**CST2550 Coursework 1 Presentation**

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**Introduction**

**Description :** For this Project , we were tasked with creating a Library System that allows a Libarian to Add a Member , Issue a Book , Calculate a Fine and Display all the Member’s information including the Borrowing history.

Overview: In this presentation, we will discuss the steps that I took to create the Library System. This will include my UML diagrams and how I implemented them into my Program and Software Testing to explain and show my errors and how I overcame them . Finally, I will talk about my limitations and how I can improve my weaknesses.

**Design**

**User Case Diagram**

A diagram of a library management system

Description automatically generated

The user case diagram is showing the interaction between the Libarian and the Member . It shows how the Library System is going to proceed. Thus , a user case diagram is used to represent Graphical Representation of the program.

**Activity Diagram**

**A diagram of a flowchart

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The activity Diagram is used to represent the flow of control in a Library System . It show the steps involved in the program and the effects it has . For example if the Book that you are looking for is available it will continue if not it will terminate. This shows how program will operate.

**UML Diagram00** A diagram of a computer program

Description automatically generated with medium confidence

This UML Diagram shows the structure of a system by representing the classes and its attributes , as we can see above. It is used to see the relationships between classes. People often use these as a blueprint for their program.

**Implementation**

I have used the UML diagrams as Blueprint to help me write my program. As the UML diagrams help to describe the program graphically . For example,

A diagram of a computer program

Description automatically generated with medium confidence

I have used the UML Diagram that you see above to help me to design my program as it shows the structure of my program . I have implemented the classes and its attributes that it shows into my program . This is was my first approach to writing my program as it has already has the classes and the attributes that I needed to my program . Thus helped to structure my code.

**A diagram of a flowchart

Description automatically generated**

This is an activity diagram, the way I have implemented this program is that , I have it used to plan and structure my program. As the activity diagram shows the sequential flow of my program .

Therefore , it helped me to write my code.

A diagram of a library management system

Description automatically generated

The way I have implemented the use case diagram ,

Is that It helped me to understand the User requirements as the Use case diagram helped me to understand the interaction between the User (Libarian) and the Member . Thus , it helped me outline the System Boundaries.

**What the Makefile is used for**

The Makefile is used for to make it easier to maintain and update the project. All changes to the project can be made into 1 centralized location. I have been using Makefile to make it easier to maintain and update my work.

**How and why version control is used ?**

I have used version control throughout my project by documenting my code and detailing any mistakes that I made throughout the project. The reason why version control is used is because in case any errors or bugs the user can go back to its previous version and start over. This provides a safety net to Software Developers.

**Screenshot of Git repository**

A screenshot of a computer

Description automatically generated

**Testing approach**

The testing approach that I adopted is testing each framework of my program ensuring that each major class (Library , Member , Book and Date)­­ works and concentrating on their specific functions. I have achived this by testing each class individually and ensuring that it fits the requirement of the Library System.

This is my application of Approach

1. Testing the Member Functions.

* Ensuring that the user is able create a Member with the correct credentials .

I.e. ; Name , address , email address.

* And the credentials are set properly

1. Librarian Testing

* Ensure that the Librarian is able to validate a Member by Checking if the Member is added successfully.
* The librarian is able to see the history of the Member . Including the number Books that they have borrowed.

1. Issuing and Returning a Book

* Check if the book is available , if not it will say a message “ Book is not available”
* If available add the Book to Member’s history.
* Check if the returning a book functionality if the book in Member’s history is removed from the list of borrowed list.

1. Fine Calculating

* Checking that fine is calculated being properly
* I’ve added a due date so that it calculates the fine properly.

**Conclusion**

**Brief Summary :**

In this report , I have talked about my coursework which is making a Library Systems and the steps I have taken to achieve making the Library System.

Which includes ; UML Diagrams , Testing Approach and Implementation.

Limitations

* When showing the Book that I have borrowed from , it only shows the Book ID and Name . It does not show the Author name ,Book Type and Page Count.

In the future , I will try to approach in a different way than I did now. Firstly , I will try plan more effectively and efficiently as I have waisted a lot time doing different parts at the same time instead of focusing on each thing at a time.