SCHOOL OF
COMPUTING

NELLI PREETHI JASMINE

CH.SC.U4CSE24132

OBJECT ORIENTED PROGRAMMING

(23CSE111)

LAB RECORD

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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.U4CSE24132– NELLI PREETHI JASMINE** 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 on held on

Internal Examiner 1 Internal Examiner 2

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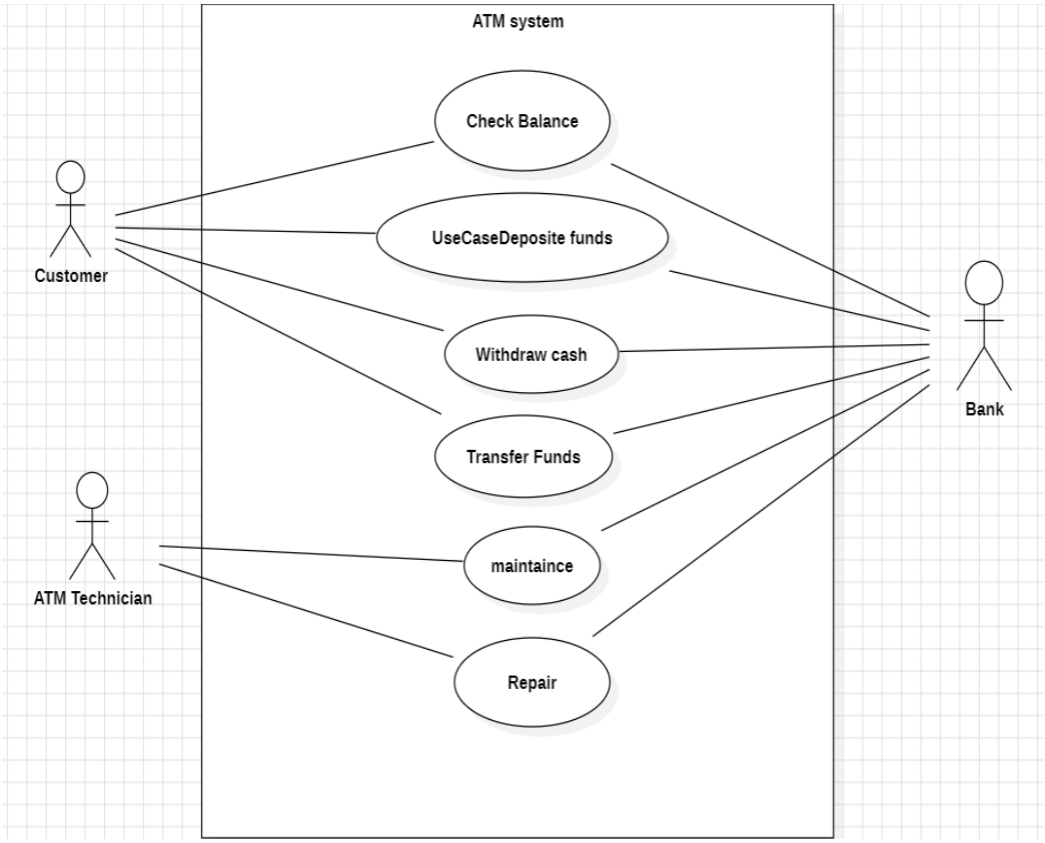
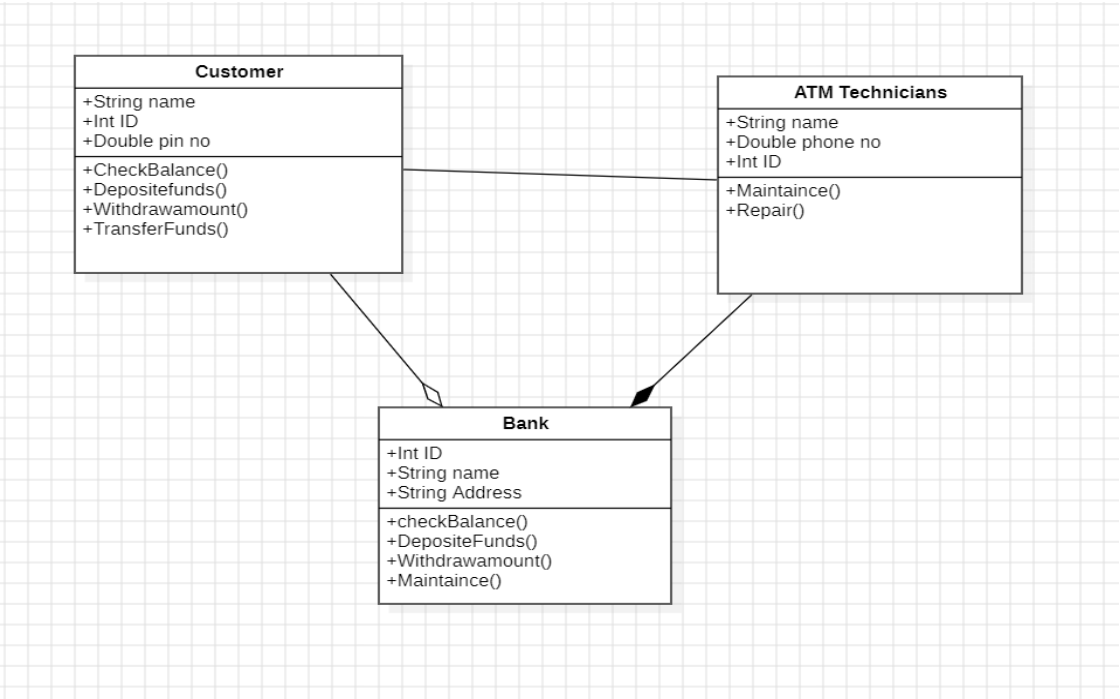
UML DIAGRAMS

1.ATM SYSTEM

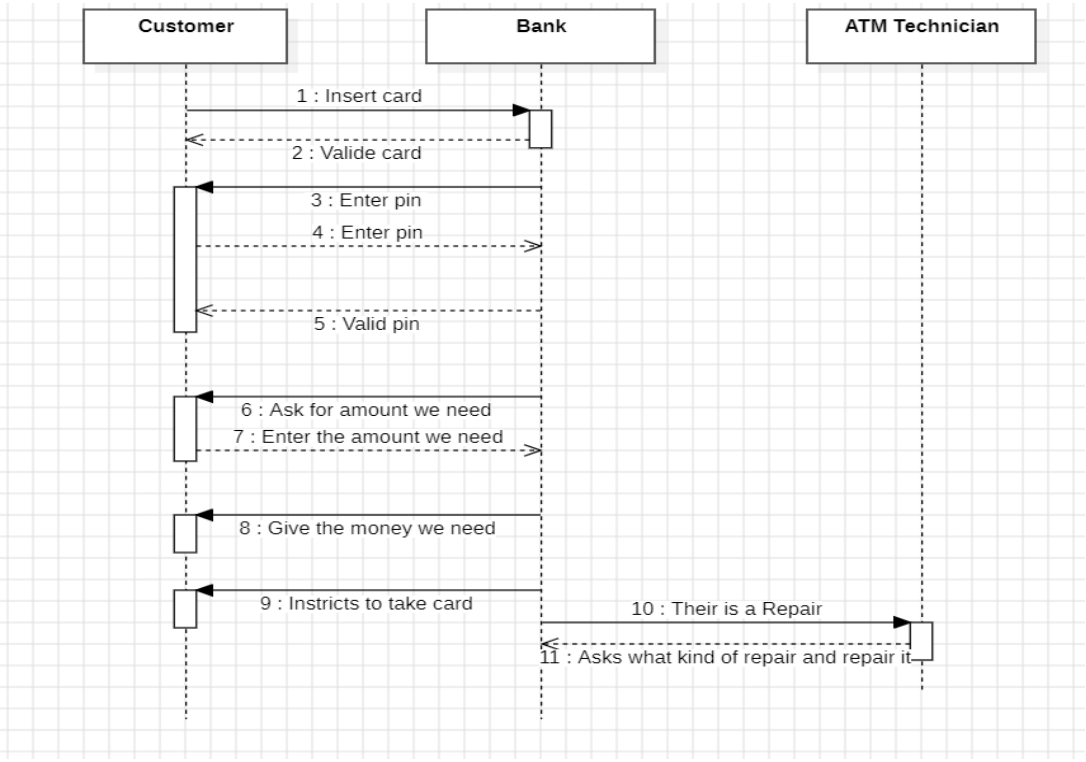
1(a): USE CASE DIAGRAM



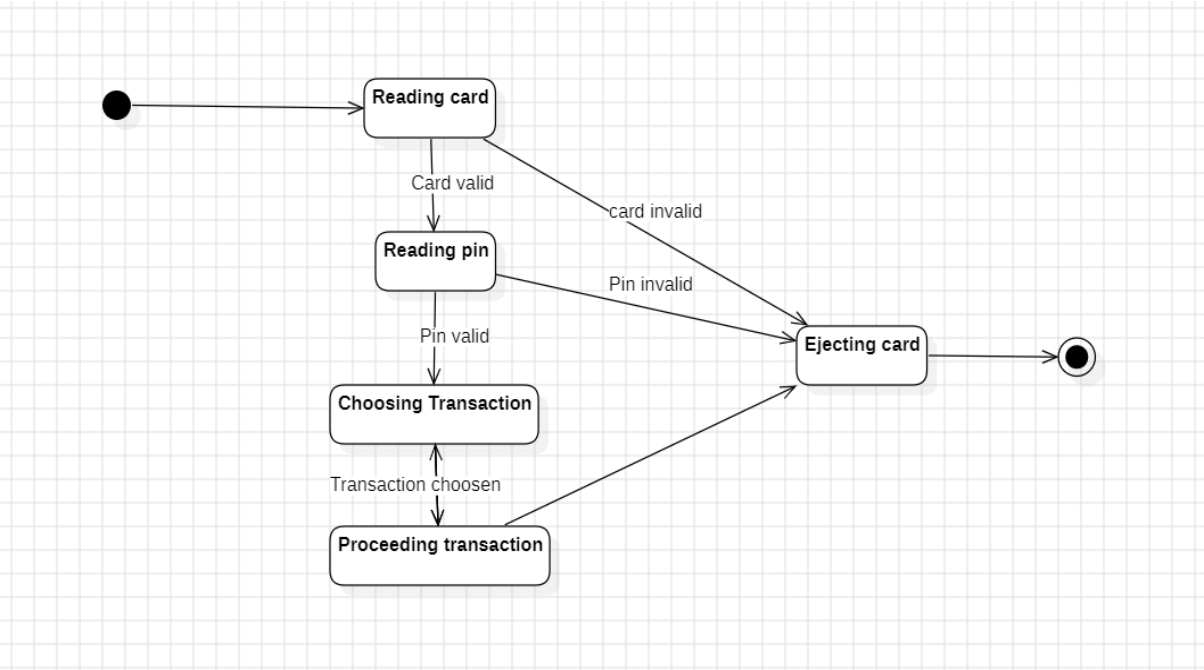
1(b): CLASS DIAGRAM



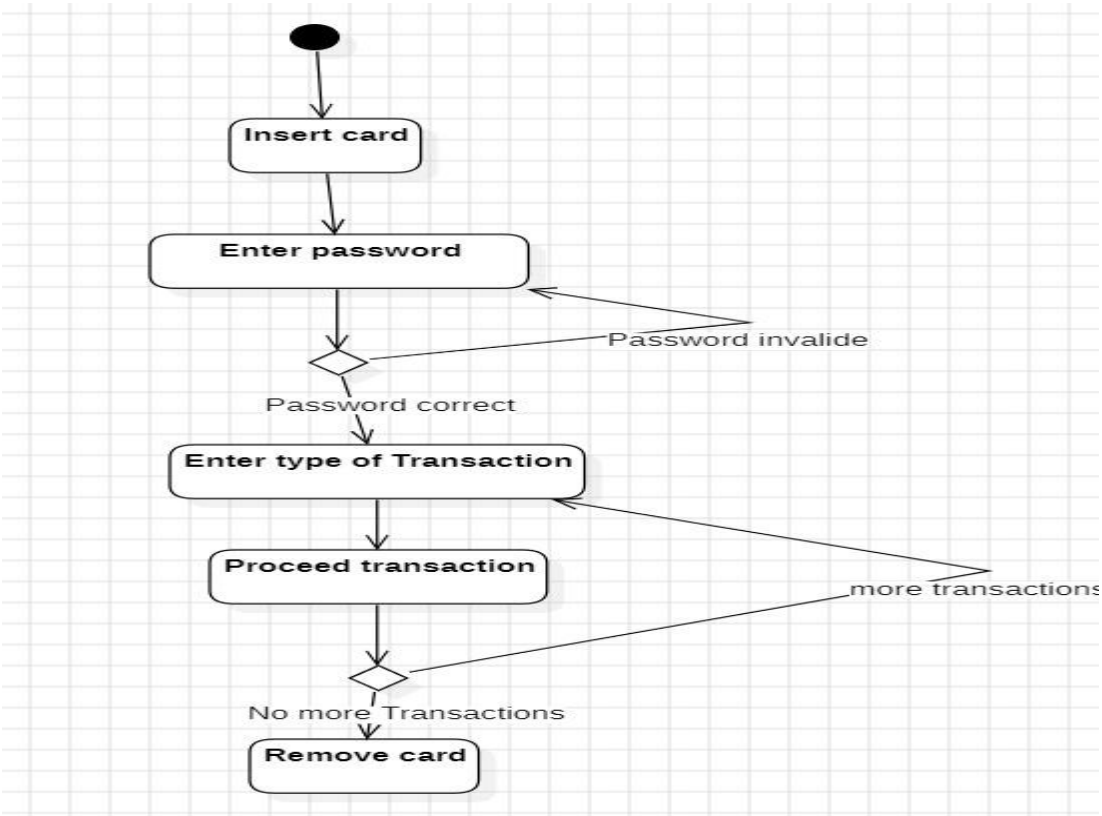
1(c): SEQUENCE DIAGRAM



1(d): STATE DIAGRAM

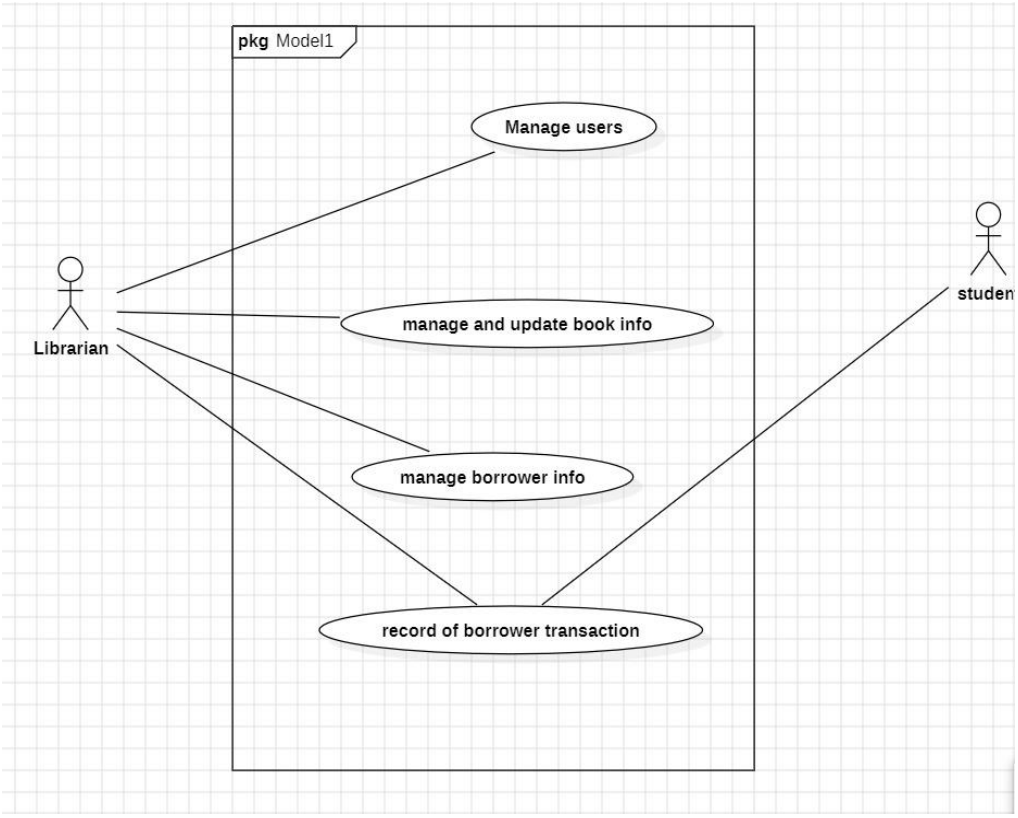


1(e): ACTIVITY DIAGRAM

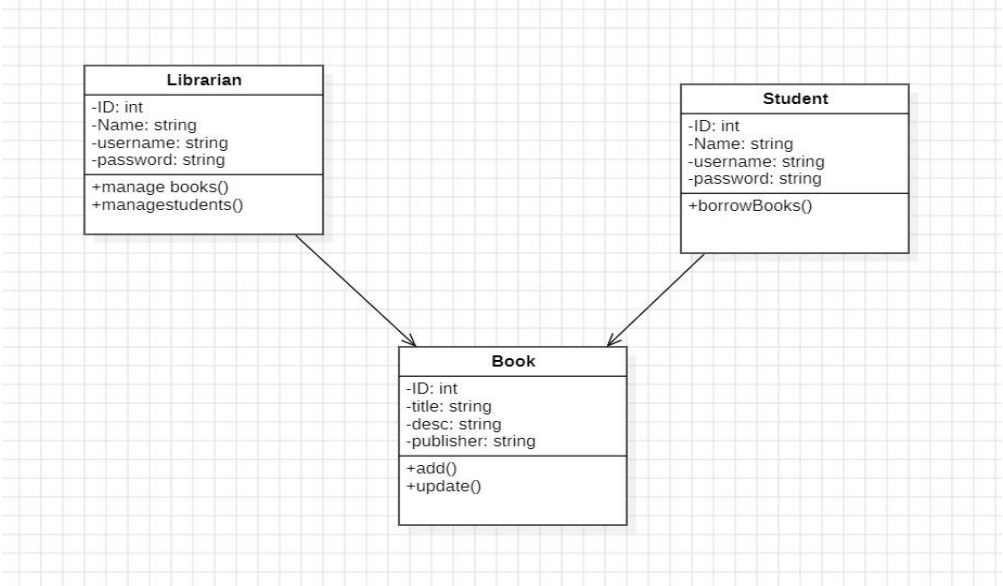


2.ONLINE ATTENDENCE

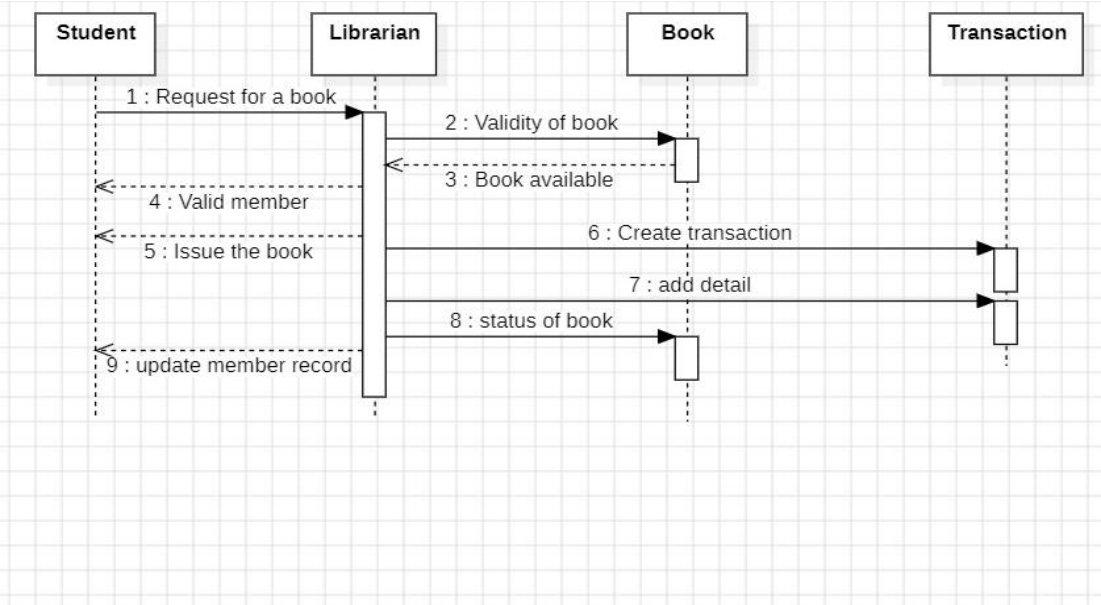
2(A): USE CASE DIAGRAM



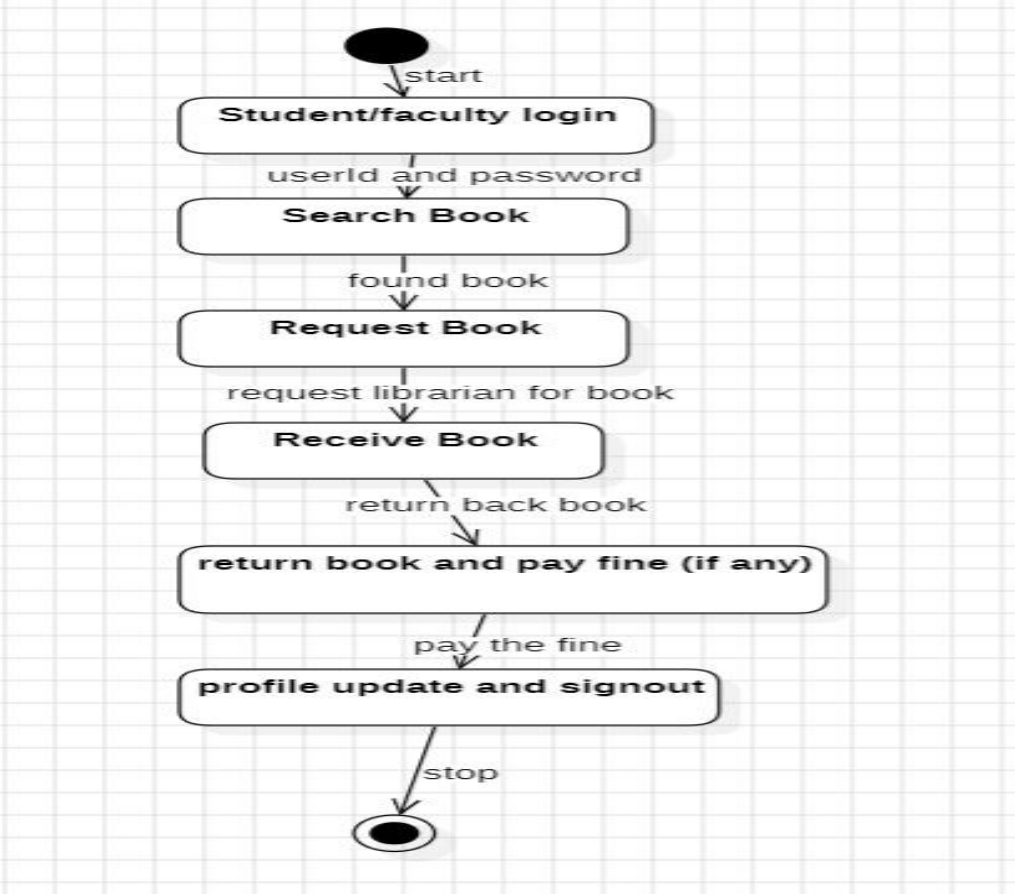
2(B): CLASS DIAGRAM



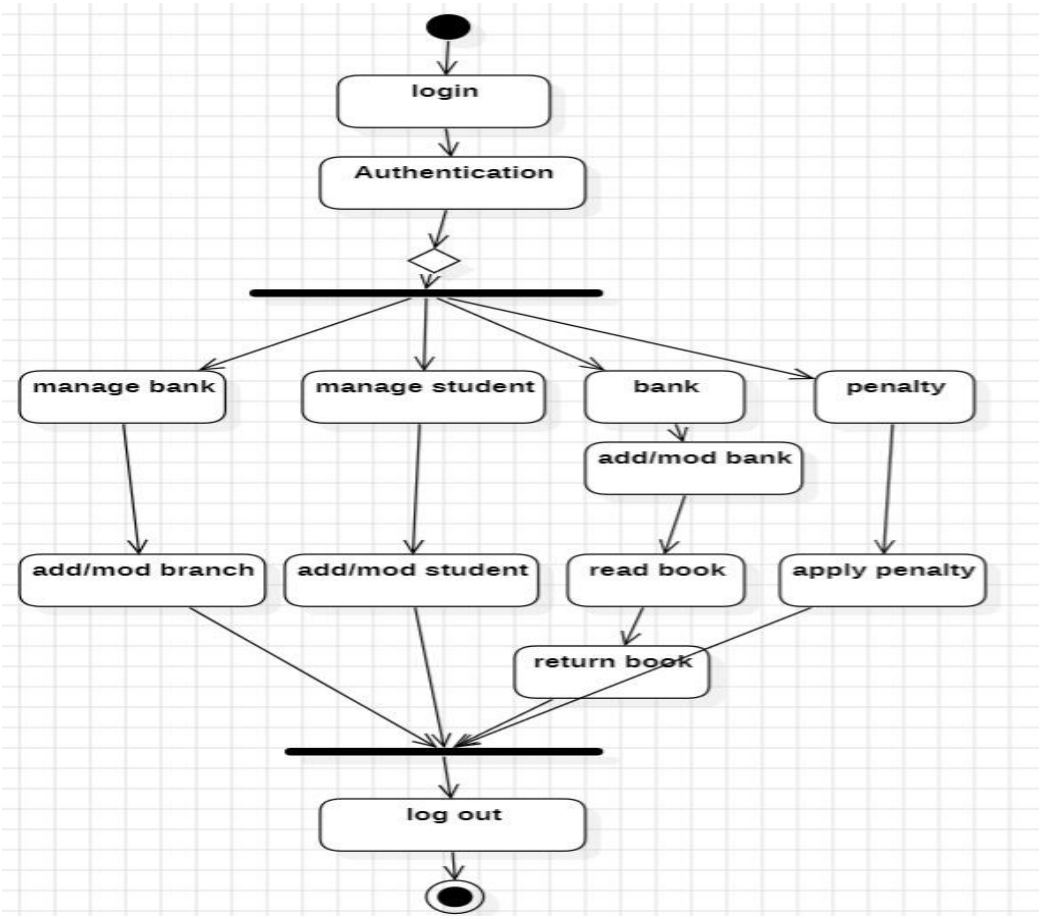
2(C): SEQUENCE DIAGRAM



2(D): STATE DIAGRAM



2(E): ACTIVITY DIAGRAM



3. JAVA BASIC PROGRAMS

3(a): SUM OF DIGITS

CODE:

```
import java.util.Scanner;

public class SumOfDigits {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();
        int sum = 0;

        while (num != 0) {
            sum += num % 10;
            num /= 10;
        }

        System.out.println("Sum of digits: " + sum);
        sc.close();
    }
}
```

OUTPUT:

```
C:\Users\PREETHI JASMINE\Desktop>javac SumOfDigits.java

C:\Users\PREETHI JASMINE\Desktop>java SumOfDigits
Enter a number: 25
Sum of digits: 7

C:\Users\PREETHI JASMINE\Desktop>
```

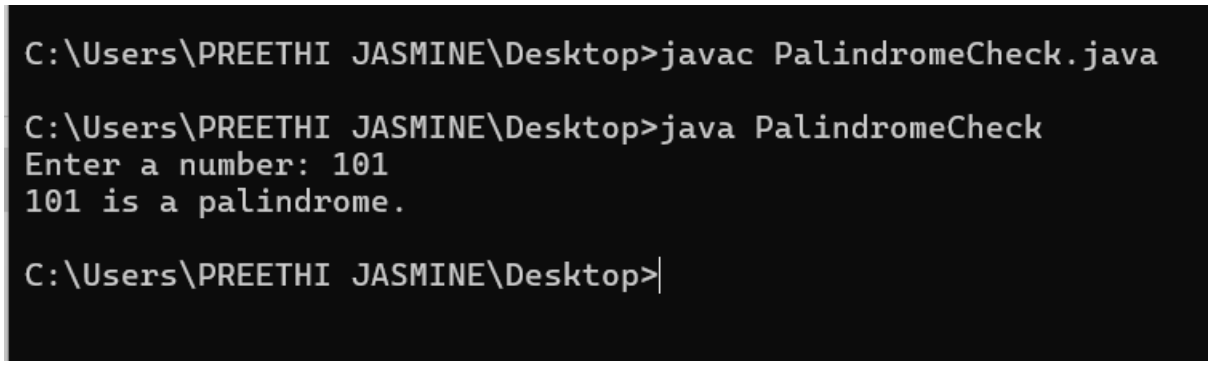
3(b):PalindromeCheck

CODE:

```
import java.util.Scanner;

public class PalindromeCheck {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();
        int original = num, reversed = 0;

        while (num != 0) {
            int digit = num % 10;
            reversed = reversed * 10 + digit;
            num /= 10;
        }

        if (original == reversed)
            System.out.println(original + " is a palindrome.");
        else
            System.out.println(original + " is not a palindrome.");
```

```
        sc.close();
    }
}
```

OUTPUT:



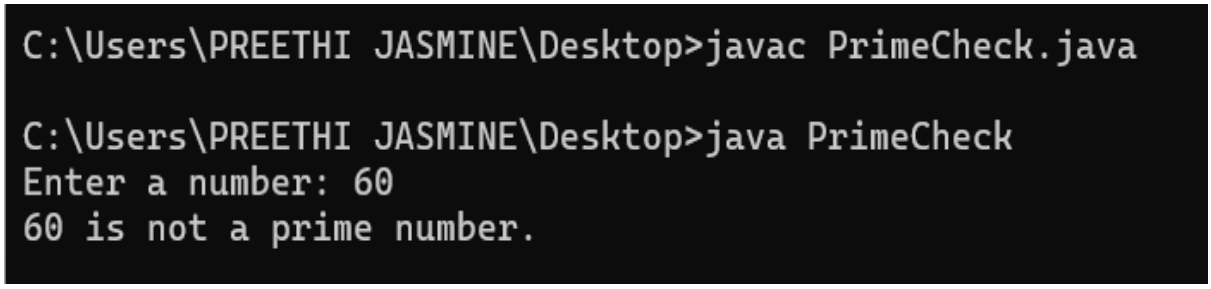
3(c): Check Prime Number

CODE:

```
import java.util.Scanner;

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

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

```
                break;
            }
        }
    }

    if (isPrime)
        System.out.println(num + " is a prime number.");
    else
        System.out.println(num + " is not a prime number.");

    sc.close();
  }
}
```

OUTPUT:



3(d): Fibonacci Numbers

CODE:

```
import java.util.Scanner;

public class FibonacciSeries {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the number of terms: ");
        int n = sc.nextInt();
```

```
        int a = 0, b = 1, next;
        System.out.print("Fibonacci Series: " + a + " " + b);

        for (int i = 2; i < n; i++) {
            next = a + b;
            System.out.print(" " + next);
            a = b;
            b = next;
        }

        sc.close();
    }
}
```

OUTPUT:

```
C:\Users\PREETHI JASMINE\Desktop>javac FibonacciSeries.java

C:\Users\PREETHI JASMINE\Desktop>java FibonacciSeries
Enter the number of terms: 5
Fibonacci Series: 0 1 1 2 3
C:\Users\PREETHI JASMINE\Desktop>
```

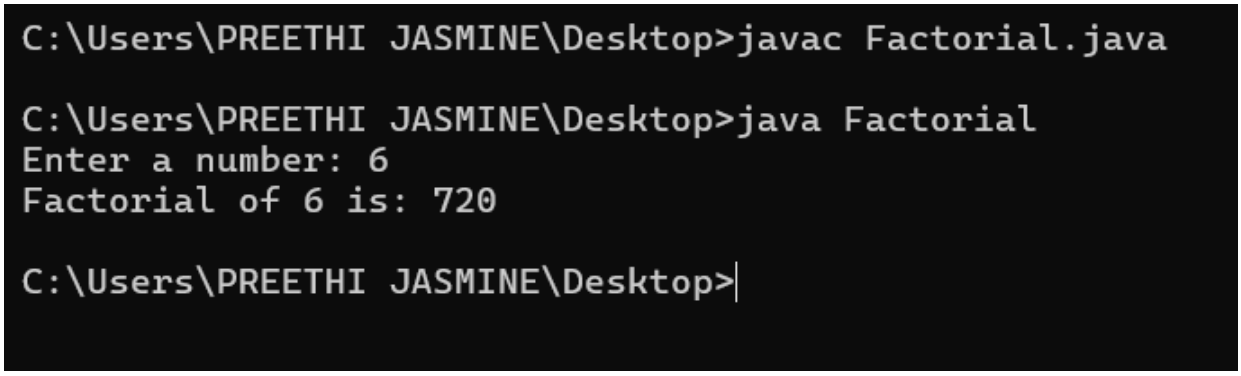
3(e): Factorial Of a Number

CODE:

```
import java.util.Scanner;

public class Factorial {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
```

```
        int num = sc.nextInt();
        int fact = 1;

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

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

OUTPUT:



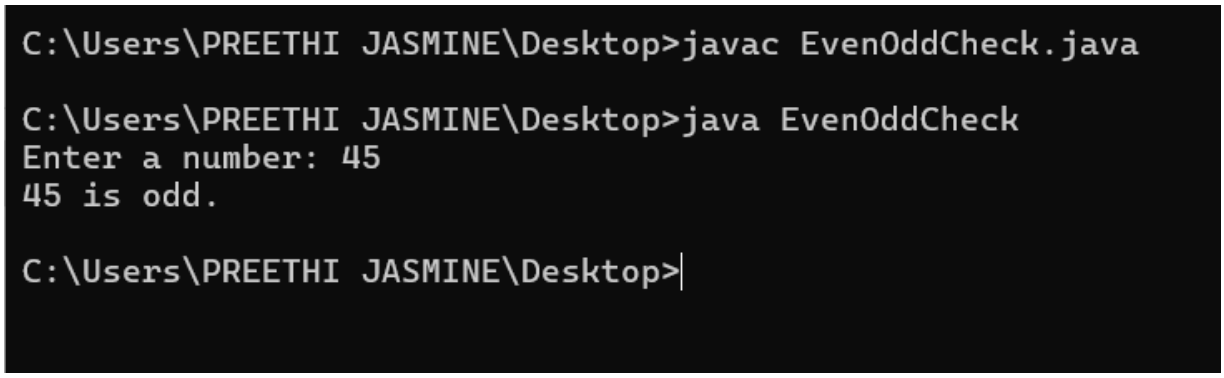
3(f): Check Even Or Odd

CODE:

```
import java.util.Scanner;

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

```
        if (num % 2 == 0)
            System.out.println(num + " is even.");
        else
            System.out.println(num + " is odd.");

        sc.close();
    }
}
```

OUTPUT:



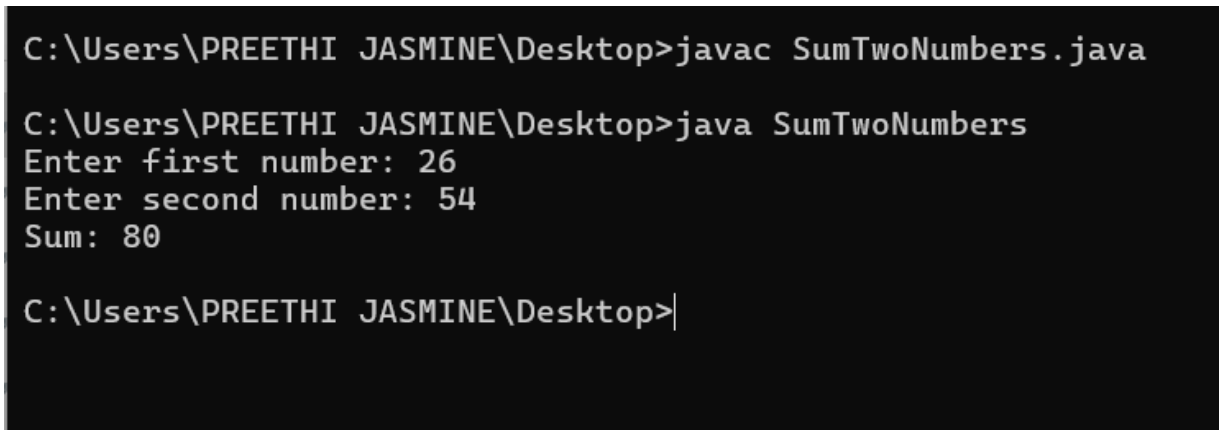
3(g): Sum Of Two Numbers

CODE:

```
import java.util.Scanner;

public class SumTwoNumbers {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter first number: ");
        int num1 = sc.nextInt();
        System.out.print("Enter second number: ");
        int num2 = sc.nextInt();
```

```
        int sum = num1 + num2;
        System.out.println("Sum: " + sum);
        sc.close();
    }
}
```

OUTPUT:



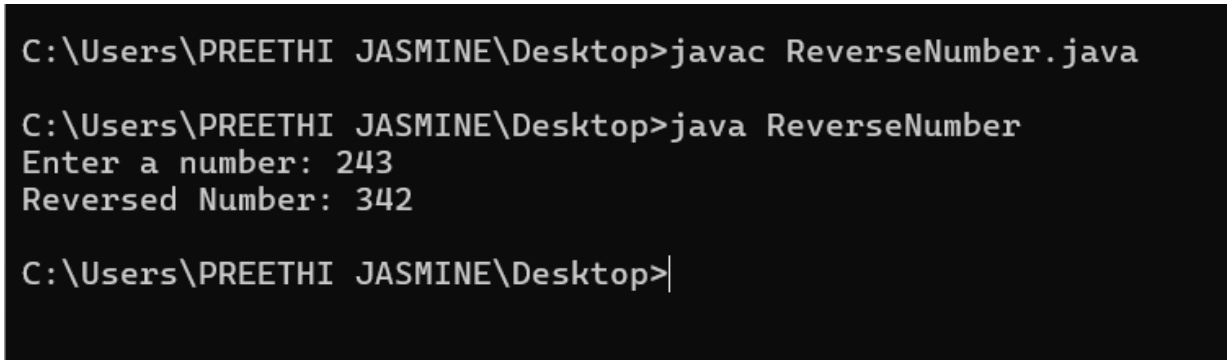
3(h): Reverse a Number

CODE:

```
import java.util.Scanner;

public class ReverseNumber {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();
        int reversed = 0;

        while (num != 0) {
            int digit = num % 10;
            reversed = reversed * 10 + digit;
```

```
            num /= 10;
        }

        System.out.println("Reversed Number: " + reversed);
        sc.close();
    }
}
```

OUTPUT:



3(i): Armstrong Number

CODE:

```
import java.util.Scanner;

public class ArmstrongNumber {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();
        int original = num, sum = 0, digits = 0, temp = num;

        while (temp != 0) {
            temp /= 10;
```

```
            digits++;
        }

        temp = num;
        while (temp != 0) {
            int digit = temp % 10;
            sum += Math.pow(digit, digits);
            temp /= 10;
        }

        if (sum == original)
            System.out.println(original + " is an Armstrong number.");
        else
            System.out.println(original + " is not an Armstrong number.");

        sc.close();
    }
}
```

OUTPUT:

```
C:\Users\PREETHI JASMINE\Desktop>javac ArmstrongNumber.java

C:\Users\PREETHI JASMINE\Desktop>java ArmstrongNumber
Enter a number: 310
310 is not an Armstrong number.

C:\Users\PREETHI JASMINE\Desktop>
```

3(j): Find The Largest Number

CODE:

```
import java.util.Scanner;

public class LargestNumber {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter three numbers: ");
        int a = sc.nextInt();
        int b = sc.nextInt();
        int c = sc.nextInt();

        int largest = (a > b) ? (a > c ? a : c) : (b > c ? b : c);
        System.out.println("Largest number: " + largest);

        sc.close();
    }
}
```

OUTPUT: