SCHOOL OF COMPUTING

LAB RECORD

23CSE111 – Object Oriented Programming

Submitted by

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BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

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AMRITA SCHOOL OF COMPUTING

CHENNAI

April - 2025

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BONAFIDE CERTIFICATE

This is to certify that the Lab Record work for 23CSE111-Object Oriented Programming Subject submitted by ***CH.SC.U4CSE24160 – Mahalakshmi K*** in **"Computer Science and Engineering"** is a bonafide record of the work carried out under my guidance and supervision at Amrita School of Computing, Chennai.

This Lab examination held on 13/03/2025

Internal Examiner 1 Internal Examiner 2

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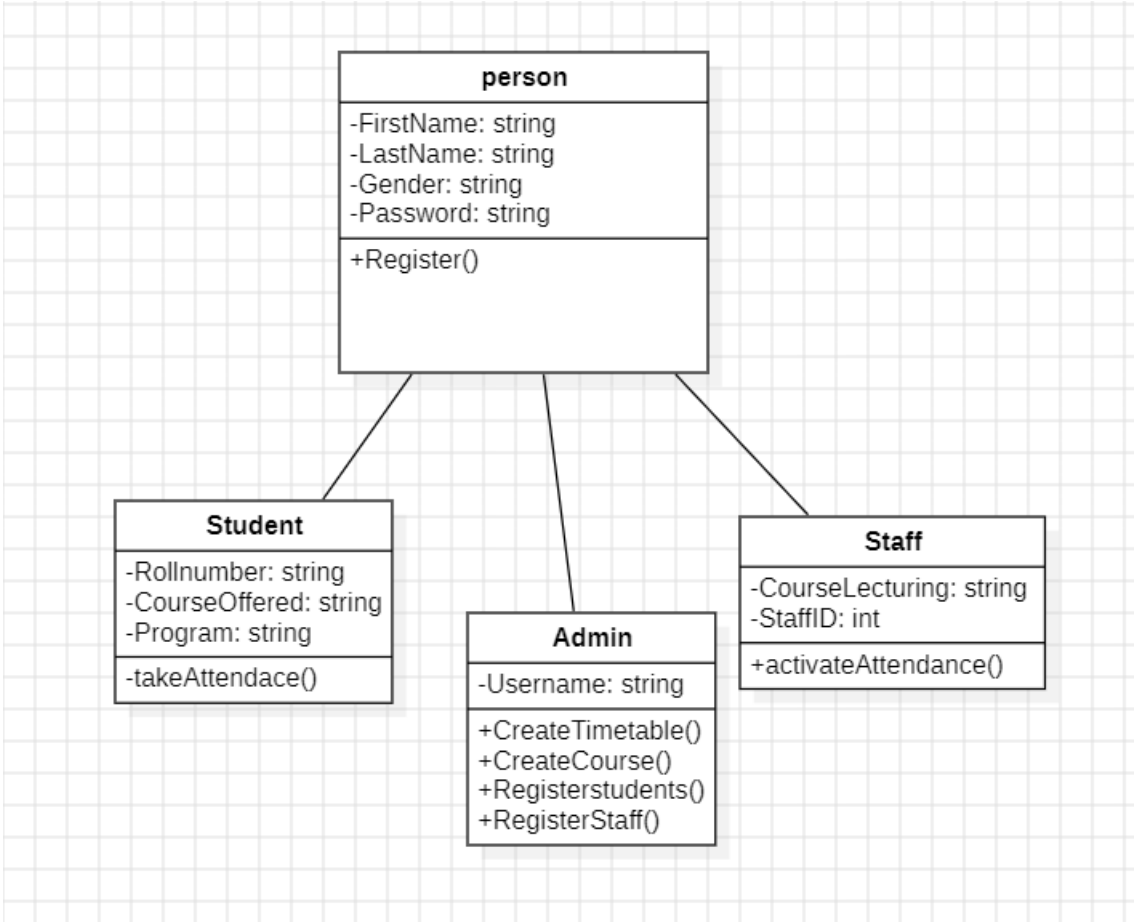
EXPERIMENT-1

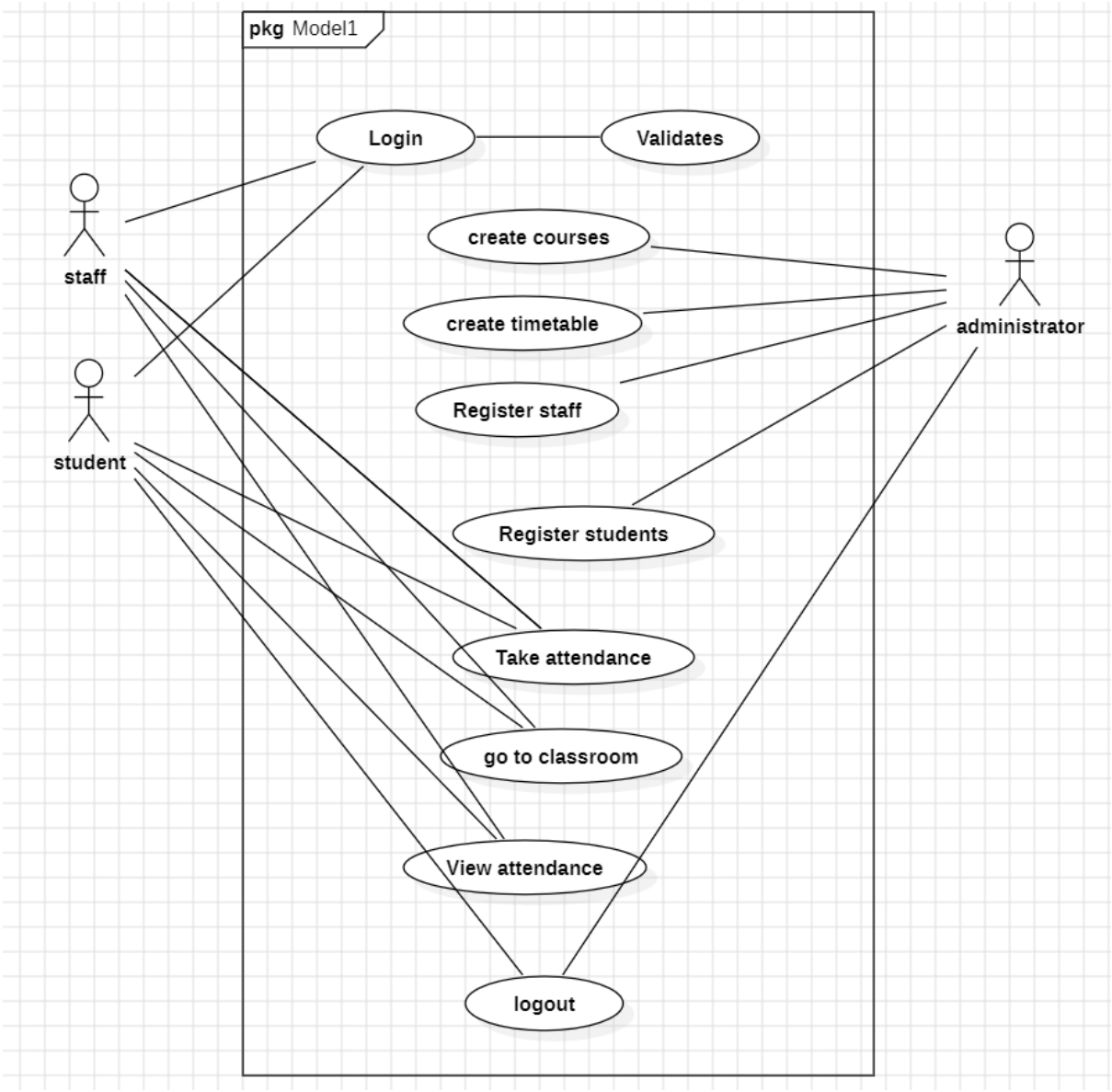
UML DIAGRAMS

1. Online attendance system:

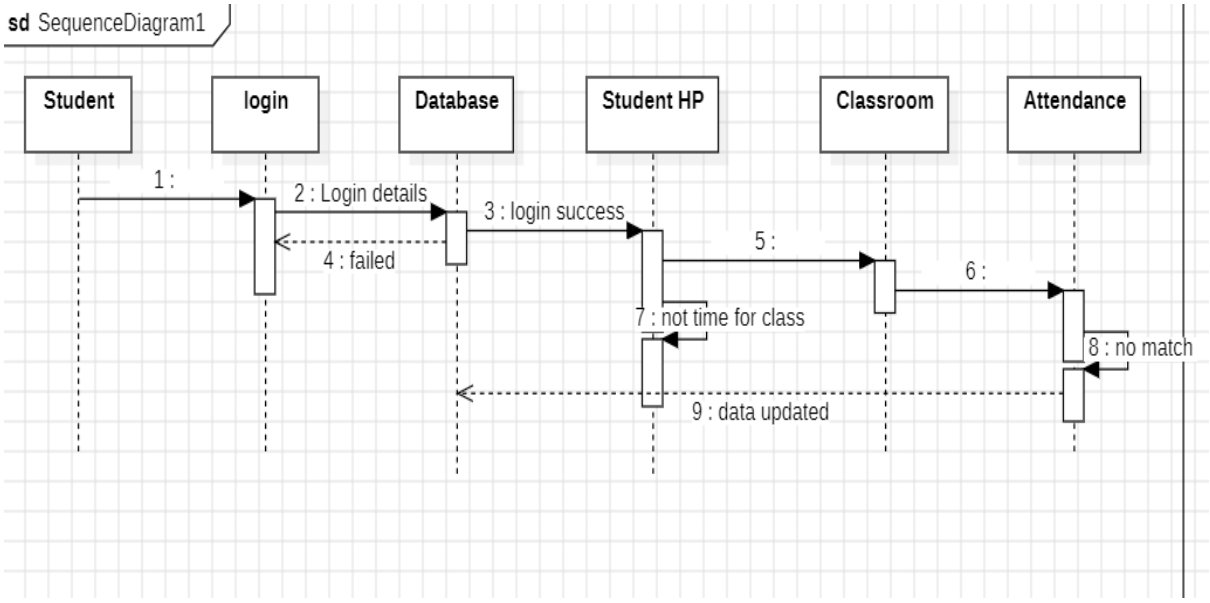
a)Class diagram



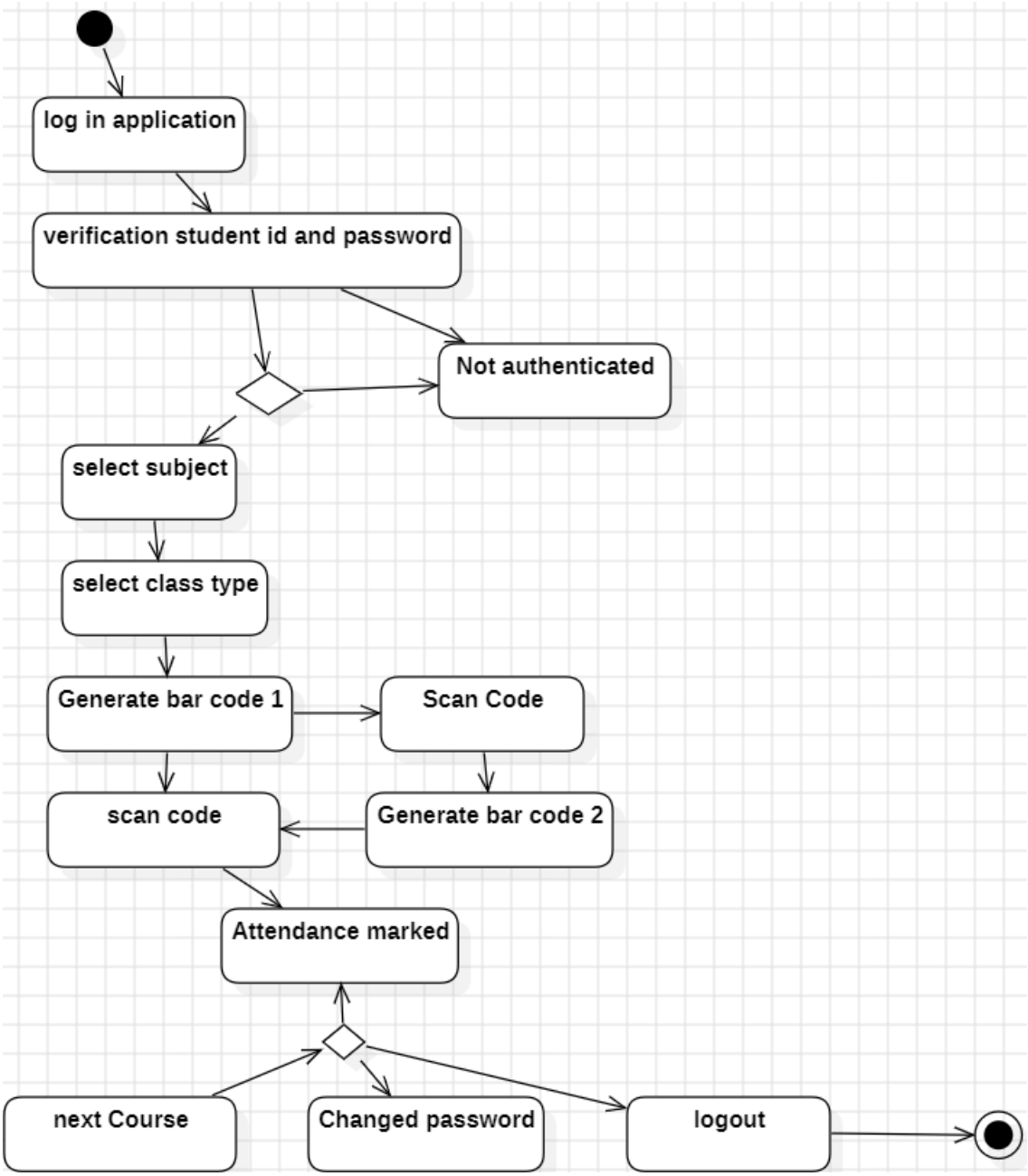
b)Use-Case Diagram



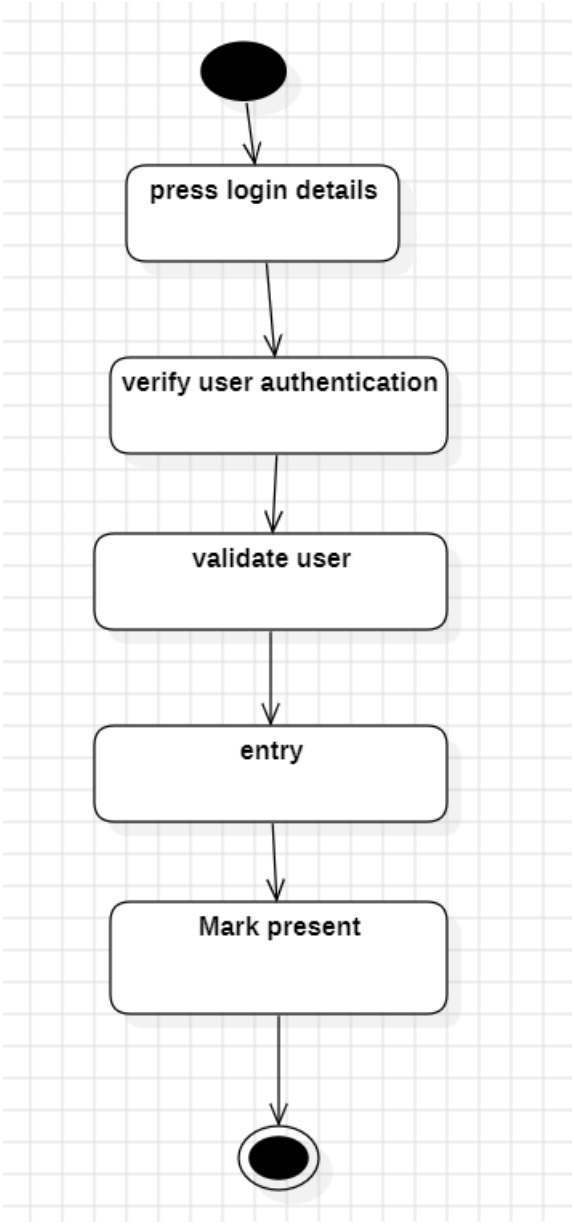
c) Sequence Diagram



d)Activity Diagram



e) State Diagram

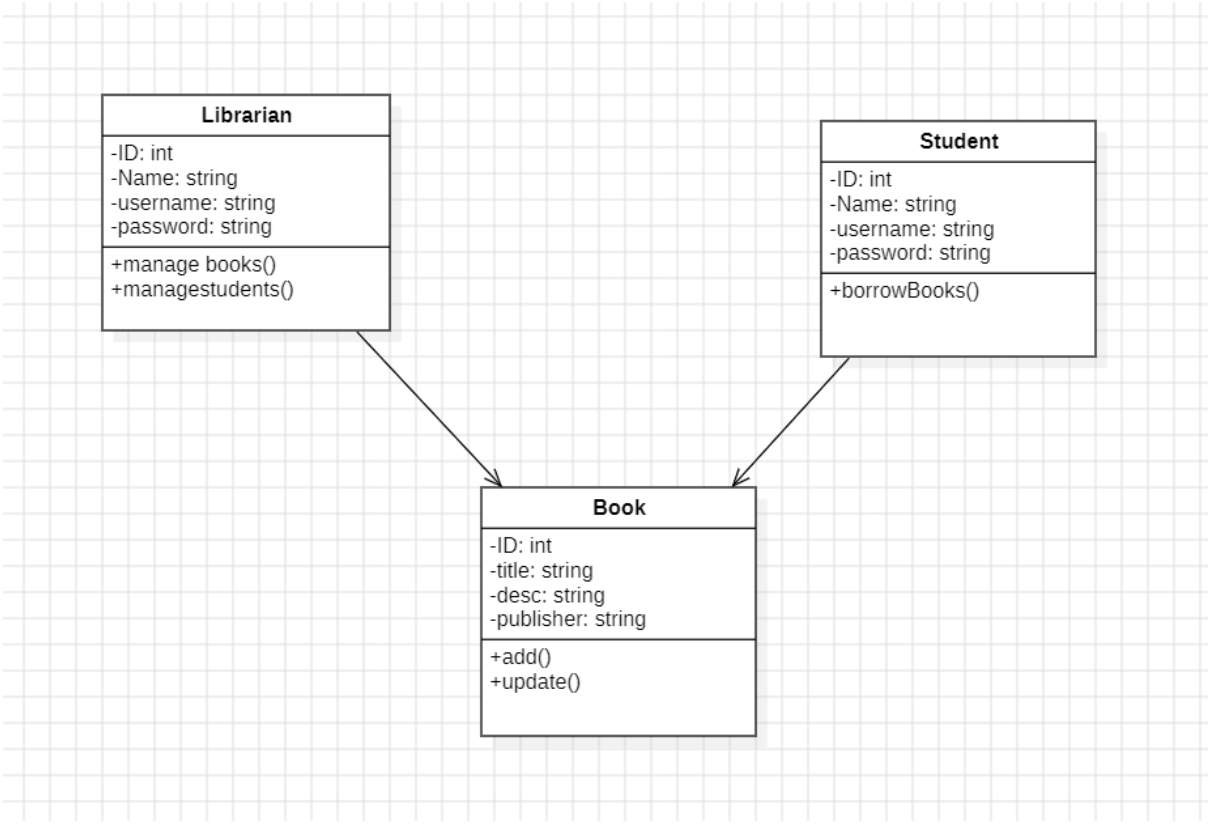

press login details
verify user authentication
validate user
entry
Mark present

EXPERIMENT-2

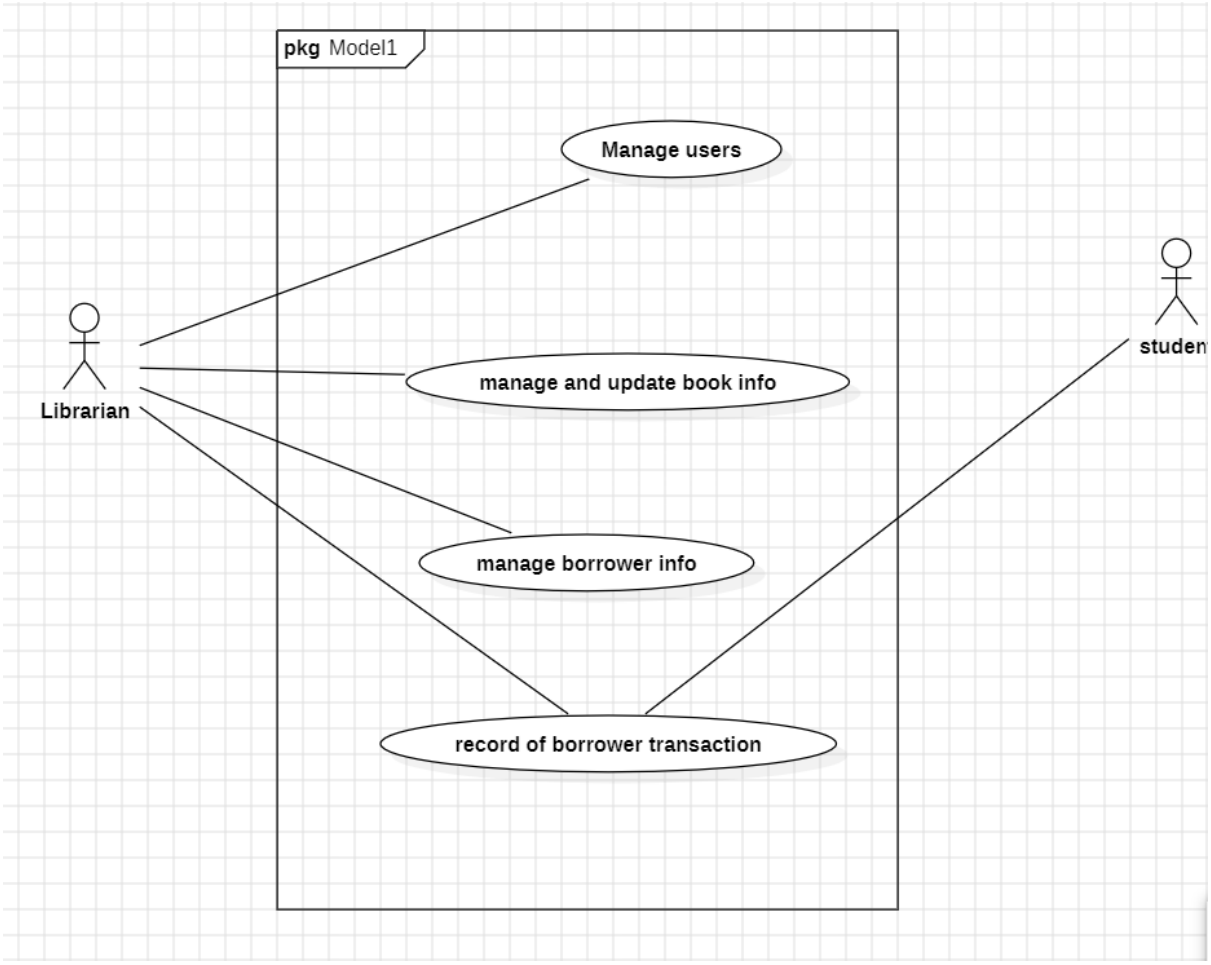
UML DIAGRAMS

2. Library Management

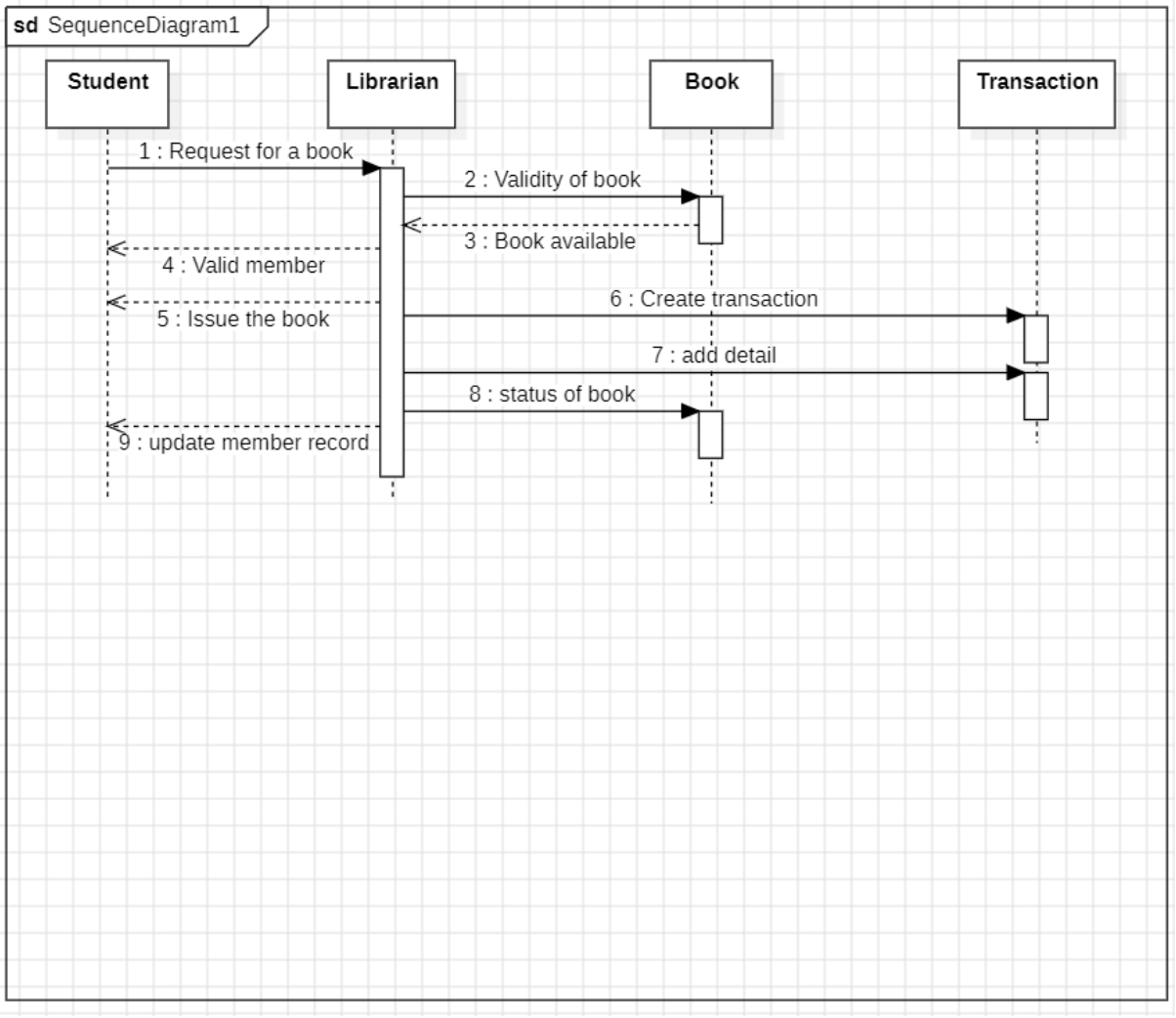
a)Class Diagram



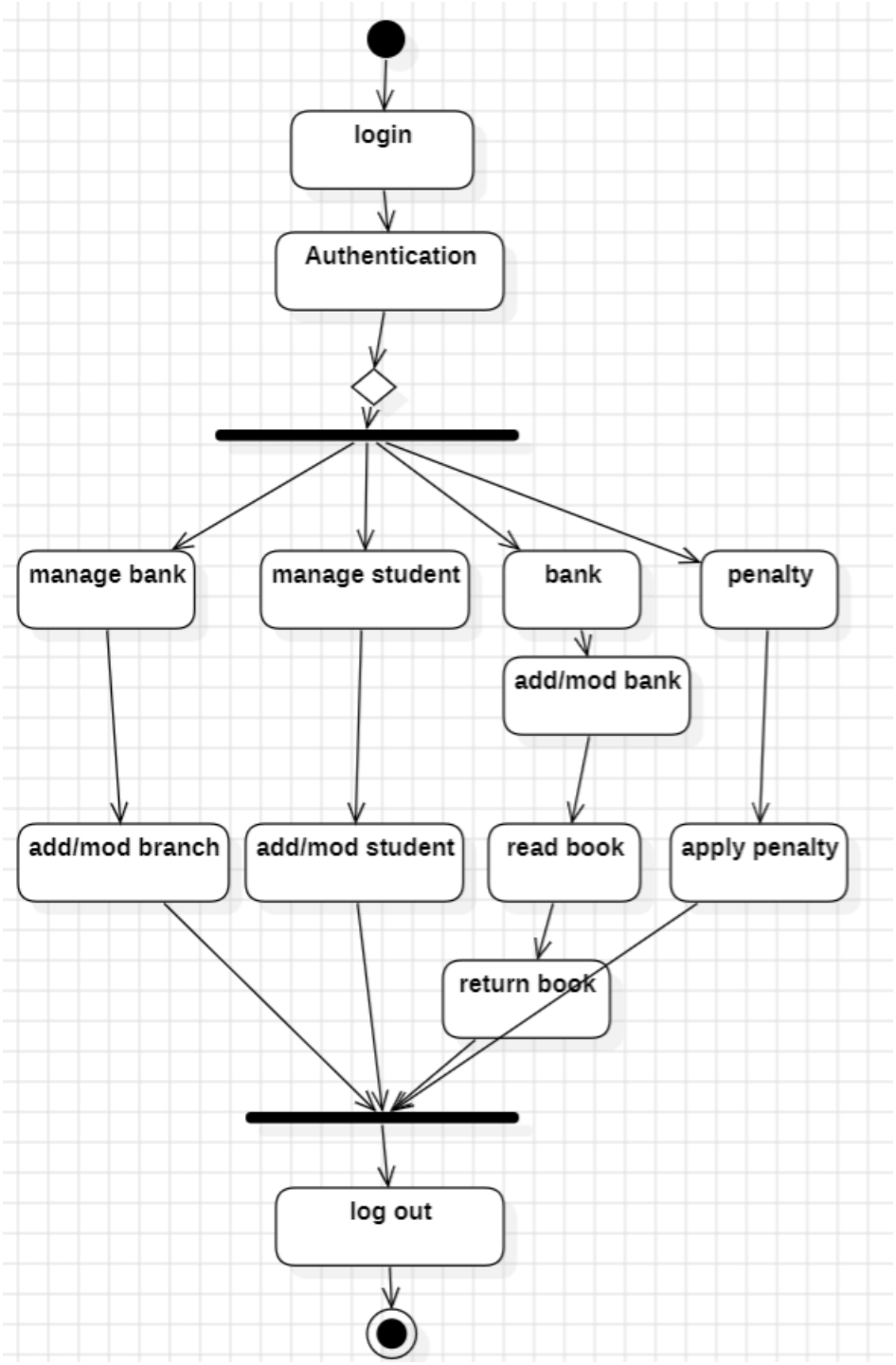
b)Use-Case Diagram



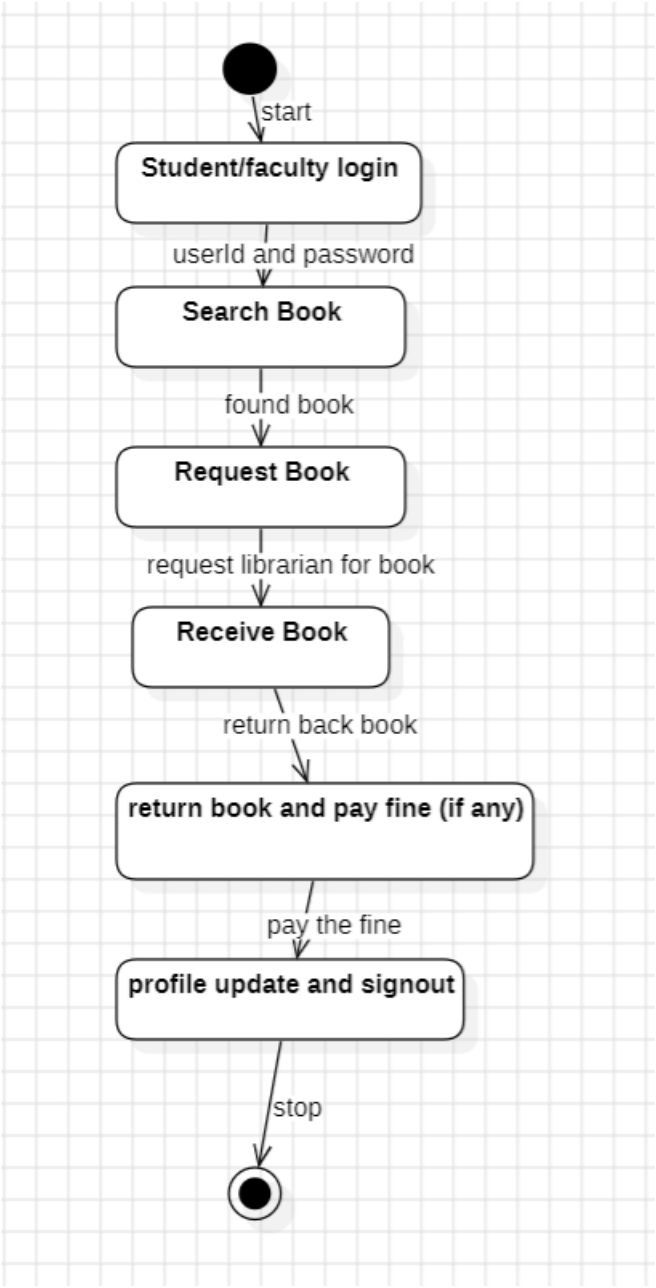
c) Sequence Diagram



d)Activity Diagram



e)State Diagram


start
Student/faculty login
userId and password
Search Book
found book
Request Book
request librarian for book
Receive Book
return back book
return book and pay fine (if any)
pay the fine
profile update and signout
stop

EXPERIMENT-3

1. Hello World (Basic Program)

Java Code :

```
public class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello, World!");
    }
}
```

OUTPUT :

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>javac HelloWorld.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>java HelloWorld.java
Hello, World!
```

2. Taking User Input

Java Code :

```
import java.util.Scanner;


public class UserInput {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter your name: ");
        String name = scanner.nextLine();
        System.out.println("Hello, " + name + "!");
        scanner.close();
    }
}
```

OUTPUT :

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>javac UserInput.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>java UserInput.java
Enter your name: Mahalakshmi
Hello, Mahalakshmi!
```

3. Check Even or Odd (Conditional Statement)

Java Code :

```
import java.util.Scanner;


public class EvenOdd {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = scanner.nextInt();


        if (num % 2 == 0) {
            System.out.println(num + " is Even.");
        } else {
            System.out.println(num + " is Odd.");
        }


        scanner.close();
    }
}
```

OUTPUT :

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>javac EvenOdd.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>java EvenOdd.java
Enter a number: 6
6 is Even.

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>
```

4. Factorial Using Loop

Java Code :

```
import java.util.Scanner;


public class Factorial {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = scanner.nextInt();
        int fact = 1;


        for (int i = 1; i <= num; i++) {
            fact *= i;
        }


        System.out.println("Factorial of " + num + " is " + fact);
        scanner.close();
    }
}
```

Output :

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>javac Factorial.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>java Factorial.java
Enter a number: 5
Factorial of 5 is 120
```

5. Fibonacci Series

Java Code :

```
public class Fibonacci {
   public static void main(String[] args) {
      int n = 10, first = 0, second = 1;

      System.out.print("Fibonacci Series: " + first + " " + second);

      for (int i = 2; i < n; i++) {
         int next = first + second;
         System.out.print(" " + next);
         first = second;
         second = next;
      }
   }
}
```

Output :

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>javac Fibonacci.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>java Fibonacci.java
Fibonacci Series: 0 1 1 2 3 5 8 13 21 34
```

6. Array Example (Printing Elements)

Java Code :

```
public class ArrayExample {
```

```
    public static void main(String[] args) {
        int[] numbers = {10, 20, 30, 40, 50};

        System.out.println("Array Elements:");
        for (int num : numbers) {
            System.out.println(num);
        }
    }
}
```

Output :

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>javac ArrayExample.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>java ArrayExample.java
Array Elements:
10
20
30
40
50
```

7. Function to Find Sum

Java Code :

```
public class FunctionExample {
    public static void main(String[] args) {
        int result = add(5, 10);
        System.out.println("Sum: " + result);
    }

    public static int add(int a, int b) {
        return a + b;
    }
}
```

Output :

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>javac FunctionExample.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>java FunctionExample.java
Sum: 15
```

8. Class and Object Example

Java Code :

```
class Car {
   String brand;

   public Car(String brand) {
      this.brand = brand;
   }

   public void showBrand() {
      System.out.println("Car brand: " + brand);
   }
}

public class Main {
   public static void main(String[] args) {
      Car myCar = new Car("Toyota");
      myCar.showBrand();
   }
}
```

Output :

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>javac Main.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>java Main.java
Car brand: Toyota
```

9. Reverse a String

Java Code :

```
import java.util.Scanner;


public class ReverseString {

   public static void main(String[] args) {

      Scanner scanner = new Scanner(System.in);

      System.out.print("Enter a string: ");

      String str = scanner.nextLine();
```

```
        String reversed = "";

        for (int i = str.length() - 1; i >= 0; i--) {
            reversed += str.charAt(i);
        }

        System.out.println("Reversed String: " + reversed);
        scanner.close();
    }
}
```

Output :

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>javac ReverseString.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>java ReverseString.java
Enter a string: Maha
Reversed String: ahaM
```

10. Check if a Number is Prime

Java Code :

```
import java.util.Scanner;

public class PrimeNumber {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = scanner.nextInt();
        boolean isPrime = true;

        if (num <= 1) {
            isPrime = false;
        } else {
            for (int i = 2; i <= Math.sqrt(num); i++) {
                if (num % i == 0) {
                    isPrime = false;
                    break;
```

```
            }
        }
    }

    if (isPrime) {
        System.out.println(num + " is a Prime Number.");
    } else {
        System.out.println(num + " is not a Prime Number.");
    }

    scanner.close();
  }
}
```

Output :

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>javac PrimeNumber.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Experiment 3>java PrimeNumber.java
Enter a number: 51
51 is not a Prime Number.
```