To-Do List Application

Technologies used:

Spring Boot, Spring Security, JPA, HSQLDB, Junit, Thymeleaf, IntelliJ IDE

Approach Taken

All the required functionalities were worked out beforehand. Once the requirements were clear, coding and development were set into motion. Continuous testing had been ensured throughout the development phase. UI design was also planned beforehand to efficiently prepare the application to be launched with all the requirements.

Architecture

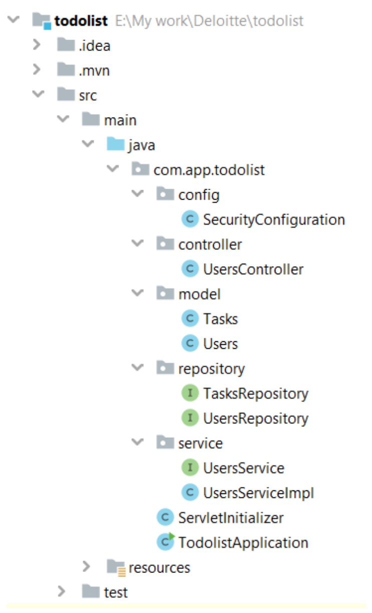
The design pattern used for the project is MVC (Model View Controller) design pattern. Model consists of the data that is made available to the users of the application. View consists of the resources used to depict the information to the users while Controller holds the logic to efficiently bridge the front-end and back-end of the application.

The Layered architecture used in the project ensures the abstraction which is sustained using Presentation Layer (Controllers), Business Layer (Service Interfaces and implementations), Persistence Layer (Entity classes) and Database (In memory database in this project).

Code structure and Security

The project follows layered architecture, which would place the **UsersController** (../controller/) to handle the requests from users to demonstrate the Presentation layer. Then we have the Business layer where the **UsersService** and **UsersServiceImpl** (../service/) reside the functioning of service interface and implementations. The project uses the tier **UsersRepository** and **TasksRepository** (../repository/) to bind the entity classes and holds the logic to access the data layer. The entity classes, **Users** and **Tasks** (../model/) comprises of the Persistence layer helping with storage logic in the project. Html files, **addtask.html** and **userlogin.html** (..resources/templates/) also use Thymeleaf for the effective communication to the controller class.

Spring Security is also implemented to ensure the authentication of the users using the application. The configuration file, **SecurityConfiguration** (../config/) contain the authentication information used in the project.



```
todolist E:\My work\Deloitte\todolist
  .idea
  .mvn
  src
    main
      java
        com.app.todolist
          config
            SecurityConfiguration
          controller
            UsersController
          model
            Tasks
            Users
          repository
            TasksRepository
            UsersRepository
          service
            UsersService
            UsersServiceImpl
          ServletInitializer
          TodolistApplication
      resources
    test
```

The database properties is mentioned in **application.properties** and **data.sql** (..resources/) holds the necessary queries to be executed upon start-up of the application.

The database used here is a memory based database, HSQLDB whose properties and other files are embedded along with the source code.

Performance

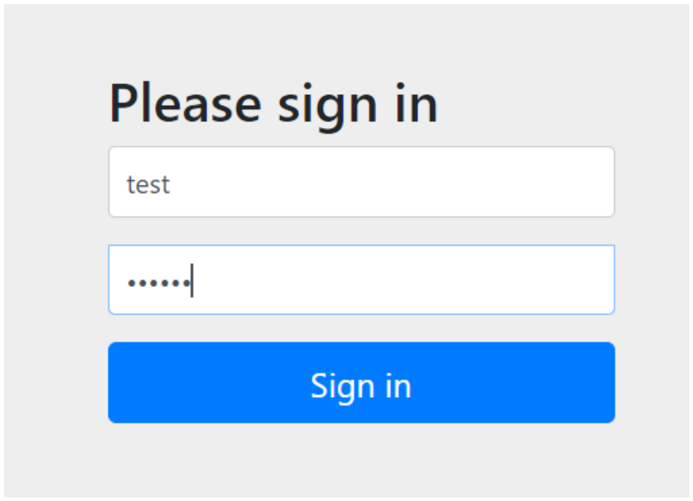
An efficient level of performance of the project is achieved through various approaches made including the loosely coupled nature ensured by implementing the project using Spring Framework.

Testing

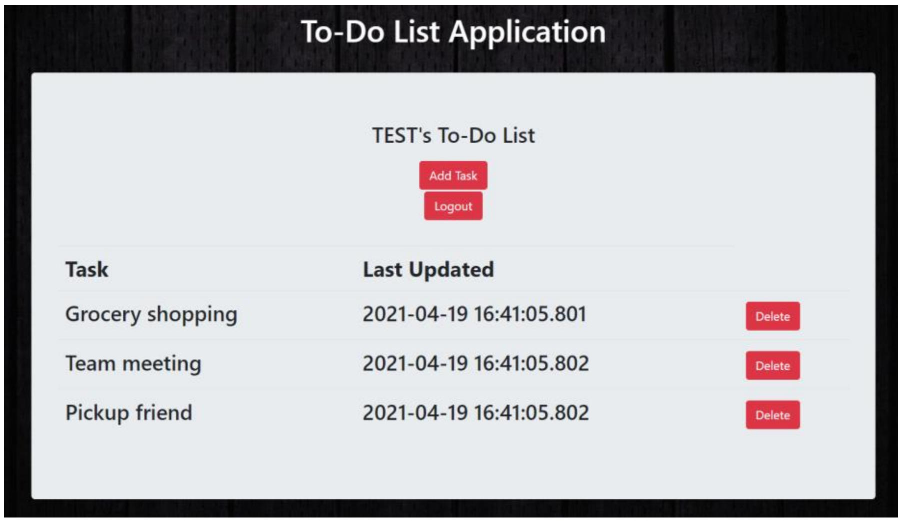
Junit framework is used for unit testing the modules involved in the project. Test class (**TodolistApplicationTests**) incorporates all the testing methods used in the ToDo List application.

Screenshots

* Login:



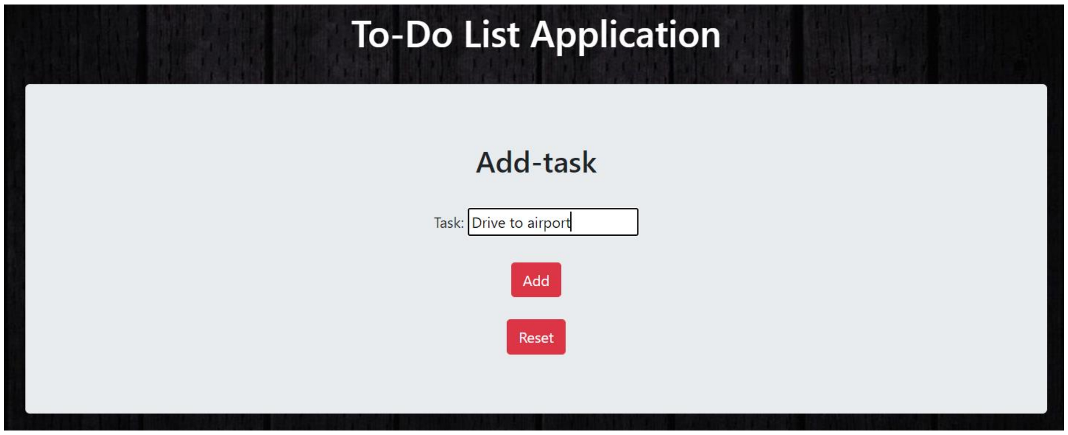
* User’s home page:


To-Do List Application

TEST's To-Do List

Task	Last Updated	
Grocery shopping	2021-04-19 16:41:05.801	Delete
Team meeting	2021-04-19 16:41:05.802	Delete
Pickup friend	2021-04-19 16:41:05.802	Delete

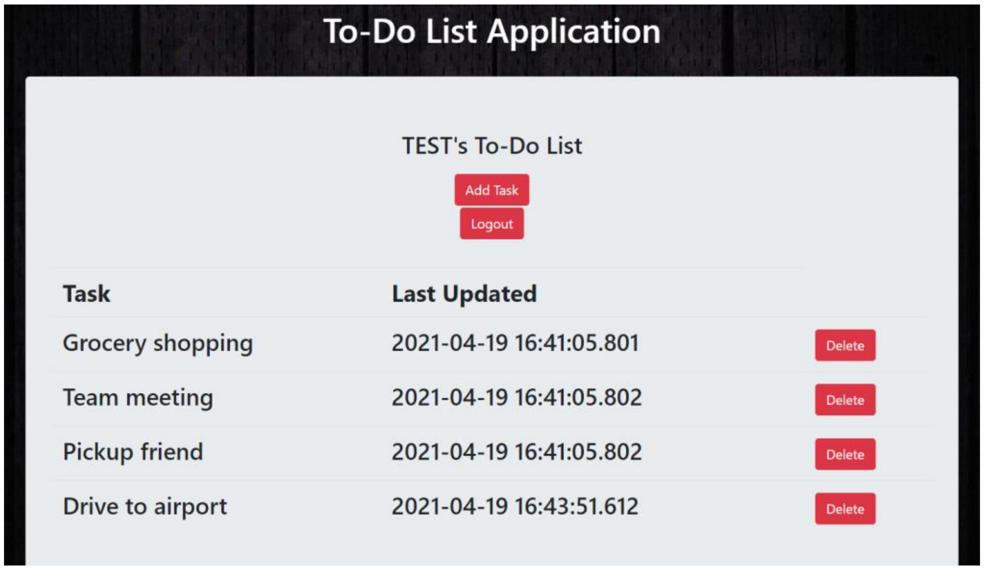
* Adding task:


To-Do List Application

Add-task

Task: Drive to airport

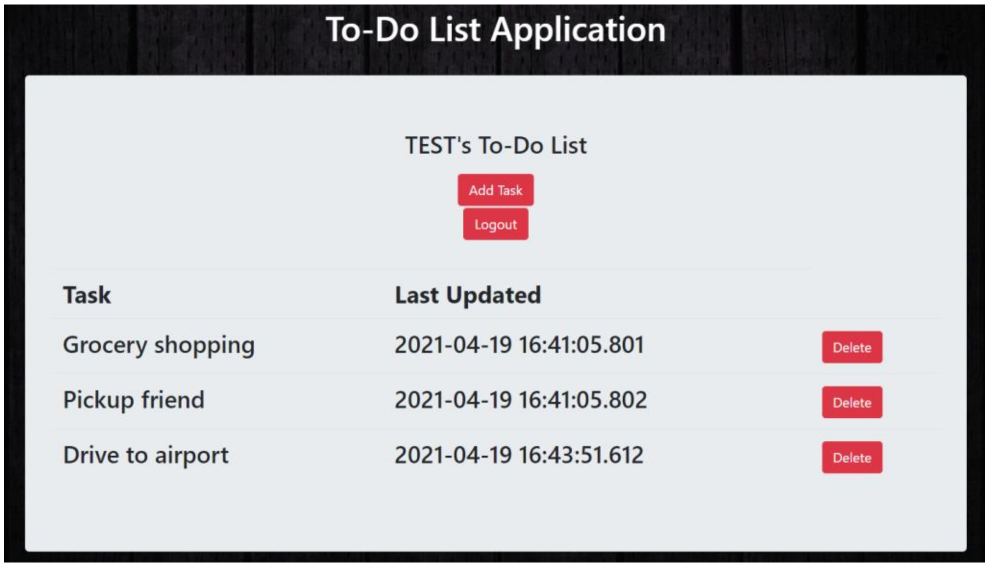
* User’s home page with added task:


To-Do List Application

TEST's To-Do List

Task	Last Updated	
Grocery shopping	2021-04-19 16:41:05.801	Delete
Team meeting	2021-04-19 16:41:05.802	Delete
Pickup friend	2021-04-19 16:41:05.802	Delete
Drive to airport	2021-04-19 16:43:51.612	Delete

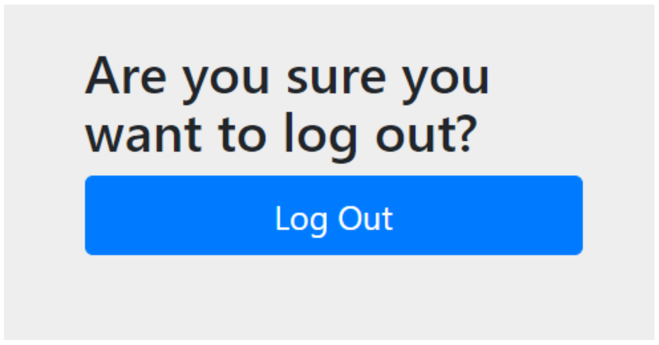
* Deleting task:


To-Do List Application

TEST's To-Do List

Task	Last Updated	
Grocery shopping	2021-04-19 16:41:05.801	Delete
Pickup friend	2021-04-19 16:41:05.802	Delete
Drive to airport	2021-04-19 16:43:51.612	Delete

* Logout:


Are you sure you want to log out?