All code mentioned in this document can be found on the github at:
https://github.com/ludan1214/java-fsd-phase3/tree/main/TaskManager
Made according to the specifications listed here:
Requirements (Click Here)

1. Setup

① A MySQL server was started on localhost port 3308 using docker desktop, a user table was created in phase3db with the following command:

- use phase3db;
- CREATE TABLE IF NOT EXISTS `phase3db`.`usertable` (

```
  `id` INT NOT NULL AUTO_INCREMENT,
  `username` VARCHAR(45) NOT NULL,
  `email` VARCHAR(45) NOT NULL,
  `password` VARCHAR(45) NOT NULL,
  PRIMARY KEY (`id`),
  UNIQUE INDEX `name_UNIQUE` (`username` ASC) VISIBLE)
ENGINE = InnoDB;
```

② And a task table was made with the following command:

- CREATE TABLE IF NOT EXISTS `phase3db`.`task_tbl` (

```
  `id` INT NOT NULL AUTO_INCREMENT,
  `name` VARCHAR(45) NULL,
  `email` VARCHAR(45) NULL,
  `start_date` DATETIME NULL,
  `end_date` DATETIME NULL,
  `description` VARCHAR(250) NULL,
  `severity` VARCHAR(10) NULL,
  PRIMARY KEY (`id`))
ENGINE = InnoDB;
```

③ Spring Setup

The spring initalizr was used to setup the project and the following Maven dependencies were included in the POM either manually or through the initializer:

1. Spring Web
2. Spring Data JPA
3. Spring Security
4. MySQL connector
5. Lombok
6. Springfox Swagger 2
7. JSTL
8. Jasper

2. Project Overview

   A simple task manager application that supports the creation, deletion, updating, and displaying of tasks as well as user registration and login was implemented.

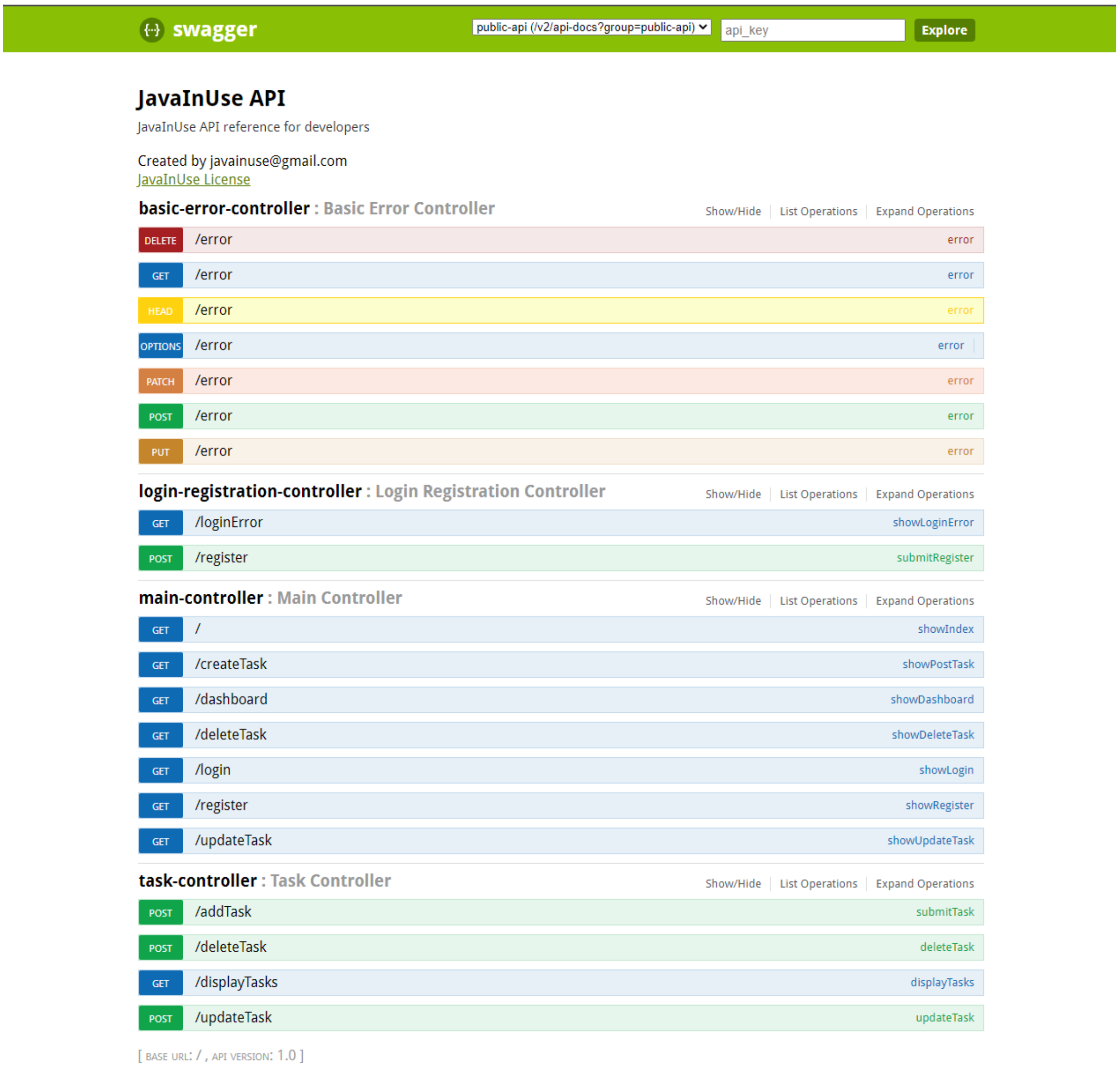
   Two entities were implemented (Task and TaskUser) as well as two repositories (UserRepository and TaskRepository) and two services (UserService and TaskService).
   Task was mapped to TaskUser with a @ManyToOne annotation with "user_id" as the foreign key. This allows us to retrieve tasks specific to certain users and display only tasks that were created by that user.

   Spring Security was used to handle the login verification and sessions. It was also used to restrict endpoints until the user is logged in. The configuration for it is located in the WebSecurityConfig class. Additionally a service called TaskUserDetailsService implemented a function called loadUserByUsername defines the verification function that extracts the username and password information from the TaskUser object.

   Custom exceptions:
   TaskAlreadyExistsException,
   TaskNotFoundException,
   UserAlreadyExistsException,
   UserNotFoundException

   The exceptions above were caught and handled by the controllers. Information about the errors are displayed in the console using log4j as well as on the webpage itself via an error notification message which is demonstrated in the demo section of this document below.

Swagger was used to generate documentation for the various POST and GET endpoints. The configuration for it is located in the SpringFoxConfig class. This can be visited by directly visiting http://localhost:8080/swagger-ui.html#/ after starting up the application (assuming default spring settings).
Note: The configured endpoints will be hidden by spring security, so for the documentation to show, the user must first register and login.



JavaInUse API

JavaInUse API reference for developers

Created by javainuse@gmail.com
JavaInUse License

basic-error-controller : Basic Error Controller — Show/Hide | List Operations | Expand Operations

DELETE	/error	error
GET	/error	error
HEAD	/error	error
OPTIONS	/error	error
PATCH	/error	error
POST	/error	error
PUT	/error	error

login-registration-controller : Login Registration Controller — Show/Hide | List Operations | Expand Operations

GET	/loginError	showLoginError
POST	/register	submitRegister

main-controller : Main Controller — Show/Hide | List Operations | Expand Operations

GET	/	showIndex
GET	/createTask	showPostTask
GET	/dashboard	showDashboard
GET	/deleteTask	showDeleteTask
GET	/login	showLogin
GET	/register	showRegister
GET	/updateTask	showUpdateTask

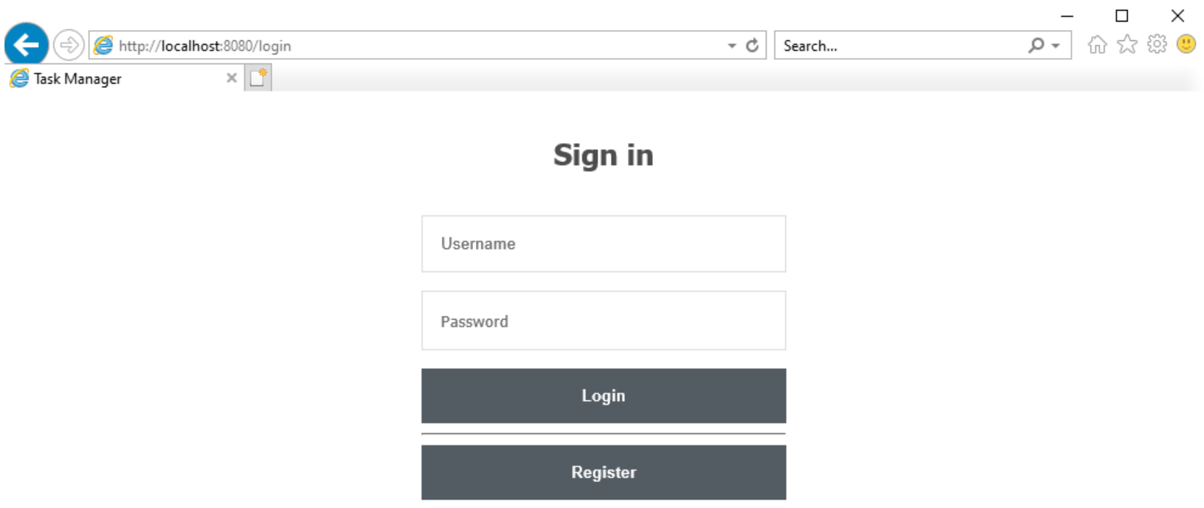
task-controller : Task Controller — Show/Hide | List Operations | Expand Operations

POST	/addTask	submitTask
POST	/deleteTask	deleteTask
GET	/displayTasks	displayTasks
POST	/updateTask	updateTask

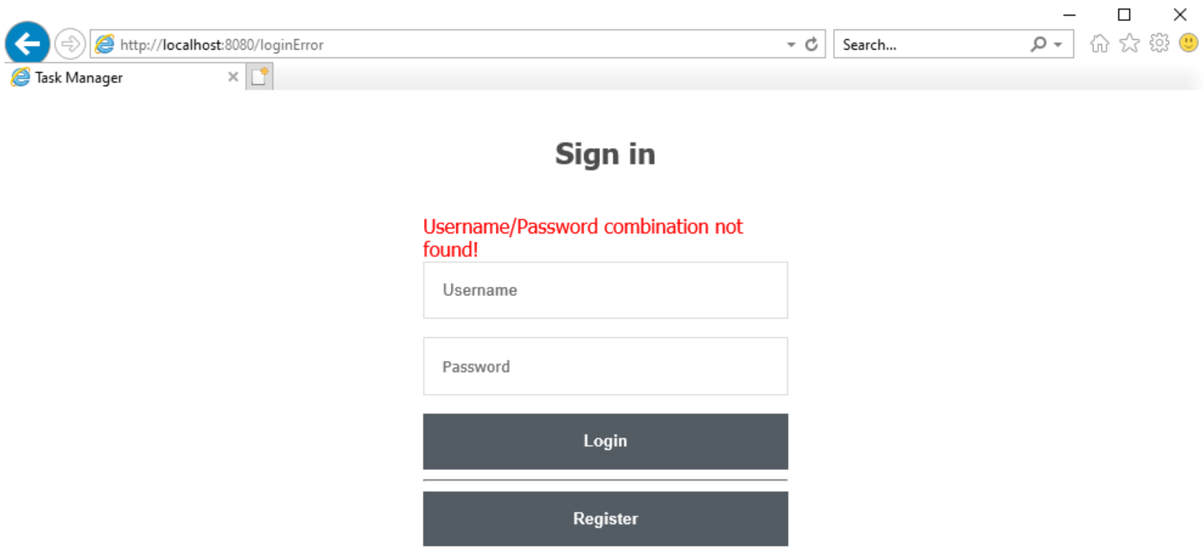
[BASE URL: / , API VERSION: 1.0]

3. Project Demo

Visiting the site we are immediately brought to the login page, we can choose to register or login with credentials.

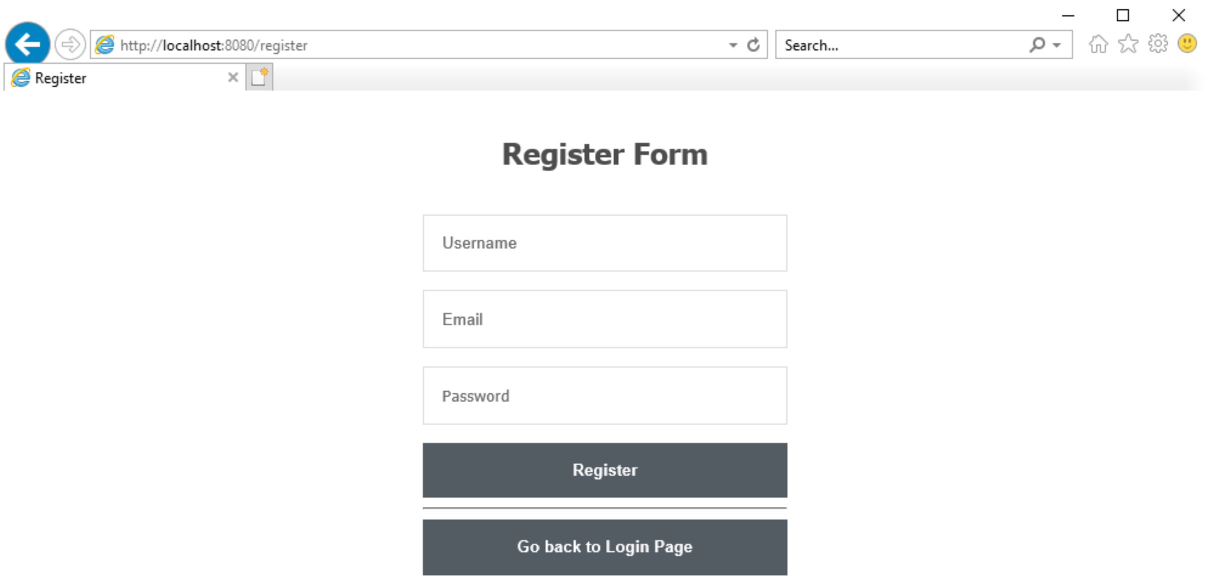


Inputting invalid information will bring up an error.

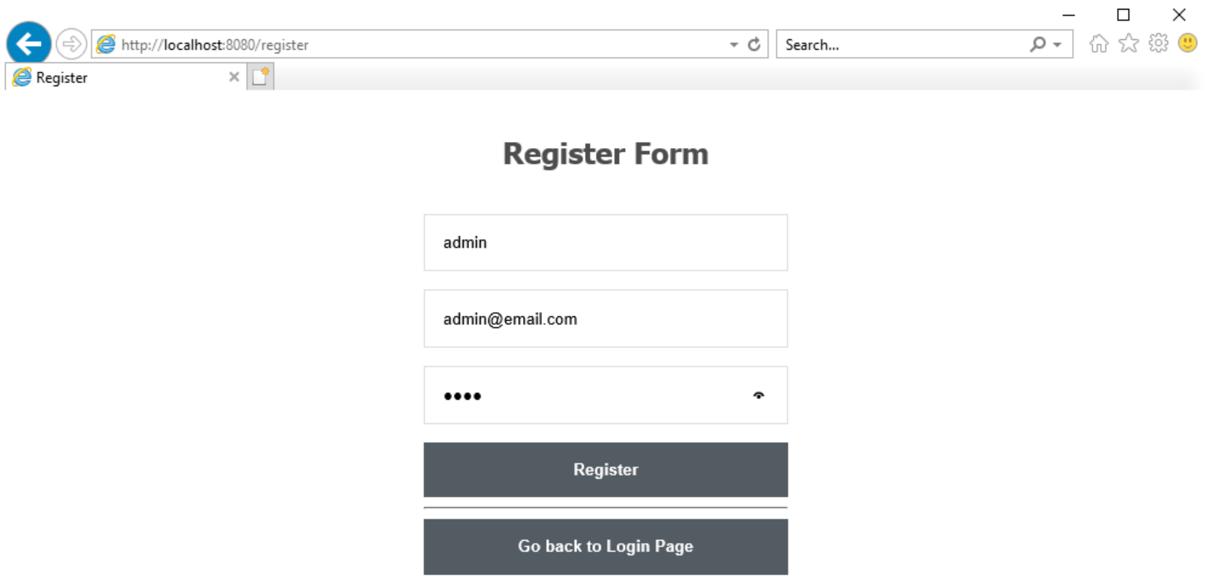


Username/Password combination not found!

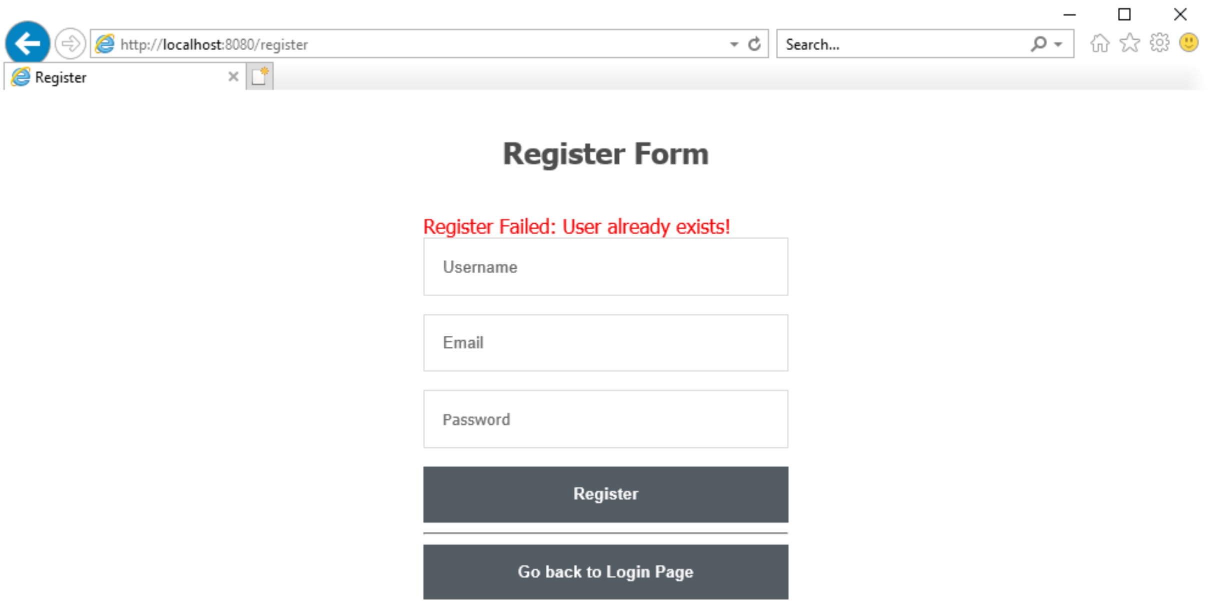
Visiting the register page, we can see a form that lets us input new information



We create a dummy account with the username "admin" and register.



Pressing the "Register" button will bring the user to the index page to login again. Registering with a pre-existing username will cause an error.

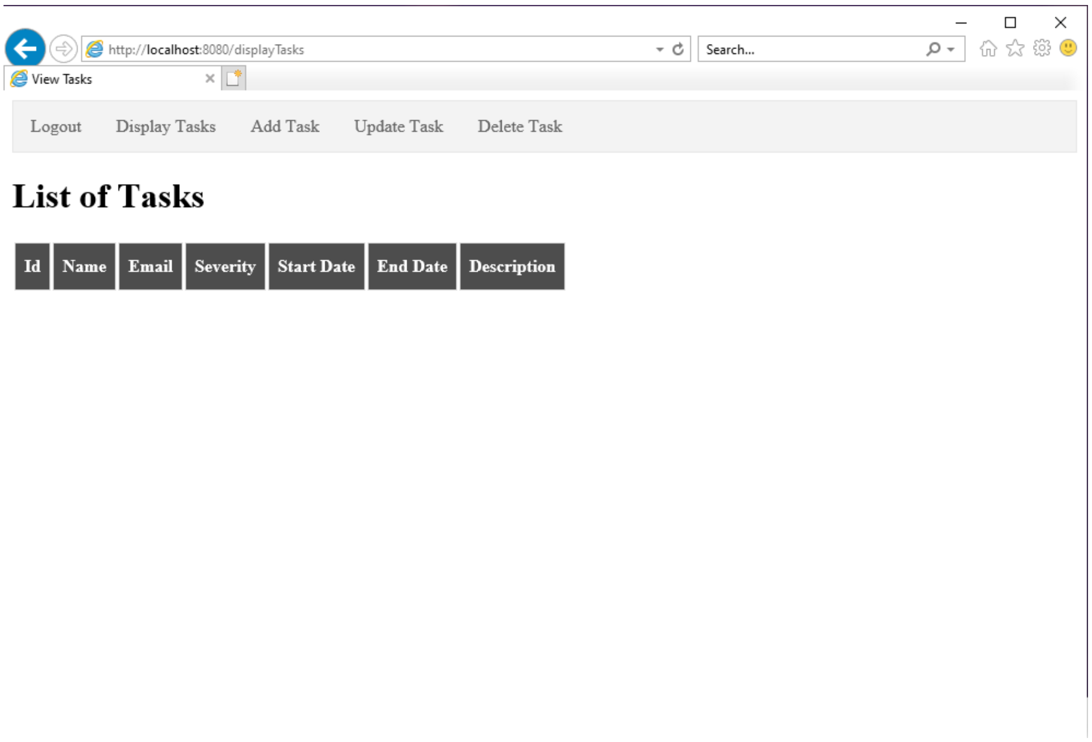

http://localhost:8080/register

Register

Register Form

Register Failed: User already exists!

After returning to the login page and logging in with he details we registered with, we will arrive at the landing page which will display the user's tasks. There currently are no tasks as we haven't added any yet.

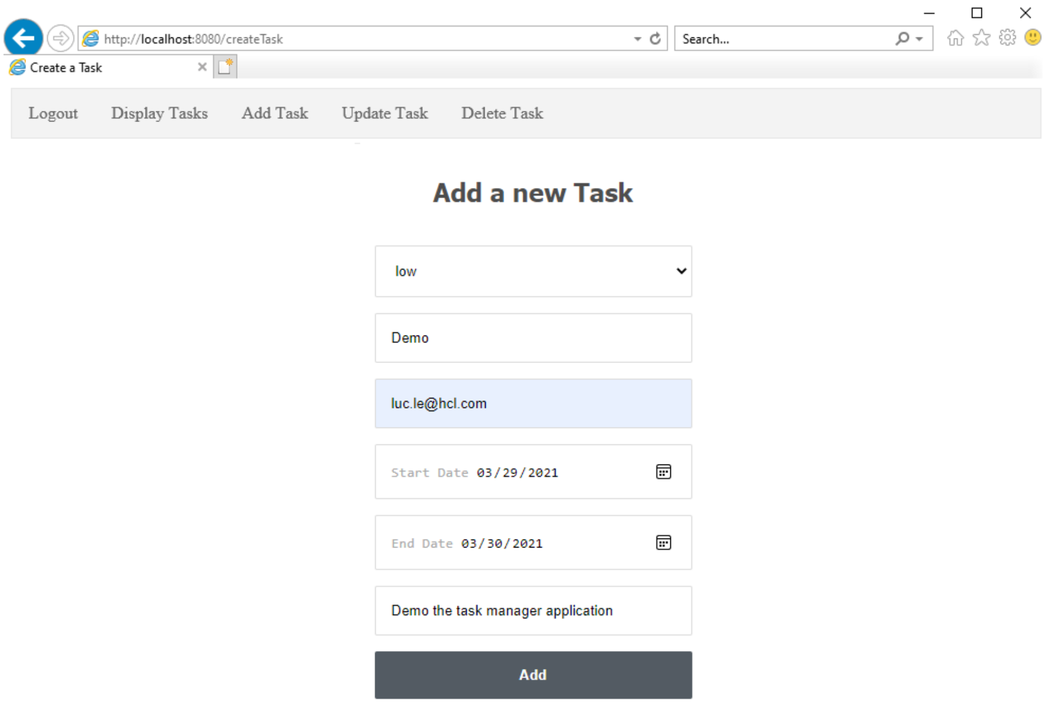

http://localhost:8080/displayTasks

View Tasks

List of Tasks

Id	Name	Email	Severity	Start Date	End Date	Description

Clicking the “Add Task” tab will bring us to a form to add a new task



Add a new Task

low

Demo

luc.le@hcl.com

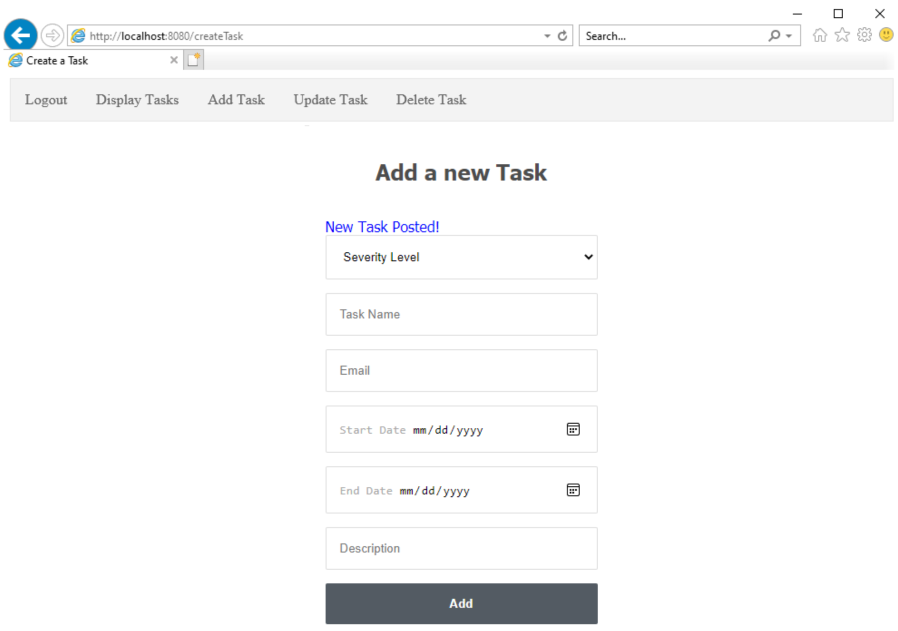
Start Date 03/29/2021

End Date 03/30/2021

Demo the task manager application

Add

Pressing “Add” will send the form to the LoginRegistration Controller to process. If the task successfully posted, a message will appear.



Add a new Task

New Task Posted!

Severity Level

Task Name

Email

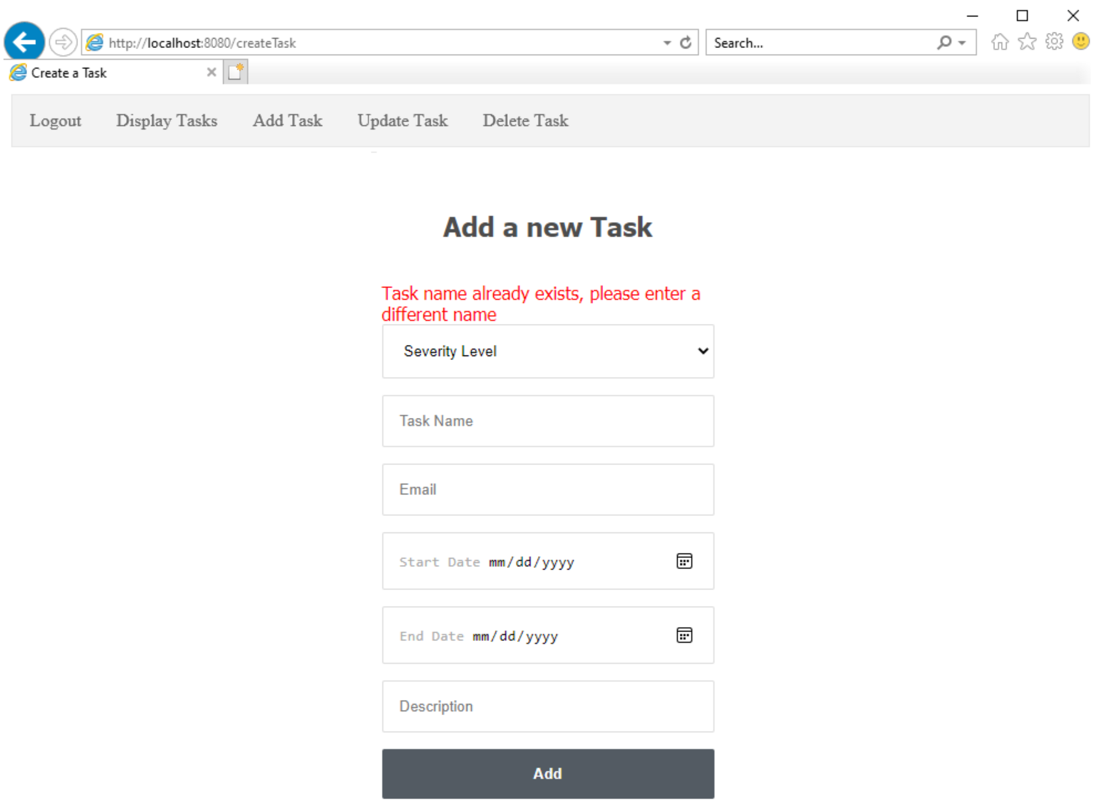
Start Date mm/dd/yyyy

End Date mm/dd/yyyy

Description

Add

If the user tries to create a task with the same name, an error message will appear.


http://localhost:8080/createTask

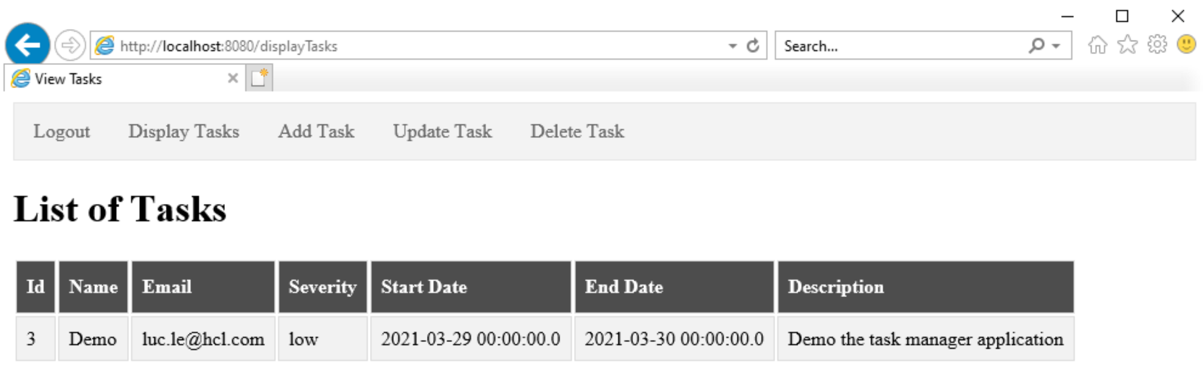
Create a Task

Add a new Task

Task name already exists, please enter a different name

Severity Level
Task Name
Email
Start Date mm/dd/yyyy
End Date mm/dd/yyyy
Description

Now visiting the display page again, we can verify that the task has been successfully posted.

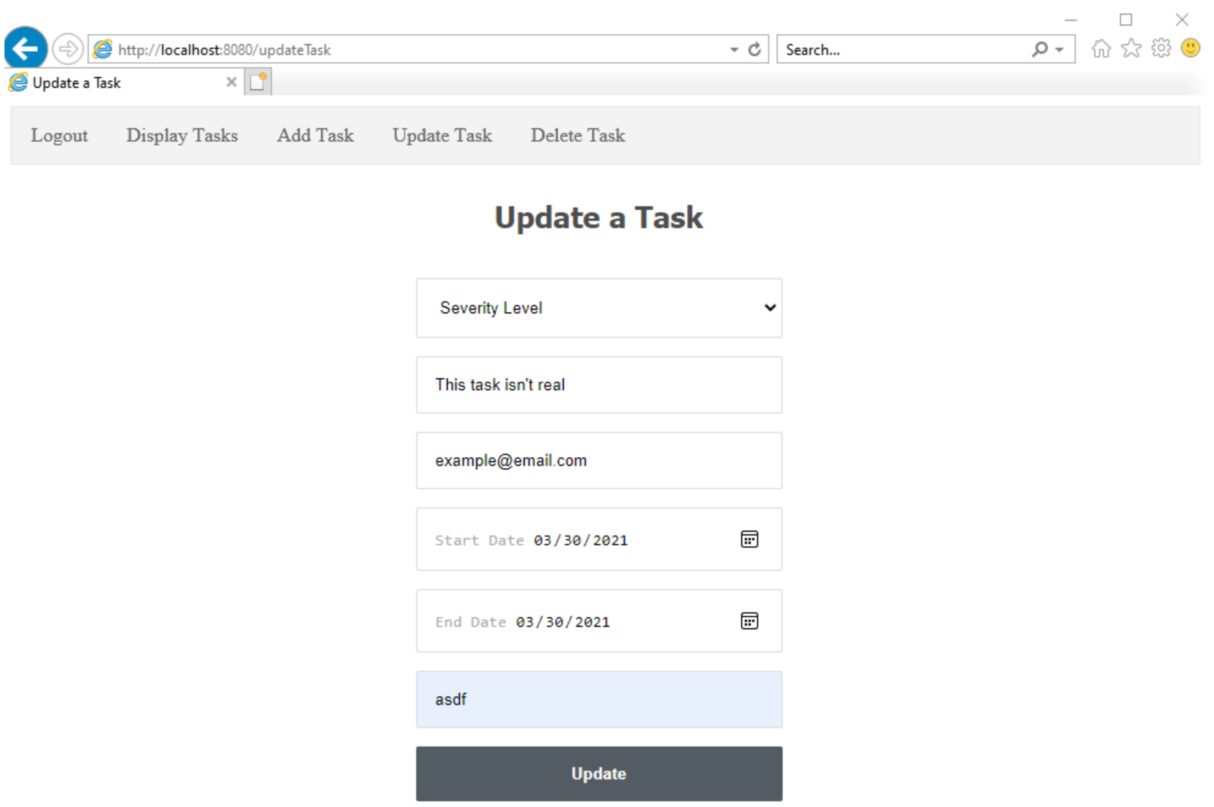

http://localhost:8080/displayTasks

View Tasks

List of Tasks

Id	Name	Email	Severity	Start Date	End Date	Description
3	Demo	luc.le@hcl.com	low	2021-03-29 00:00:00.0	2021-03-30 00:00:00.0	Demo the task manager application

Now suppose we wanted to update that task, we can click the “Update Task” tab which will bring us to a new form.



Update a Task

Severity Level

This task isn't real

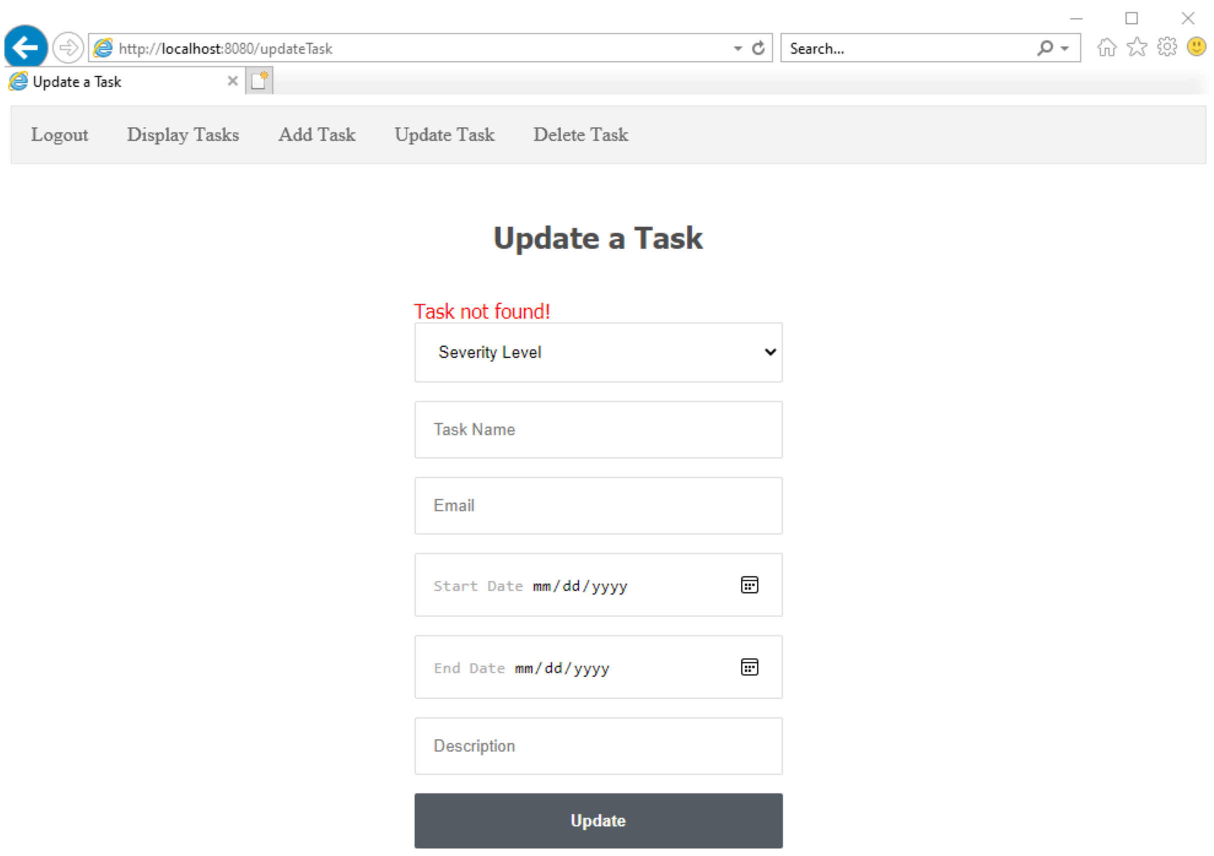
example@email.com

Start Date 03/30/2021

End Date 03/30/2021

asdf

Suppose we tried to update a task that doesn't exist, an error will appear.



Update a Task

Task not found!

Severity Level

Task Name

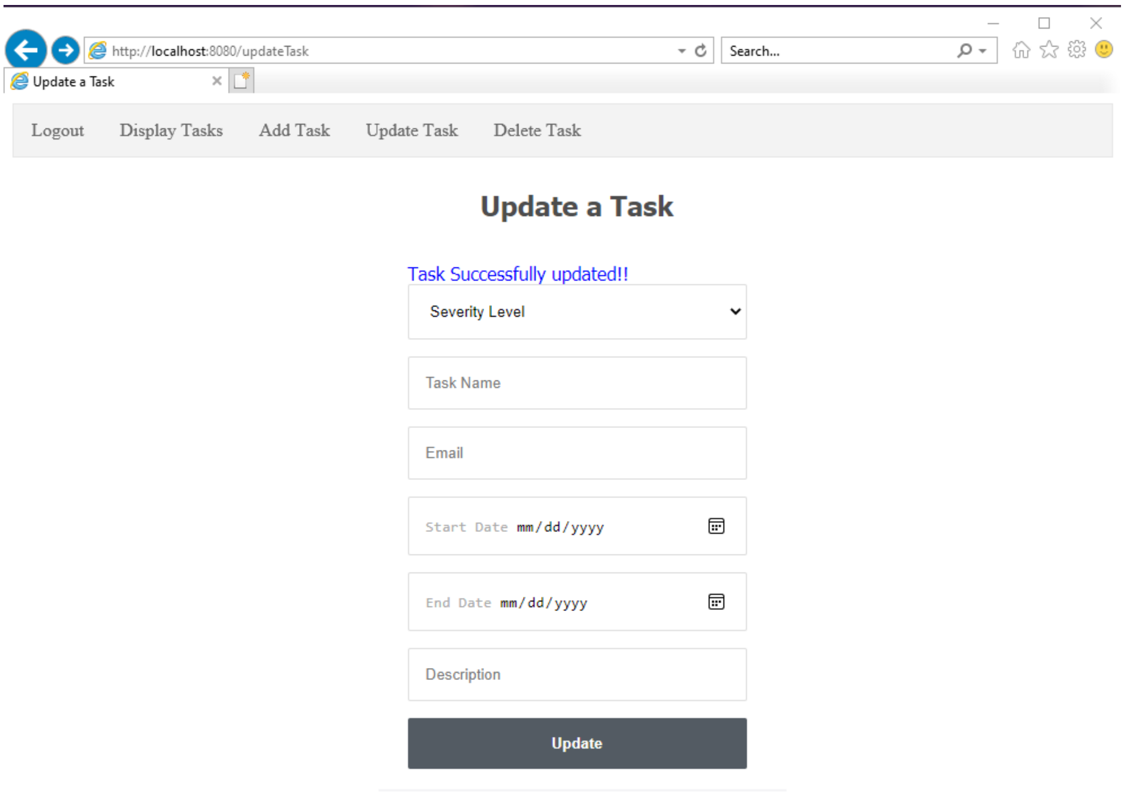
Email

Start Date mm/dd/yyyy

End Date mm/dd/yyyy

Description

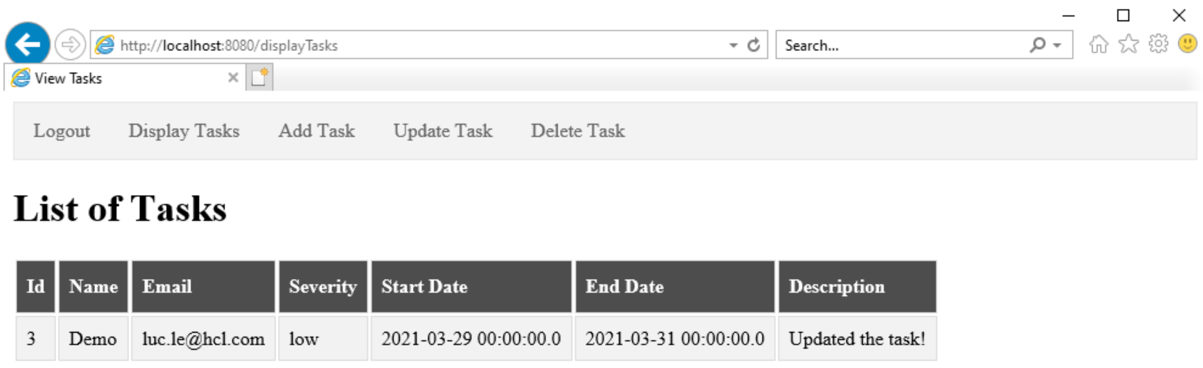
Now if we properly use the correct task name we used when we added a task, the task will successfully update and a message will appear.



Update a Task

Task Successfully updated!!

We can verify this by visiting the display page again.



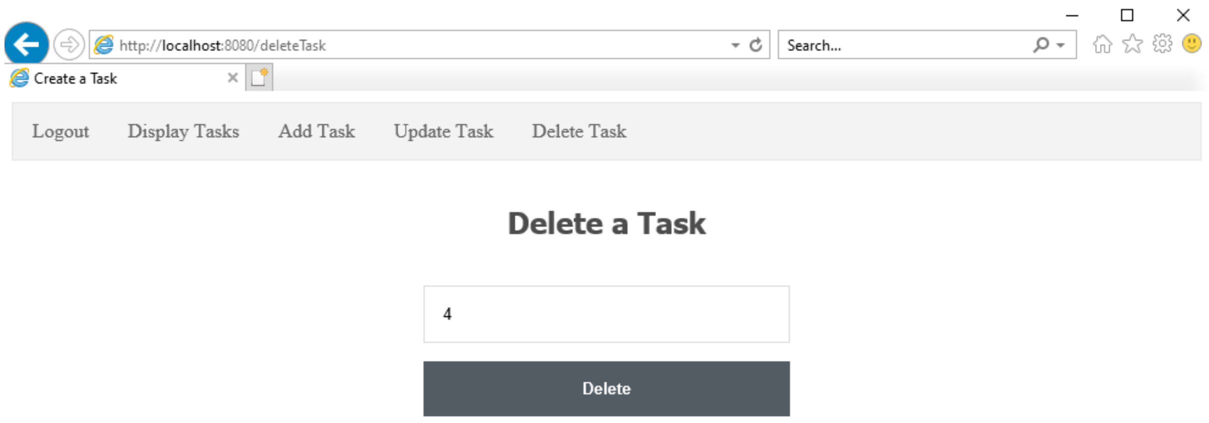
List of Tasks

Id	Name	Email	Severity	Start Date	End Date	Description
3	Demo	luc.le@hcl.com	low	2021-03-29 00:00:00.0	2021-03-31 00:00:00.0	Updated the task!

We can see an updated description after filling out the form and pressing update.

The last feature with tasks is the delete feature, in which we can delete a task by its Id listed in the leftmost column.

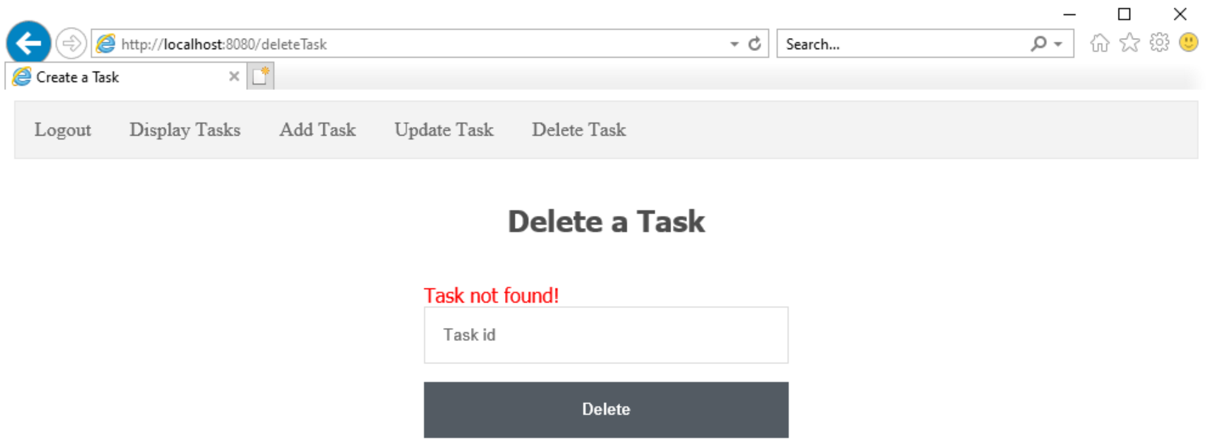
From above, we know that the task id is 3, but suppose we tried to delete a task of id 4 which shouldn't exist.



Delete a Task

4

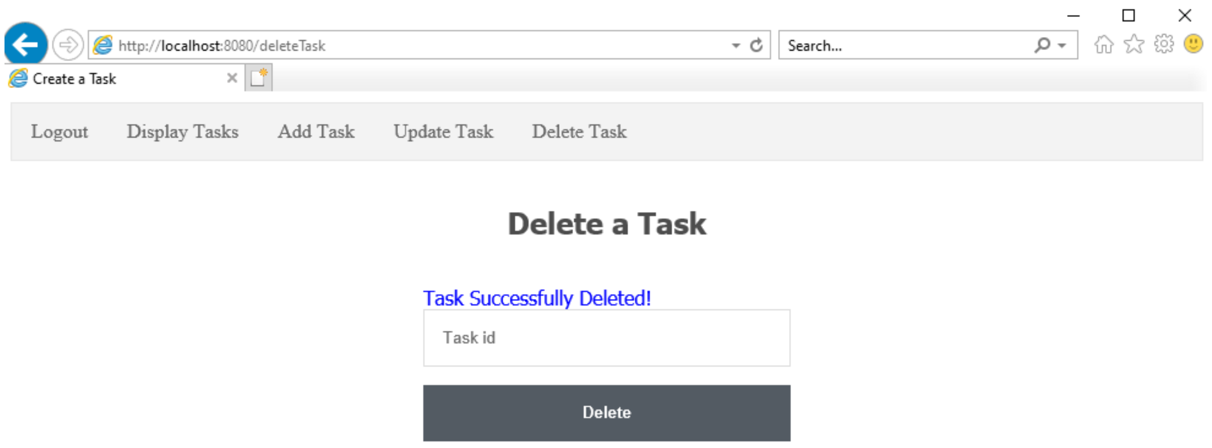
An error will appear. Additionally, if a task that exists with that ID is found under another user, the controller will check to see if the logged in user's username matches the user associated with the task. If the names do not match, the delete request will be rejected with the same error below. So users cannot delete or modify each other's tasks.



Delete a Task

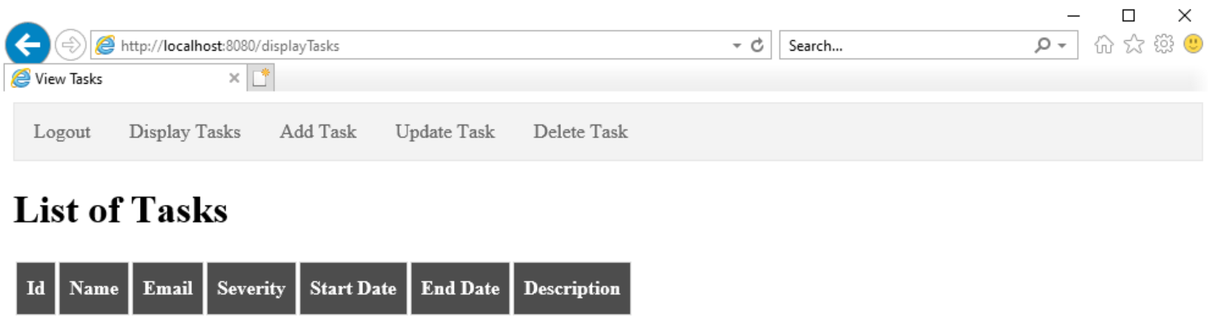
Task not found!

On a successful delete, a success message will appear.



Task Successfully Deleted!

We can verify the task has been deleted by visiting the display page once again.

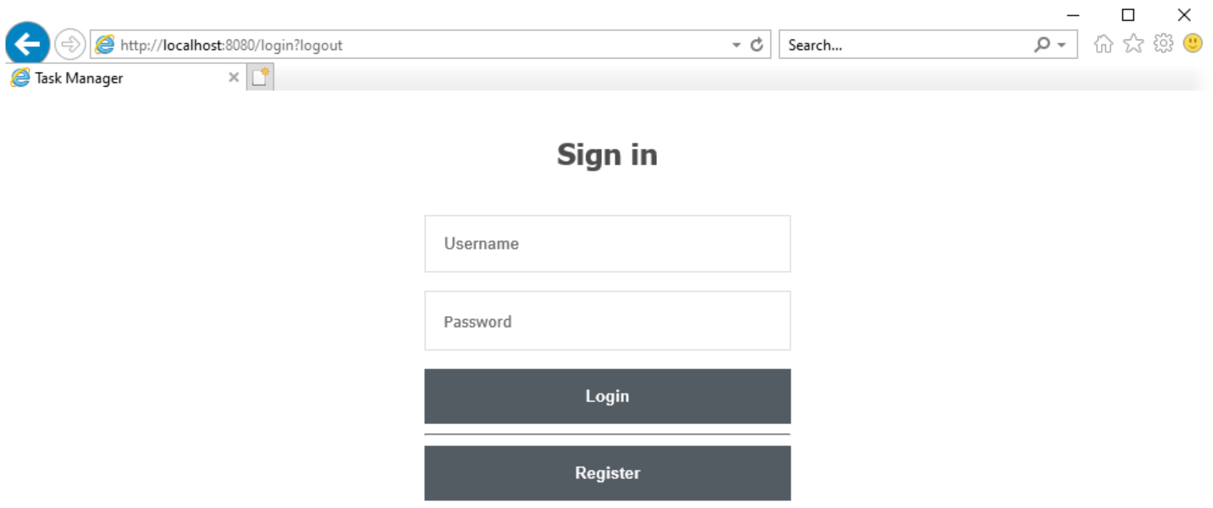


List of Tasks

Id	Name	Email	Severity	Start Date	End Date	Description

Finally since we are done demonstrating all of the functionality of the application, we can logout of the session by pressing the logout button in the top left corner.

This will bring us to the login page where can choose to register a new user or login once again.



This concludes all of the basic functionality of the Task Manager application.