UE20CS352-OOAD MVC-ASSIGNMENT

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MVC Architecture Pattern:

MVC (Model-View-Controller) is an architectural pattern used in software engineering for developing user interfaces. It separates the application into three interconnected components, namely Model, View, and Controller. The Model represents the data and business logic, the View displays the data, and the Controller manages the communication between the Model and the View. MVC architecture pattern helps to create a well-structured and organized application that is easy to maintain and update.

Advantages of MVC Pattern:

1. An improved development process: By using MVC, you can develop in parallel and in a rapid manner. To develop the business logic of an MVC web application, one programmer can work on the view and the other on the controller. Therefore, applications developed using the MVC model can be completed three times faster than those developed using other techniques.

2. Ability To Provide Multiple Views: A model can have multiple views using the MVC Model. MVC development is a great solution for today's increasing demand for new methods of accessing your applications. The approach also limits the amount of code duplication since the display is separated from the data and business logic.

3. Support For Asynchronous Technique: MVC architecture can also be integrated with JavaScript Framework. In other words, MVC applications will be able to work with PDF files, site-specific browsers, and andns. The MVC framework also supports an asynchronous technique that helps developers develop applications that load very quickly.

4. The Modification Does Not Affect The Entire Model: For any web application, the user interface tends to change more frequently than even the business rules of the .net development company. It is obvious that you make frequeThe MVC framework also supports an asynchronous technique that helps developers develop applications that load very quickly.or tablets. Moreover, Therefore, any changes in the Model will not affect the entire architecture

Features of MVC Framework chosen (SPRING BOOT):

Spring Boot is a popular Java-based framework for building web applications, microservices, and other enterprise-level applications. Here are some of its key features:
1).Opinionated Configuration: Spring Boot provides a preconfigured set of dependencies and sensible default configurations, which help developers get started quickly without having to spend time on tedious configuration tasks.
2)Auto-configuration: Spring Boot is designed to automatically configure itself based on the dependencies in the classpath, which makes it easy to set up and reduces the amount of boilerplate code that developers need to write.
3)Embedded Web Server: Spring Boot comes with an embedded web server (Tomcat, Jetty, or Undertow) which simplifies the deployment process by packaging the server with the application.
4)Spring MVC: Spring Boot includes Spring MVC, a powerful framework for building web applications, which simplifies the development of RESTful web services.
5)Actuator: Spring Boot provides an Actuator module that allows developers to monitor and manage the application, including health checks, metrics, and management endpoints.
6)Easy Testing: Spring Boot provides a number of testing tools, including the ability to create mock objects and perform integration tests, which makes it easy to write comprehensive test suites for your application.
7)Production-ready: Spring Boot is designed to be production-ready out of the box, with features like centralized logging, monitoring, and management that simplify the deployment and operation of applications in production.

Problem:

Creating a simple crud app to manage Anime(create,read,update,delete) using spring boot framework.

The two scenarios are
1)create Anime(adding anime)
2)view Anime(displaying the newly created anime)

Model:

Anime.java

```java
J Anime.java U ✕

src > main > java > com > mvcassignment > pes2ug20cs815 > model > J Anime.java > {} com.mvcassignment.pes2ug20cs815.model
1    package com.mvcassignment.pes2ug20cs815.model;
2    💡
3    import javax.persistence.*;
4
5    @Entity
6    @Table(name="ANIME")
7    public class Anime {
8
9        @Id
10       @GeneratedValue(strategy = GenerationType.AUTO)
11       private Long id;
12
13       @Column
14       private String name;
15
16       @Column
17       private int year;
18
19       public Anime() {
20
21       }
22
23       public Long getId() {
24           return id;
25       }
26
27       public void setId(Long id) {
28           this.id = id;
29       }
30
31       public String getName() {
```

J Anime.java U ✕

src > main > java > com > mvcassignment > pes2ug20cs815 > model > J Anime.java > {} com.mvcassignment.pes2ug20cs815.model

```java
32              return name;
33          }
34
35          public void setName(String name) {
36              this.name = name;
37          }
38
39          public int getYear() {
40              return year;
41          }
42
43          public void setYear(int year) {
44              this.year = year;
45          }
46      }
47
```

View:
ViewAnimeList.jsp

```jsp
1   <%@ page language="java" contentType="text/html; charset=ISO-8859-1"
2       pageEncoding="ISO-8859-1"%>
3   <%@ taglib prefix="form" uri="http://www.springframework.org/tags/form"%>
4   <%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core"%>
5
6   <!DOCTYPE html>
7
8   <head>
9       <meta charset="ISO-8859-1">
10      <title>View Anime List</title>
11
12      <link rel="stylesheet"
13              href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
14          <link rel="stylesheet"
15              href="https://cdnjs.cloudflare.com/ajax/libs/toastr.js/latest/toastr.min.css">
16          <script
17              src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
18          <script
19              src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
20          <script
21              src="https://cdnjs.cloudflare.com/ajax/libs/toastr.js/latest/toastr.min.js"></script>
22
23      <style>
24          a{
25              color: white;
26          }
27          a:hover {
28              color: white;
29              text-decoration: none;
30          }
31
```

```css
32        footer {
33          background-color: ☐rgba(0, 0, 0, 0.8);
34          color: ◼white;
35          position: fixed;
36          bottom: 0;
37          left: 0;
38          right: 0;
39          height: 50px;
40          border-top-left-radius: 10px;
41          border-top-right-radius: 10px;
42          display: flex;
43          justify-content: center;
44          align-items: center;
45          z-index: 9999;
46        }
47        table {
48          border: 1px solid ◼#ddd; /* Border color */
49          border-collapse: collapse;
50          width: 100%; /* Table width */
51          margin-bottom: 20px;
52        }
53
54        th, td {
55          text-align: left;
56          padding: 8px;
57        }
58
59        th {
60          background-color: ◼#f2f2f2; /* Table head color */
61        }
62
```

```html
63    </style>
64
65    </head>
66    <body>
67
68        <div class="container">
69
70            <h1 class="p-3"> Anime List</h1>
71
72            <form:form>
73
74                <table class="table table-bordered">
75                    <tr>
76                        <th>Id</th>
77                        <th>Name</th>
78                        <th>Year</th>
79                        <th>Edit</th>
80                        <th>Delete</th>
81                    </tr>
82
83                    <c:forEach var="anime" items="${animeList}">
84                        <tr>
85                            <td>${anime.id}</td>
86                            <td>${anime.name}</td>
87                            <td>${anime.year}</td>
88                            <td><button type="button" class="btn btn-success">
89                                <a href="/editAnime/${anime.id}">Edit</a>
90                            </button></td>
91                            <td><button type="button" class="btn btn-danger">
92                                <a href="/deleteAnime/${anime.id}">Delete</a>
93                            </button></td>
```

```
 94                        </tr>
 95
 96                    </c:forEach>
 97
 98                </table>
 99
100            </form:form>
101
102            <button type="button" class="btn btn-primary btn-block">
103                <a href="/addAnime">Add New Anime</a>
104            </button>
105
106        </div>
107
108        <footer class="text-center mt-5">
109            <p>&copy; Done by Vijay J(PES2UG20CS815)</p>
110        </footer>
111
112        <script th:inline="javascript">
113                window.onload = function() {
114
115                    var msg = "${message}";
116                    console.log(msg);
117                    if (msg == "Save Success") {
118                        Command: toastr["success"]("Anime added successfully!!")
119                    } else if (msg == "Delete Success") {
120                        Command: toastr["success"]("Anime deleted successfully!!")
121                    } else if (msg == "Delete Failure") {
122                        Command: toastr["error"]("Some error occurred, couldn't delete user")
123                    } else if (msg == "Edit Success") {
124                        Command: toastr["success"]("Anime updated successfully!!")
```

```
125                    }
126
127                    toastr.options = {
128                        "closeButton": true,
129                        "debug": false,
130                        "newestOnTop": false,
131                        "progressBar": true,
132                        "positionClass": "toast-top-right",
133                        "preventDuplicates": false,
134                        "showDuration": "300",
135                        "hideDuration": "1000",
136                        "timeOut": "5000",
137                        "extendedTimeOut": "1000",
138                        "showEasing": "swing",
139                        "hideEasing": "linear",
140                        "showMethod": "fadeIn",
141                        "hideMethod": "fadeOut"
142                    }
143                }
144        </script>
145
146    </body>
147
148    </html>
```

AddAnime.jsp

```jsp
1   <%@ page language="java" contentType="text/html; charset=ISO-8859-1"
2       pageEncoding="ISO-8859-1"%>
3   <%@ taglib prefix="form" uri="http://www.springframework.org/tags/form"%>
4   <%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core"%>
5
6   <!DOCTYPE html>
7
8   <head>
9       <meta charset="ISO-8859-1">
10      <title>Add Anime</title>
11
12      <link rel="stylesheet"
13          href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
14      <link rel="stylesheet"
15          href="https://cdnjs.cloudflare.com/ajax/libs/toastr.js/latest/toastr.min.css">
16      <script
17          src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
18      <script
19          src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
20      <script
21          src="https://cdnjs.cloudflare.com/ajax/libs/toastr.js/latest/toastr.min.js"></script>
22
23  </head>
24  <style>
25          footer {
26      background-color: ☐rgba(0, 0, 0, 0.8);
27      color: ☐white;
28      position: fixed;
29      bottom: 0;
30      left: 0;
31      right: 0;
```

```jsp
32      height: 50px;
33      border-top-left-radius: 10px;
34      border-top-right-radius: 10px;
35      display: flex;
36      justify-content: center;
37      align-items: center;
38      z-index: 9999;
39  }
40  </style>
41  <body>
42
43      <div class="container">
44
45          <h1 class="p-3"> Add an Anime </h1>
46
47          <form:form action="/saveAnime" method="post" modelAttribute="anime">
48
49              <div class="row">
50                  <div class="form-group col-md-12">
51                      <label class="col-md-3" for="name">Name</label>
52                      <div class="col-md-6">
53                          <form:input type="text" path="name" id="name"
54                              class="form-control input-sm" required="required" />
55                      </div>
56                  </div>
57              </div>
58
59              <div class="row">
60                  <div class="form-group col-md-12">
61                      <label class="col-md-3" for="year">Year</label>
62                      <div class="col-md-6">
```

```jsp
 63                            <form:input type="number" path="year" id="year"
 64                                class="form-control input-sm" required="required" />
 65                        </div>
 66                    </div>
 67                </div>
 68
 69                <div class="row p-2">
 70                    <div class="col-md-2">
 71                        <button type="submit" value="Register" class="btn btn-success">Save</button>
 72                    </div>
 73                </div>
 74
 75            </form:form>
 76
 77            <footer class="text-center mt-5">
 78                <p>&copy; Done by Vijay J(PES2UG20CS815)</p>
 79            </footer>
 80
 81        </div>
 82
 83        <script th:inline="javascript">
 84                window.onload = function() {
 85
 86                    var msg = "${message}";
 87                    console.log(msg);
 88                    if (msg == "Save Failure") {
 89                        Command: toastr["error"]("Something went wrong with the save.")
 90                    }
 91
 92                    toastr.options = {
 93                        "closeButton": true,
```

```jsp
 94                        "debug": false,
 95                        "newestOnTop": false,
 96                        "progressBar": true,
 97                        "positionClass": "toast-top-right",
 98                        "preventDuplicates": false,
 99                        "showDuration": "300",
100                        "hideDuration": "1000",
101                        "timeOut": "5000",
102                        "extendedTimeOut": "1000",
103                        "showEasing": "swing",
104                        "hideEasing": "linear",
105                        "showMethod": "fadeIn",
106                        "hideMethod": "fadeOut"
107                    }
108                }
109            </script>
110
111    </body>
112
113    </html>
114
```

EditAnime.jsp

```jsp
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<%@ taglib prefix="form" uri="http://www.springframework.org/tags/form"%>
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core"%>

<!DOCTYPE html>

<head>
    <meta charset="ISO-8859-1">
    <title>Edit Anime</title>

    <link rel="stylesheet"
        href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
        <link rel="stylesheet"
            href="https://cdnjs.cloudflare.com/ajax/libs/toastr.js/latest/toastr.min.css">
        <script
            src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
        <script
            src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
        <script
            src="https://cdnjs.cloudflare.com/ajax/libs/toastr.js/latest/toastr.min.js"></script>

</head>
<style>
    body {
        background-image: url("path/to/image.jpg");
        background-repeat: no-repeat;
        background-size: cover;
        background-position: center;
    }
```

```jsp
        background-color: rgba(0, 0, 0, 0.8);
        color: white;
        position: fixed;
        bottom: 0;
        left: 0;
        right: 0;
        height: 50px;
        border-top-left-radius: 10px;
        border-top-right-radius: 10px;
        display: flex;
        justify-content: center;
        align-items: center;
        z-index: 9999;
    }
</style>
<body>

    <div class="container">

        <h1 class="p-3"> Edit Anime </h1>

        <form:form action="/editSaveAnime" method="post" modelAttribute="anime">

                <div class="row">
                    <div class="form-group col-md-12">
                        <div class="col-md-6">
                            <form:hidden path="id" class="form-control input-sm" />
                        </div>
                    </div>
                </div>
```

```jsp
                                <div class="row">
                                    <div class="form-group col-md-12">
                                        <label class="col-md-3" for="name">Name</label>
                                        <div class="col-md-6">
                                            <form:input type="text" path="name" id="name"
                                                class="form-control input-sm" required="required" />
                                        </div>
                                    </div>
                                </div>

                                <div class="row">
                                    <div class="form-group col-md-12">
                                        <label class="col-md-3" for="year">Year</label>
                                        <div class="col-md-6">
                                            <form:input type="number" path="year" id="year"
                                                class="form-control input-sm" required="required" />
                                        </div>
                                    </div>
                                </div>

                                <div class="row p-2">
                                    <div class="col-md-2">
                                        <button type="submit" value="Register" class="btn btn-success">Save</but
                                    </div>
                                </div>

                        </form:form>

                        <footer class="text-center mt-5">
                            <p>&copy; Done by Vijay J(PES2UG20CS815)</p>
                        </footer>
                </div>

        <script th:inline="javascript">
                    window.onload = function() {

                        var msg = "${message}";
                        console.log(msg);
                        if (msg == "Edit Failure") {
                            Command: toastr["error"]("Something went wrong with the edit.")
                        }
                        toastr.options = {
                            "closeButton": true,
                            "debug": false,
                            "newestOnTop": false,
                            "progressBar": true,
                            "positionClass": "toast-top-right",
                            "preventDuplicates": false,
                            "showDuration": "300",
                            "hideDuration": "1000",
                            "timeOut": "5000",
                            "extendedTimeOut": "1000",
                            "showEasing": "swing",
                            "hideEasing": "linear",
                            "showMethod": "fadeIn",
                            "hideMethod": "fadeOut"
                        }
                    }
                </script>
        </body>
    </html>
```

Controller:
AnimeController.java

```java
package com.mvcassignment.pes2ug20cs815.controller;

import com.mvcassignment.pes2ug20cs815.model.Anime;
import com.mvcassignment.pes2ug20cs815.service.AnimeService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Controller;
import org.springframework.ui.Model;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.ModelAttribute;
import org.springframework.web.bind.annotation.PathVariable;
import org.springframework.web.bind.annotation.PostMapping;
import org.springframework.web.servlet.mvc.support.RedirectAttributes;

@Controller
public class AnimeController {

    @Autowired
    AnimeService animeService;

    @GetMapping({"/", "/viewAnimeList"})
    public String viewAnimeList(@ModelAttribute("message") String message, Model model)
        model.addAttribute("animeList", animeService.getAllAnime());
        model.addAttribute("message", message);

        return "ViewAnimeList";
    }

    @GetMapping("/addAnime")
    public String addAnime(@ModelAttribute("message") String message, Model model) {
        model.addAttribute("anime", new Anime());
        model.addAttribute("message", message);
```

```java
        return "AddAnime";
    }

    @PostMapping("/saveAnime")
    public String saveAnime(Anime anime, RedirectAttributes redirectAttributes) {
        if (animeService.saveOrUpdateAnime(anime)) {
            redirectAttributes.addFlashAttribute("message", "Save Success");
            return "redirect:/viewAnimeList";
        }

        redirectAttributes.addFlashAttribute("message", "Save Failure");
        return "redirect:/addAnime";
    }

    @GetMapping("/editAnime/{id}")
    public String editAnime(@PathVariable Long id, Model model) {
        model.addAttribute("anime", animeService.getAnimeById(id));

        return "EditAnime";
    }

    @PostMapping("/editSaveAnime")
    public String editSaveAnime(Anime anime, RedirectAttributes redirectAttributes) {
        if (animeService.saveOrUpdateAnime(anime)) {
            redirectAttributes.addFlashAttribute("message", "Edit Success");
            return "redirect:/viewAnimeList";
        }

        redirectAttributes.addFlashAttribute("message", "Edit Failure");
        return "redirect:/editAnime/" + anime.getId();
```

```java
        }

        @GetMapping("/deleteAnime/{id}")
        public String deleteAnime(@PathVariable Long id, RedirectAttributes redirectAttributes) {
            if (animeService.deleteAnime(id)) {
                redirectAttributes.addFlashAttribute("message", "Delete Success");
            } else {
                redirectAttributes.addFlashAttribute("message", "Delete Failure");
            }

            return "redirect:/viewAnimeList";
        }
}
```

repo:
IAnimeRepository.java

```java
package com.mvcassignment.pes2ug20cs815.repo;

import com.mvcassignment.pes2ug20cs815.model.Anime;
import org.springframework.data.jpa.repository.JpaRepository;
import org.springframework.stereotype.Repository;

@Repository
public interface IAnimeRepository extends JpaRepository<Anime, Long> {
}
```
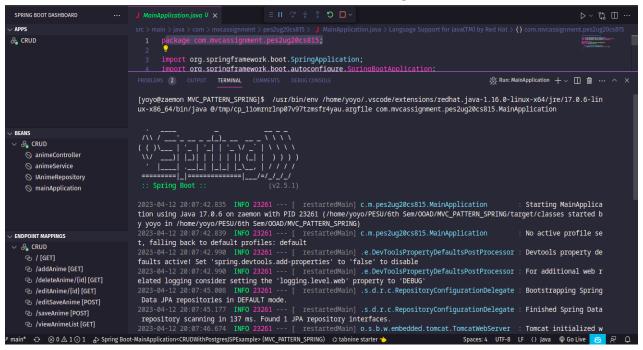
service:
AnimeService.java

```java
package com.mvcassignment.pes2ug20cs815.service;

import com.mvcassignment.pes2ug20cs815.model.Anime;
import com.mvcassignment.pes2ug20cs815.repo.IAnimeRepository;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import java.util.ArrayList;
import java.util.List;

@Service
public class AnimeService {

    @Autowired
    IAnimeRepository animeRepo;

    public List<Anime> getAllAnime() {
        List<Anime> animeList = new ArrayList<>();
        animeRepo.findAll().forEach(anime -> animeList.add(anime));

        return animeList;
    }

    public Anime getAnimeById(Long id) {
        return animeRepo.findById(id).get();
    }

    public boolean saveOrUpdateAnime(Anime anime) {
        Anime updatedAnime = animeRepo.save(anime);

        if (animeRepo.findById(updatedAnime.getId()) != null) {
            return true;
        }

        return false;
    }

    public boolean deleteAnime(Long id) {
        animeRepo.deleteById(id);

        if (animeRepo.findById(id) != null) {
            return true;
        }

        return false;
    }
}
```
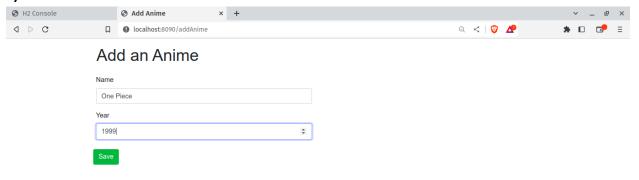
MainApplication.java

```java
package com.mvcassignment.pes2ug20cs815;

import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;
import org.springframework.context.annotation.ComponentScan;

@SpringBootApplication
@ComponentScan("com.mvcassignment.pes2ug20cs815")
public class MainApplication {

    public static void main(String[] args) {
        SpringApplication.run(MainApplication.class, args);
    }

}
```
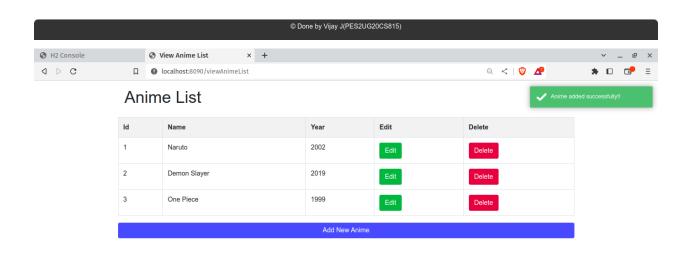
Output ScreenShots:
1)Screenshot of console with application running

2) Screenshot of UIs related to the two scenarios with values.

3)Screenshot of database contents