



**Green University of Bangladesh**  
**Department of Computer Science and Engineering**  
**(CSE)**

**Faculty of Sciences and Engineering**  
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**Lab Report 3**

**Course Title:** Integrated Design Project- I

**Course Code:** CSE-324

**Section:** 221-D22

**Group Details**

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**Lab Report Status**

**Marks:** .....

**Comments:**.....

**Signature:**.....

**Date:**.....

# Developing UML Use Case diagram for Library Management System.

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## 1. Objective

The main objective of this lab is to develop the UML Use Case diagram for a library management system as described in the problem analysis in lab report 7.

## 2. Use Cases and Actors.

Here firstly we must identify the use cases and by analyzing the problem analysis we identified below use cases for library management system,

- Register as a New User.
- Request a Book.
- Renew a Book.
- Return Book and Pay Fine.
- Provide Feedback.
- Issue Library Card.
- Update Records in the Database.
- Delete Records in the Database.

The actors that interact with the library management system are,

- Student
- Librarian

## 3. Procedure

### **Requirements Gathering:**

- Identified key functionalities for the Library Management System.
- Defined actors, including User (students and staff) and Librarian.

### **Tool Selection:**

- Used **Lucidchart** to create the use case diagram because it has many features and functionalities that makes the implementation easier.

### **Finalization:**

- Arranged all use cases, actors, and relationships for clarity and accuracy.
- Validated the diagram to ensure it aligns with the system requirements.

To create the diagram perfectly we can follow the design process of use case diagram. At first, we must place the container and inside the container we must place the uses case ovals. After placing the use cases we can add the actors and show the relationship between the actors and the use cases by adding connected lines between them. At last, we have to identify the extended and include relationship between the use cases.

#### 4. Symbols used to create the Use Case Diagram.

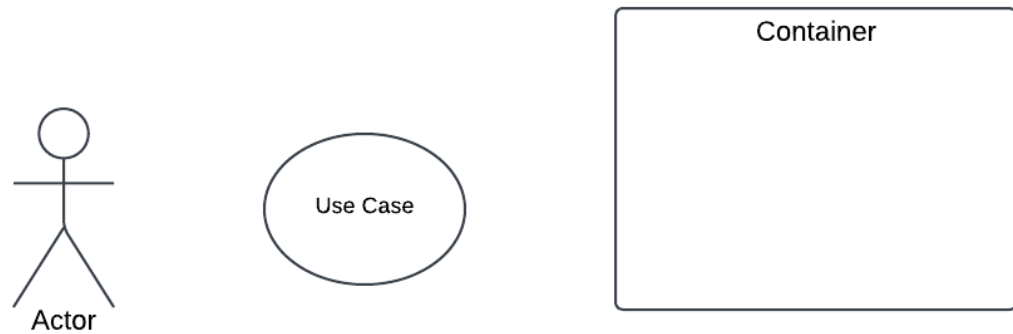
Here,

The oval represents the use cases.

The stick figure represents the actors.

The Rectangle represents the container which contain the system.

We will use line to represent which actor interact with which use cases.



#### 5. UML Use case diagram for Library Management System.

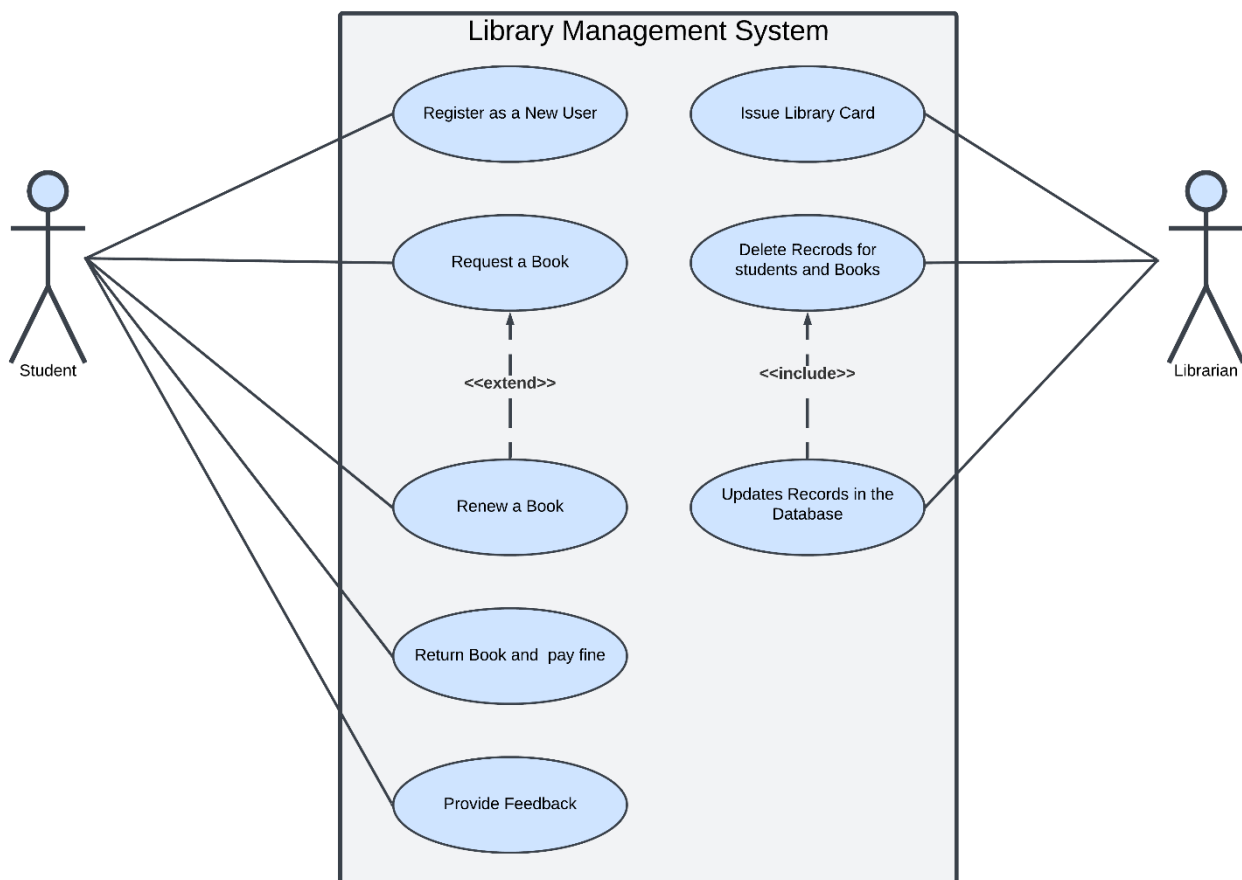


FIG1: Use case diagram for library Management System

## 6. Discussion

By completing this report, I learned why we use “Use Case” diagrams because it shows the interaction between use cases with its user or in this case actor, we can easily identify which use cases is used by which actor. I think the hardest part to identify each of the use cases perfectly and find out the extended and include relationship between each use cases. Overall, after grasping all the knowledge it was easy to implement.

Important points ,possibilities and improvements are:

- **Clarity:** The diagram illustrates the user-librarian interaction well with the system.
- **Coverage:** All key functions were covered except additional such scenarios as Lost Library Card or Book Availability Check may also be included for completeness.
- **Further Enhancements:** Add another actor for the admin role if the system is expected to expand.