

Java III Project

THIS DOcuMENT CONTAINS INFORMATION ON THE Java III PROJECT

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# Question 1

## Introduction

This program allows the client to read, add, sort and search the movie database from a csv file.

## UML Diagram

### Server

Diagram

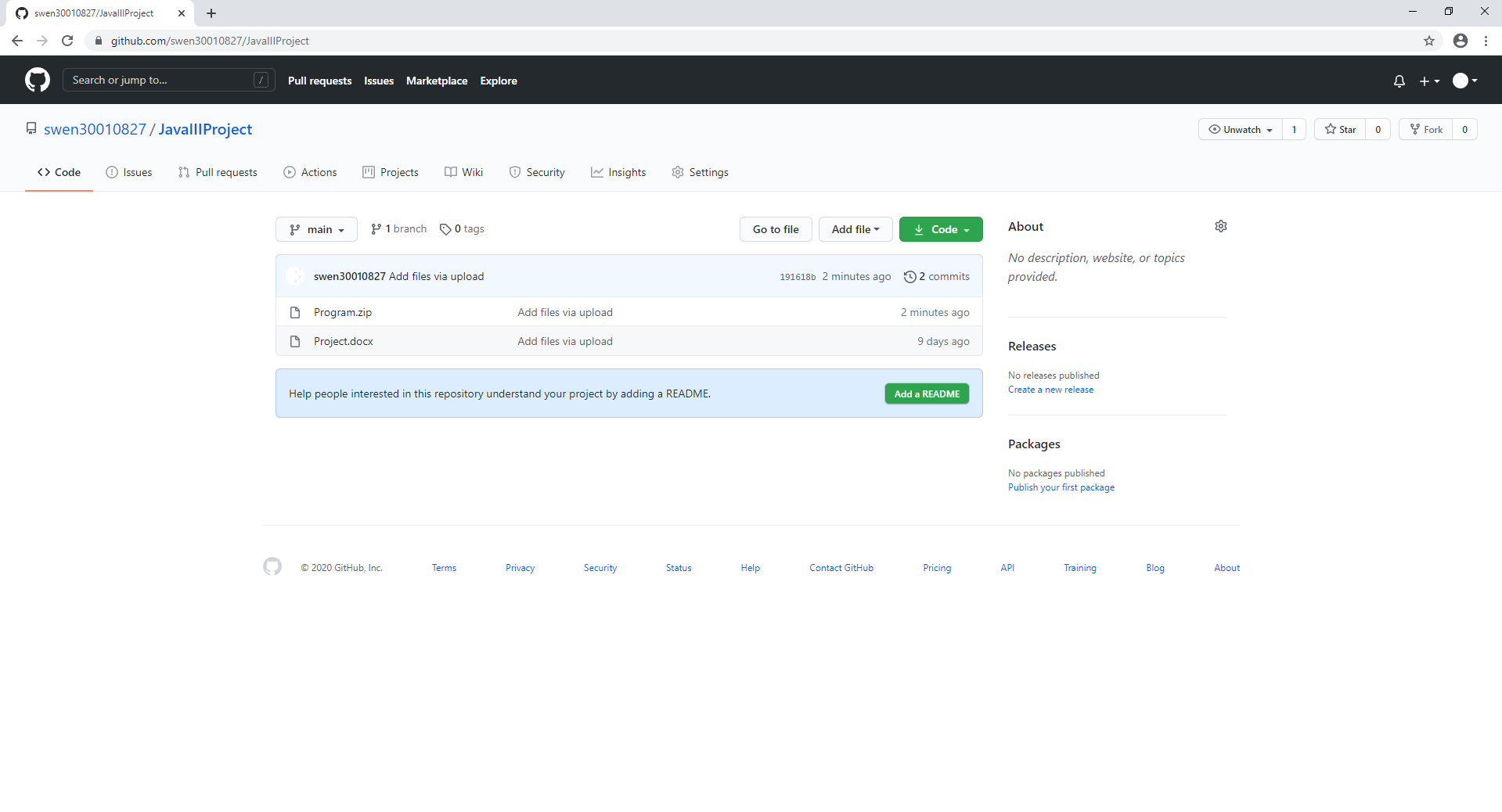
Description automatically generated

### Client

Diagram

Description automatically generated

## GitHub Repository



# Question 2

Note: The Product Specification Document is located in a separate file in the same folder called ‘Product Specification Document’.

# Question 3

Implement Solution

## Data Structures

Dynamic data structures are used (doubly linked list).

## Hashing Techniques

Hashing techniques are used to encrypt the user’s passwords. The user will have to input their username and password on the client side of the system. The username and password will be sent to the server to verify if the user exists and if the password inputted is correct.

## Sorting Algorithm

In the program, merge sort is used. Merge sort is more complex to implement compared to selection and bubble sort. It divides the unsorted list into sub-lists which will contain one element each. Then, it repeatedly merges the sub-lists to produce new sub-lists until only one list is remaining, which is the sorted list. It is very efficient when working with large sets of data compared to selection and bubble sort which is exactly what this program needs as it contains nearly 2500 data. This code can be located in the Backstage class on the client application.

The user is able to sort according to title or movie id.

## Searching Algorithm

The search technique used is binary search. A sorted array is divided into two halves. If the value of the target item is less than the middle value, the search range is lowered to the lower half and vice versa. The process continues until the target is found or the array has been searched thoroughly. This code can be located in the Backstage class on the client application.

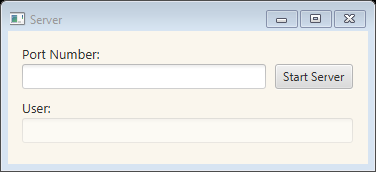
The user is able to search according to title or movie id.

## Third Party Library

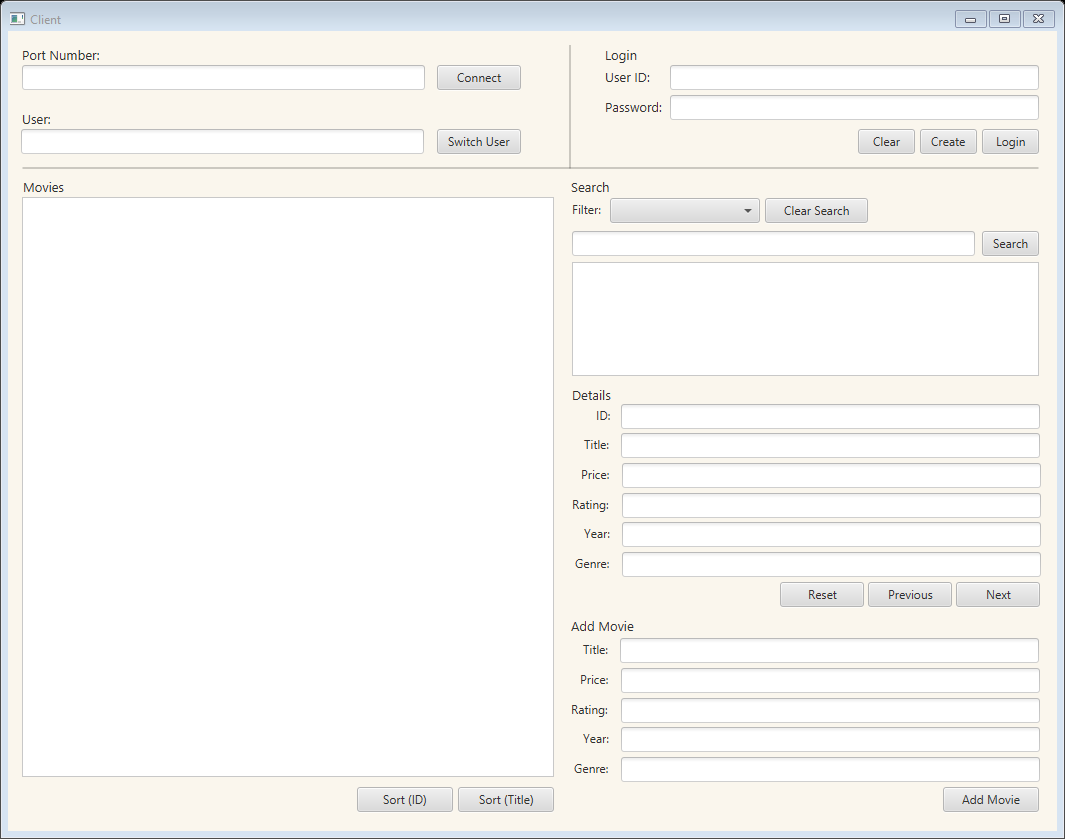
A third party library is used to read and write data to and from a csv file.

## GUI

### Server



### Client



## Help Files

When the help button is clicked, a help file will open with instructions on how to use the application for the client.

# Question 4

## Test Table

Note: Test table and evidence is located in a separate file in the same folder called ‘Test Screenshots’.

## Debugging Screenshots

Debugging is conducted to ensure the program is going through the correct blocks of code.

