

Course name : Object-Oriented

Programming using Java

Course code : EIE3320

student IDs/names :

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**(one-person group)**

assignment name :

Lab2 report

Class and Class Inheritance

date : 21/11/2022

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# **Introduction**

## Expected Outcomes

- Understand the principles of object-oriented design.
- Apply Java in object-oriented software development.
- Apply UML in object-oriented software modeling.
- Apply an object-oriented approach to developing computer software.
- Apply GUI and Data Structures with Java.
- Learn independently and be able to search for the information required in solving problems.
- Present ideas and finding effectively.
- Work in a team and collaborate effectively with others.

## Brief of the project

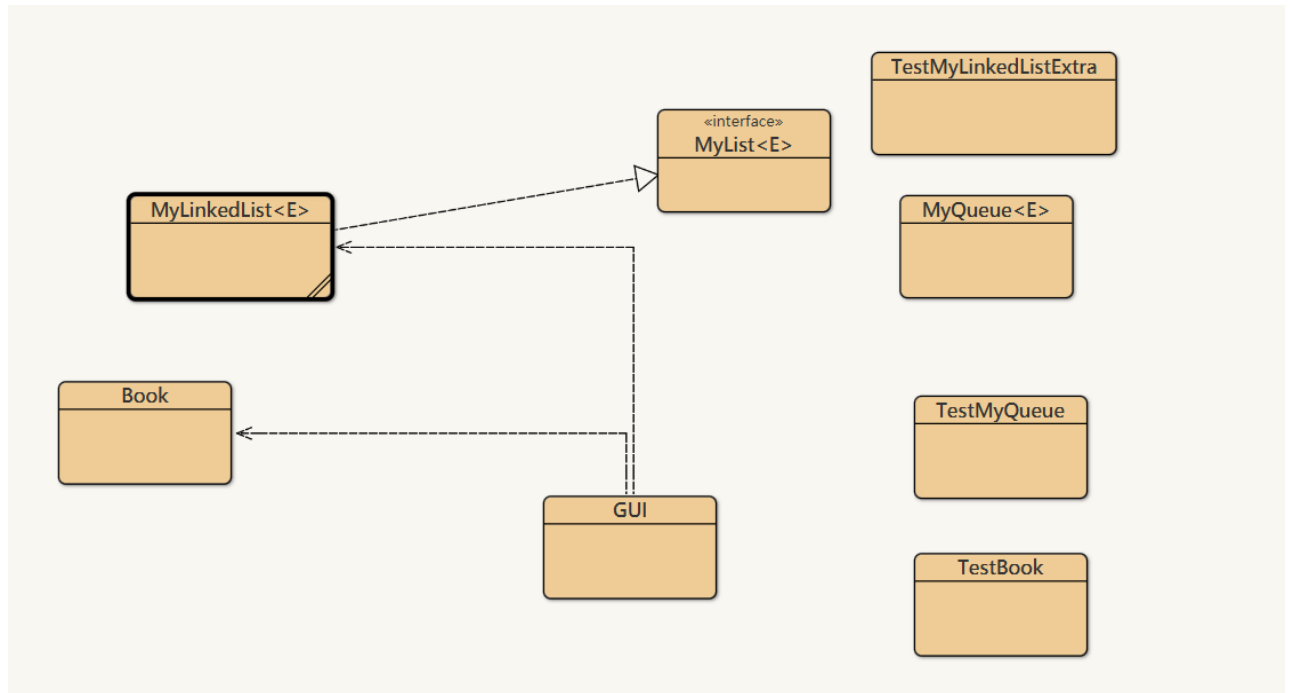
In this project, you are required to develop a Library Admin System by using Java. The system is a Java GUI application through which the library admin staff can (1) Add/Edit/Delete/Search/Display Book records and (2) Borrow/Return/Reserve books for the library users. Through this project, you will come across the design, implementation, and testing phases of a typical Java GUI application. The following shows the initial User Interface (UI) of the application.

## **Methodology**

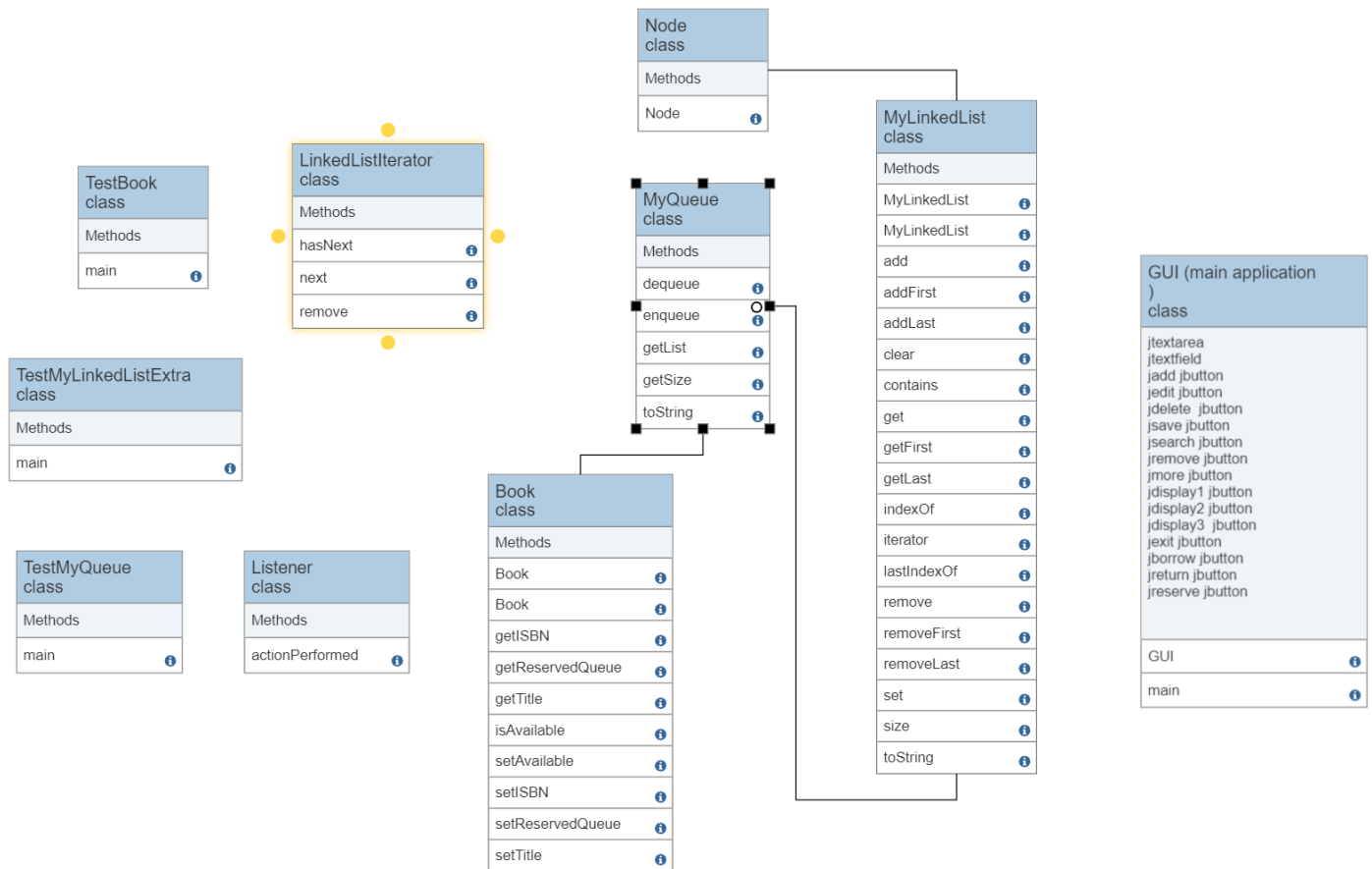
### **The schedule of implementing the program**

Week	Date	Scheme of Implementation
Week 11	7-11/11/2022	<ul style="list-style-type: none"><li>• Study of References</li><li>• Class Implementations(MyLinkedList class/MyQueue class/Book class)</li></ul>
Week 12	14-18/11/2022	<ul style="list-style-type: none"><li>• Completion of the GUI</li><li>• Study of References</li><li>• Brainstorm additional feature</li></ul>
Week 13	21-22/11/2022	<ul style="list-style-type: none"><li>• Completion of the GUI</li><li>• Study of References</li><li>• Program Testing</li><li>• Completion of the Timer(Additional)</li><li>• Lab Report</li><li>• Program Testing</li></ul>
	23/11/2022(Deadline for Submission)	<ul style="list-style-type: none"><li>• Record Demo Video</li><li>• Final Checking</li><li>• Submission of all required lab material</li></ul>

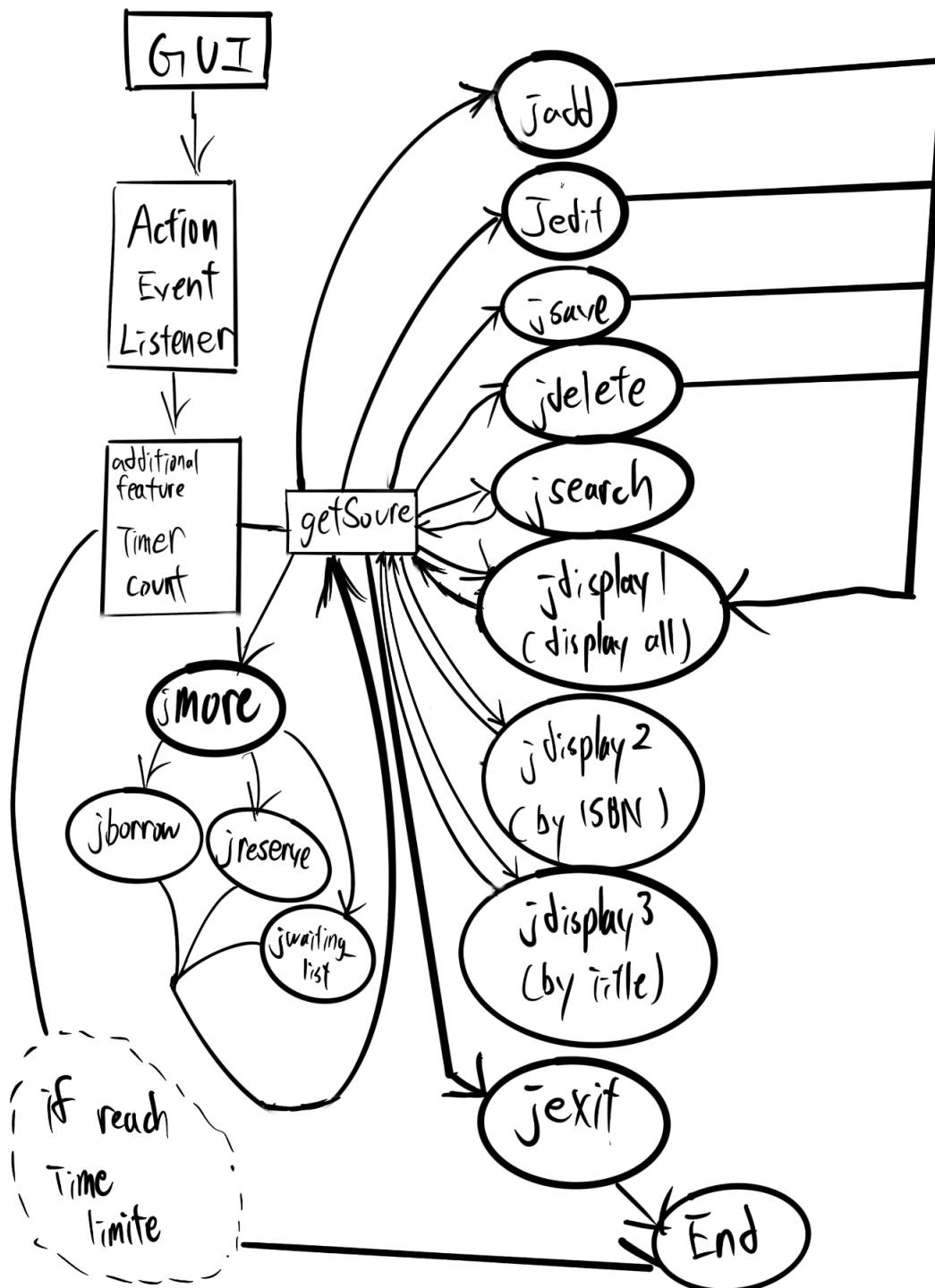
## UML diagrams to show your object-oriented design:



# UML Class Diagram and the specifications of the classes defined, and the public/private member functions/variables included:



## The flow of execution using UML Activity Diagram.



**Describe the implementation and the use of the linked list and the queue classes. Include the EXTRACTED source code for explanation**

myLinkedList

A Linked List that is used throughout the entire program is "myLinkedList." It was applied to the creation of the MyQueue class.

myQueue

The "MyQueue" Class is used to keep a record of who has reserved each book.

"myLinkedList" is used to achieve the queue's characteristics. "Reserve" and "Waiting Queue" buttons, which apply both enqueue, dequeue, and getList, is applied through my Queue Class.



## **Program Testing (through video demo)**

**video demo** <https://www.youtube.com/watch?v=e4S9Q9m4ol8>

# Conclusion

This project is a chance for me to apply what I learn through the lecture and the executing ability in the homework sessions.

Firstly, the main body class - GUI is almost the conclusion of the whole java content of this course. It helps me to recall the application of JFrame and also the JButton. Also, the application of the tree and bst is needed through saving/searching/deleting/adding these button functions.

Lastly, I have to plan the schedule of the building project, and also think about the additional feature base on the basic model of the project. It's hard to do so since it requires creative thinking with application on the project and the program builder(me). To conclude, this is a fun experience to build a project.

## **Future Development**

there are a lot bugs and demo requirement and fulfil. Due to the limitation of deadline, this project cannot be hand in with preferably.

Eg, save isbn "123" title "java" should not be save since the number of isbn is not a 10 digital number.