;
Query OK, 1 row affected (0.01 sec)

Database changed
Query OK, 0 rows affected (0.01 sec)

Query OK, 0 rows affected (0.02 sec)

Query OK, 0 rows affected (0.03 sec)

mysql> show tables;
+-------------------+
| Tables_in_library |
+-------------------+
| book              |
| issue             |
| student           |
+-------------------+
3 rows in set (0.00 sec)
```

Figure 5: Relevant Tables

2.2 Problem 2

Once the tables were created, data was loaded into the tables. The code for insertion in provided in **Part-B** folder named, as **task2.sql**

```
mysql> select * from book;
+---------+-----------------------------------------+--------------------+--------------------------+
| book_id | title                                   | category           | author                   |
+---------+-----------------------------------------+--------------------+--------------------------+
|       1 | A Tale of Two Cities                    | Historical Fiction | Charles Dickens          |
|       2 | The Little Prince                       | Novella            | Antoine de Saint-Exupery |
|       3 | Harry Potter and the Philosopher's Stone | Fantasy           | J.K. Rowling             |
|       4 | And Then There Were None                | Mystery            | Agatha Christie          |
|       5 | Dream of the Red Chamber                | Family Saga        | Cao Xeuqin               |
|       6 | The Hobbit                              | Fantasy            | J.R.R. Tolkien           |
+---------+-----------------------------------------+--------------------+--------------------------+
6 rows in set (0.00 sec)

mysql> select * from student;
+------------+---------------+-----------+------+----------+
| student_id | name          | dept_name | year | semester |
+------------+---------------+-----------+------+----------+
|          1 | Shashank P    | CSE       | 2020 | Fall     |
|          2 | Anand Hegde   | CSE       | 2021 | Summer   |
|          3 | Thati Bhanoday | EE       | 2020 | Winter   |
|          4 | Udayansh      | EE        | 2022 | Spring   |
|          5 | Veeresh       | MMAE      | 2019 | Winter   |
|          6 | Vaibhav       | MMAE      | 2018 | Spring   |
+------------+---------------+-----------+------+----------+
6 rows in set (0.00 sec)

mysql> select * from issue;
+------------+---------+------------+-------------+
| student_id | book_id | issue_date | return_date |
+------------+---------+------------+-------------+
|          1 |       3 | 2022-10-13 | NULL        |
|          1 |       5 | 2022-09-30 | NULL        |
|          2 |       2 | 2022-02-14 | 2022-02-15  |
|          2 |       6 | 2022-09-24 | 2022-10-01  |
|          3 |       5 | 2022-06-12 | 2022-06-24  |
|          3 |       6 | 2021-07-01 | 2021-07-31  |
|          4 |       1 | 2021-02-23 | 2021-02-25  |
|          4 |       1 | 2022-10-05 | NULL        |
|          5 |       4 | 2020-12-28 | 2021-01-15  |
|          6 |       4 | 2021-02-28 | 2021-03-15  |
+------------+---------+------------+-------------+
10 rows in set (0.00 sec)
```

Figure 6: Relevant Tables

2.3 Problem 3

Then J2EE Project was created with the following specifications

2.3.1 Home.jsp

It contains a selection option, to allow the user to choose between **Adding** or **Issuing** books.

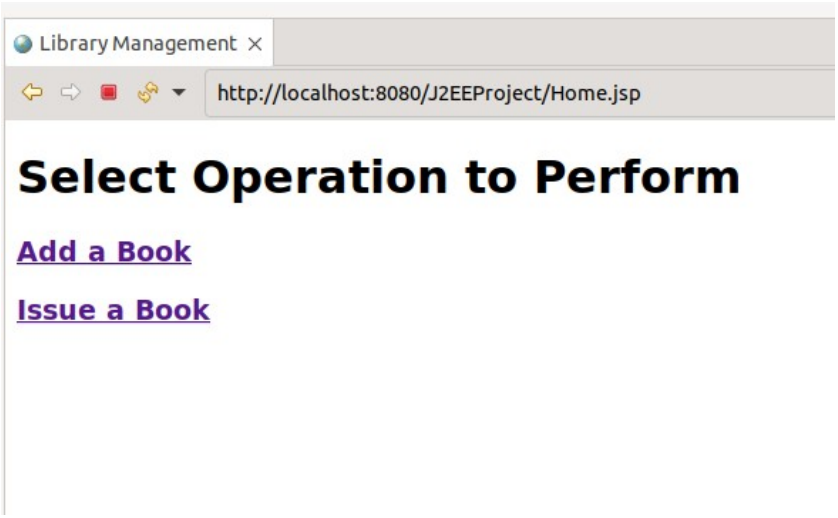

Figure 7: Home Page

2.3.2 Add.jsp

It allows a user to add new books into the databse by entering relevant information about the books. On successful addition of a book, a success message is displayed using **AddResult.jsp**

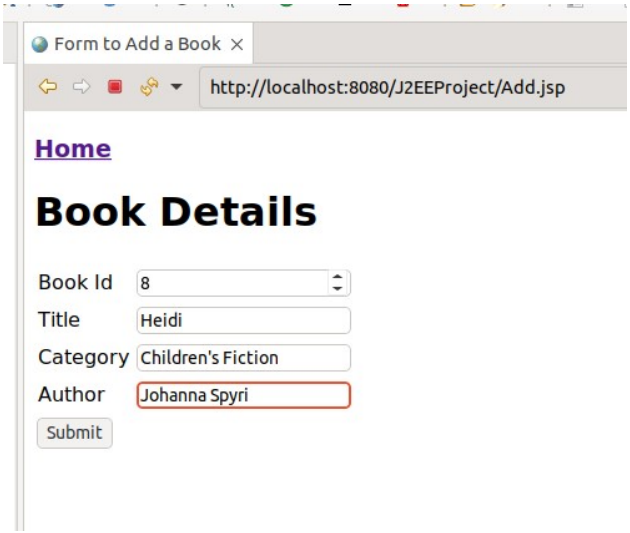

Figure 8: Add Page

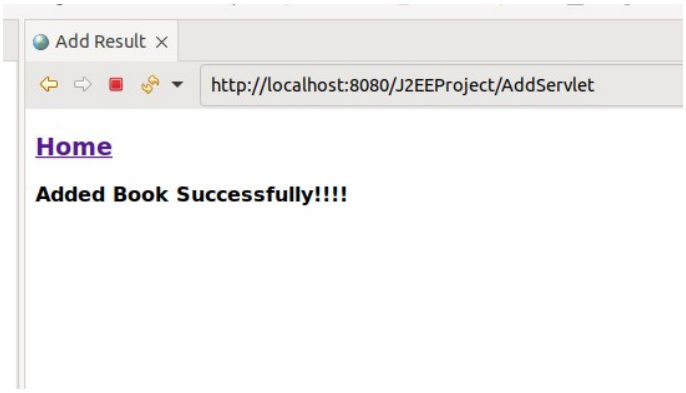

Figure 9: Add Result

2.3.3 Issue.jsp

It allows a user to issue books to students by entering relevant information about the book and the student. On successful issue of a book, a success message is displayed using **IssueResult.jsp**

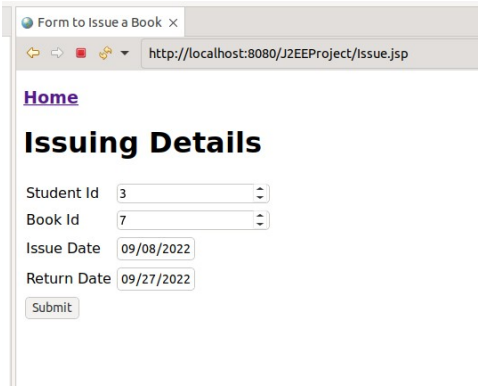

Figure 10: Issue Page

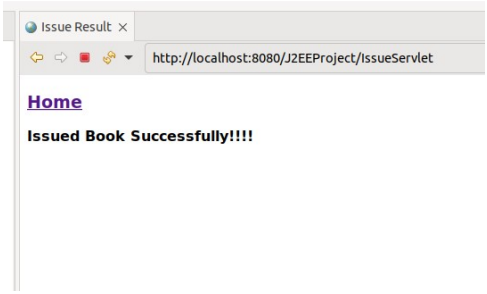

Figure 11: Issue Result

2.3.4 Exception Handling

During addition of a new book or while issuing of books to students, several exceptions can occur. These include

1. Book already exists.
2. Book being issued does not exists.
3. The student to whom the book is issued does not exist.
4. SQL Exceptions due to connection/environment.

The following images show the handling of different execptions.

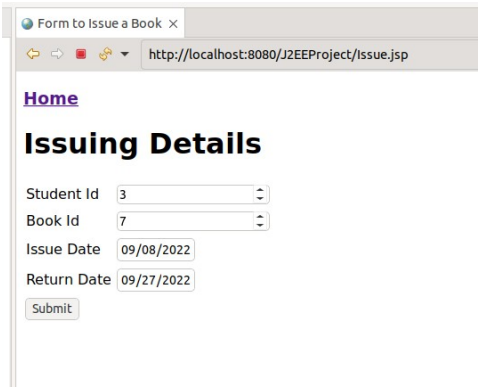

Figure 12: Issue Page

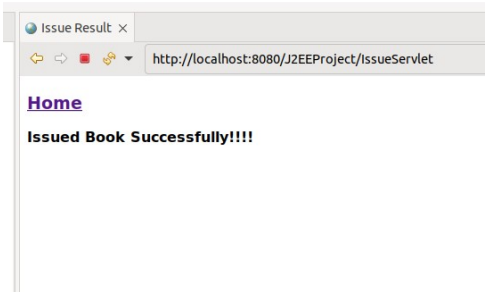

Figure 13: Issue Result