CS545 Final Exam

Professor Rujuan Xing

Student Id: ________________________ **Name:**___________________________

The exam takes 2 hours. Total score is 60.

1-5 (5)	6 (5)	7 (10)	5 (10)	6 (28)	SCI (2)	Total (60)

Please read the exam policy before you start the exam.

Exam Policy:

There is no tolerance policy for exams. **You will be asked to leave the exam room immediately without a warning** once you do the following things which mean you'll get **NC**.

1. You are caught cheating or trying to cheat.
2. Answers should be written with a Pen or Pencil, but if you want to use a pencil please bring your own eraser and sharpener. You're not allowed to borrow from other students or proctors during exam.
3. All mobile phones should be turned off and submitted along with your luggage at the beginning of the exam.
4. Restroom policy:
   4.1 No phones
   4.2 Only 5 minutes
   4.3 Not allowed to go to restroom after someone submit paper
5. You're not allowed to go out room for water.
6. All your answers must be written on your exam paper.

Please write down your answer clearly. If I cannot read your answer, you'll not get credit.

Good luck!

PART I (5 points): True/False Questions

1. @ExceptionHandler declares the class of exception handled by the method.

   T F ____

2. @ResponseStatus Exceptions cannot be handled by @ControllerAdvice.

   T F ____

3. Method level authorization is less important than URL authorization.

   T F ____

4. To determine the language of a user, the Client HTTP Accept-Language header can be used.

   T F ____

5. Spring MVC provides support for file uploading. To enable it, the only thing that needs to be done is to declare the tag with enctype="multipart/form-data" in form.

   T F ____

PART II (15 points): Short Answer Questions

6. (5 points) What are the ways to handle Exception in Spring MVC? Provide code to explain.

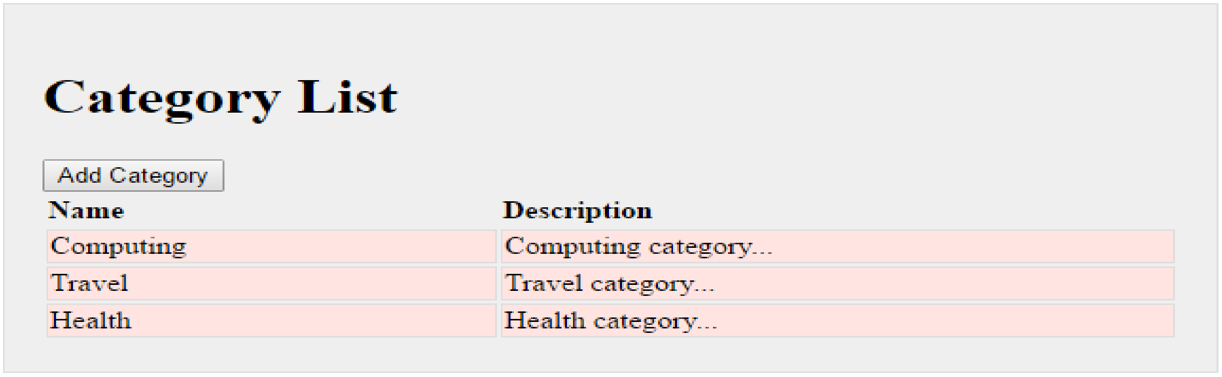
7. (10 points) Cross cutting concerns are an important technology used in Spring & Spring MVC.
   Explain the concept of Interceptors used in Spring MVC. What is an interceptor? How are multiple interceptors associated with a resource handled? Explain how interceptors are used for Security authorization and Exception handling.

   Below is an example configuration of a custom interceptor to further help in your explanation. Explain the configuration. Where/when [in this example] is the interceptor invoked? What are the methods that VolunteerInterceptor.java must implement?

```
<mvc:interceptors>
      <mvc:interceptor>
            <mvc:mapping path="/home/**" />
            <bean class="mum.edu.interceptor.VolunteerInterceptor" />
      </mvc:interceptor>
</mvc:interceptors>
```

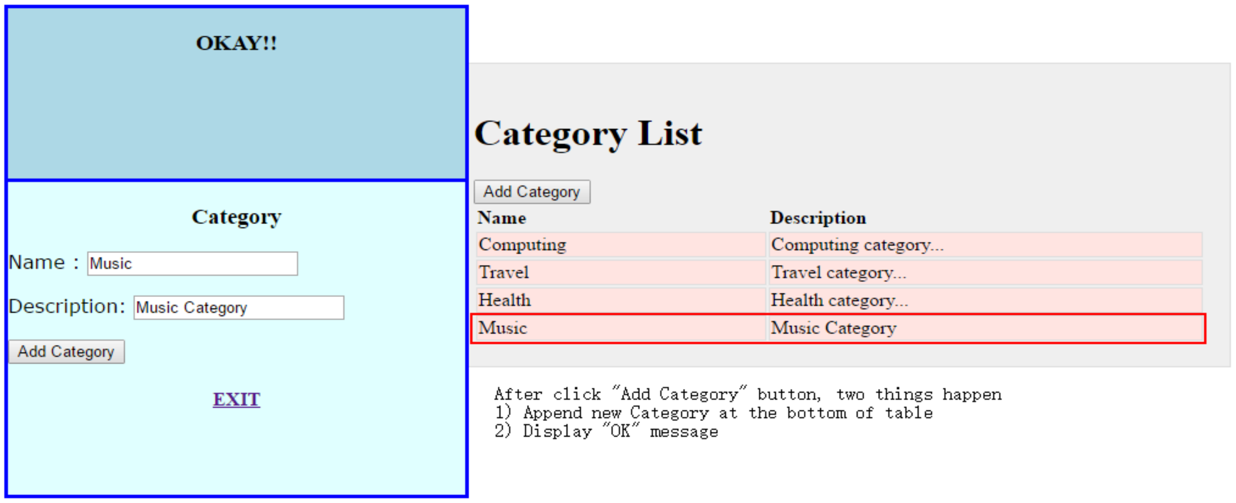
PART III (38 points): Programming Questions

8. (10 Points) This problem involves a Restful Web Service implementation. The Restful service is responsible for the "Add Category" function on the Category List Page. <u>Tasks:</u>
    1. Complete the `CategoryController`
    2. Complete the `AJAX` function.



Category List

Name	Description
Computing	Computing category...
Travel	Travel category...
Health	Health category...



OKAY!!

Category

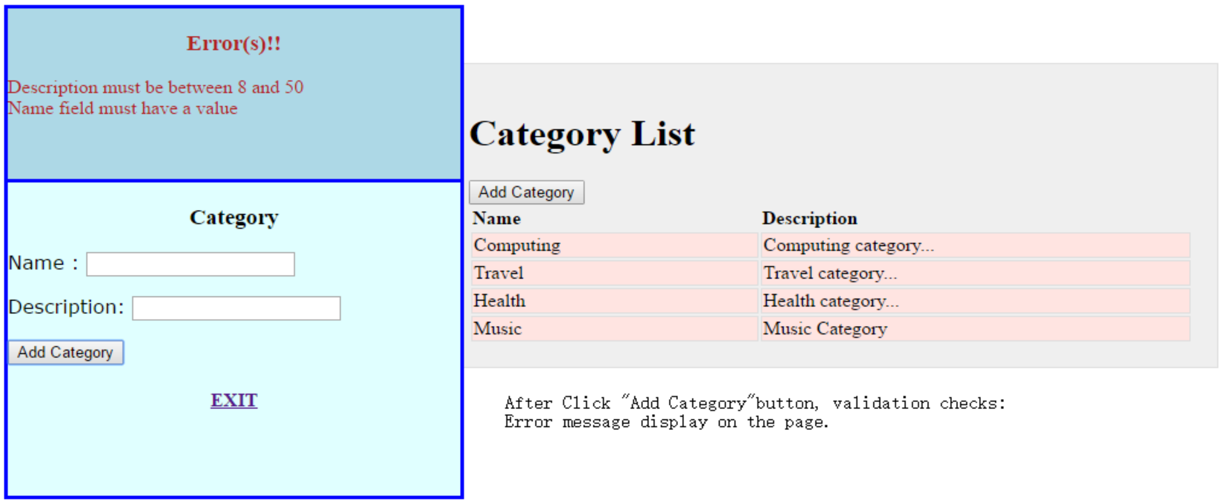
Name : Music

Description: Music Category

Category List

Name	Description
Computing	Computing category...
Travel	Travel category...
Health	Health category...
Music	Music Category

```
After click "Add Category" button, two things happen
1) Append new Category at the bottom of table
2) Display "OK" message
```



Error(s)!!

Description must be between 8 and 50
Name field must have a value

Category

Name :

Description:

Category List

Name	Description
Computing	Computing category...
Travel	Travel category...
Health	Health category...
Music	Music Category

```
After Click "Add Category"button, validation checks:
Error message display on the page.
```

DomainErrors.java

This is the Object that is the error payload sent in response to the AJAX call JUST like the Lab in class. It contains a String errorType and a list of error messages. As a reminder, here is how you load it up with errors on the server:

```
DomainErrors errors = new DomainErrors();
errors.setErrorType("CategoryValidationError");
for (FieldError fieldError : fieldErrors) {
   DomainError error =
         new
   DomainError(messageAccessor.getMessage(fieldError));
        errors.addError(error);
}
```

CategoryList.jsp – you might need this file for reference in your AJAX success and error callback function.

```
<table style="width: 100%;">
      <tr>
            <th style="width: 40%;">Name</th>
            <th style="width: 60%;">Description</th>
      </tr>
      <c:forEach items="${categories}" var="category">
            <tr>
                  <td>${category.name}</td>
                  <td>${category.description}</td>
            </tr>
      </c:forEach>
</table>

<!-- Success - or Validation errors -->
<div id="result" style="display:none" >
      <p id="success" ></p>
      <p id="errors" ></p>
</div>
```

Main.js

```
var contextRoot = "/" + window.location.pathname.split('/')[1];
function categorySubmit() {
      var dataToSend = JSON.stringify(serializeObject($('#categoryForm')));
      $.ajax({
            //code to make AJAJ Call






            success : function(__________________________________________) {
                  $('#success').html("");
                  $('#errors').html("");
                  $("#success").append('<H3 align="center"> OKAY!! <H3>');
                  $('#result').show();
                  var newRow = '<tr><td>' + ___________________ +

                  '</td><td>'+ _____________________ + '</td></tr>';
                  $('table tbody').append(newRow);
            },

            error : function(__________________________________________) {

                  if (__________________________________________________) {
                        $('#success').html("");
                        $('#errors').html("");
                  $("#errors").append('<H3 align="center"> Error(s)!! <H3>');
                        $("#result").append('<p>');

                        var errorList = _________________________________
                        //code to loop errorList









                        $("#errors").append('</p>');
                        $('#result').show();
                  } else {
                        alert(errorObject.responseJSON.errors(0));
                  }}});}
```

CategoryController.java

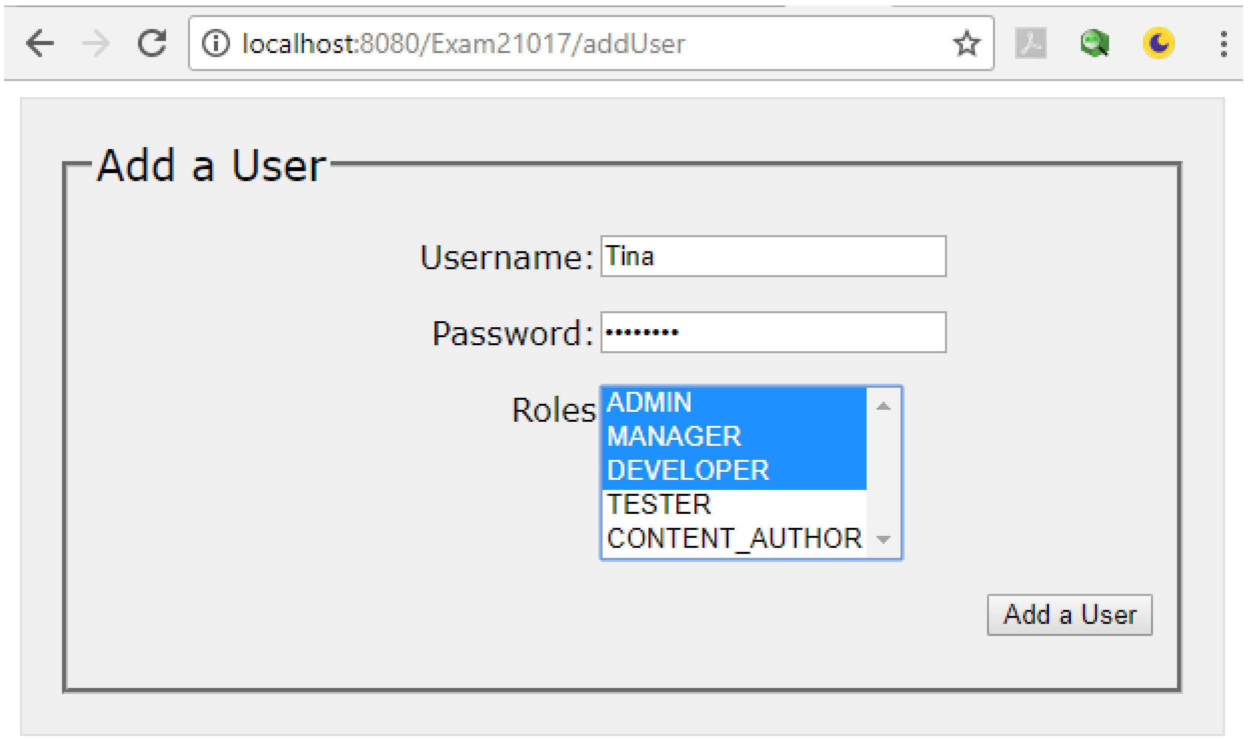
```
@Controller
public class CategoryController {

    @Autowired
    private CategoryService categoryService; //assume has save() method.



    public ____________________  saveCategory(_____________________) {



        return ______________________;
    }

}
```

9. (28 points) This is the "full stack" problem AKA "tall thin person" implementation. It is expected that you will use "good coding practices" as discussed in class.

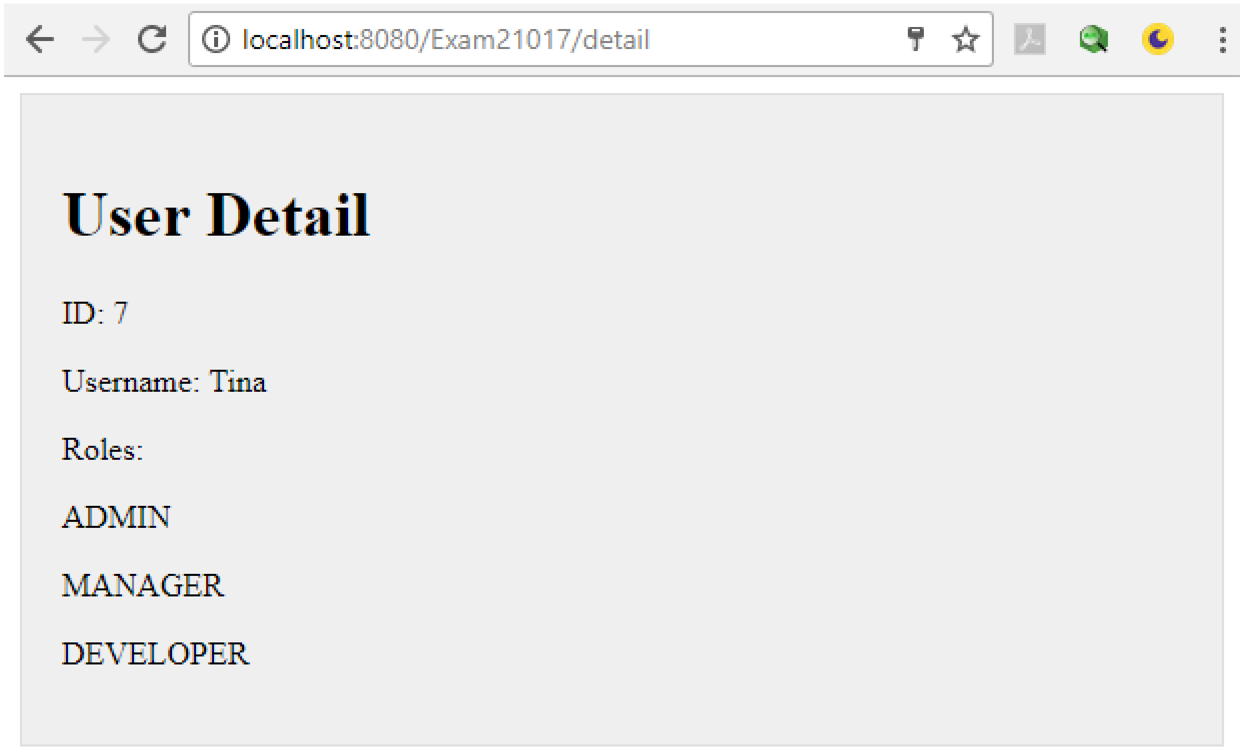
TASKS:

1. Define necessary attributes in `User.java` and `Role.java` according to screenshots. Annotate them for ORM (think about their relationship). No need to add setters and getters. Each User has a List of <Role>. You many add more properties/attributes in User or Role classes.
2. Complete the `UserController`. Follow best practices and make sure the URLs matche the screenshots.
3. Complete&Annotate the `UserServiceImpl & RoleServiceImpl.` You need to call methods from each repository to do actual Save or Update functionality.
4. Complete the `UserRepository`
   a. There should be a method that finds a User by username. The name should be `LookupTheUserThruUsername`.
5. Complete the `RoleRepository`
   a. Define a class level declared query which finds all ROLES that start with letter "A". The name should be `GetRolesStartWithA.`
6. Implement `UserForm.jsp` using Spring Form Tag

`UserForm.jsp`



Detail.jsp



localhost:8080/Exam21017/detail

User Detail

ID: 7

Username: Tina

Roles:

ADMIN

MANAGER

DEVELOPER

```
public class User implements Serializable {


    private long id;

    private String username;

    private String password;



}
```

```
public class Role implements Serializable{

      private long id;


      private String role;



}

public class UserController {


      public String getAddUserForm(_________________________________) {



      }

      public String processAddUserForm(_____________________________ ){




      }

      public String detail(_____________________________) {


      }
}
```

```
//Code completed for this
interface
public interface UserService {
	User save(User user);
}
```

```
//Code completed for this
interface
public interface RoleService {
	List<Role> findAll();

	Role get(long id);
}
```

```
public class UserServiceImpl implements UserService {




	@Override
	public User save(User user) {



	}

}


public class RoleServiceImpl implements RoleService {




	@Override
	public List<Role> findAll() {



	}

	@Override
	public Role get(long id) {



	}}
```

```
public interface UserRepository ______________________________________{




}


public interface RoleRepository ______________________________________{




}
```

UserForm.jsp

```
<__________________________________________________________________>
      <fieldset><legend>Add a User</legend>

      <p>
            <label for="username">Username: </label>


            <_______________________________________________________>
      </p>

      <p>
            <label for="password">Password: </label>


            <_______________________________________________________>
      </p>
```

```
        <p>
              <label for="roles">Roles </label>
              //write code here to generate multi-selector









        </p>


        <p id="buttons">
              <input id="submit" type="submit" value="Add a User">
        </p>
        </fieldset>

  </__________________>
```

10. (2 Points) Write one or two paragraphs relating a point from the course to a principle from SCI. (No Credit if copy from main points chart. You have to use your own words).