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CH.SC.U4CSE24121

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.U4CSE24121-KURRA VENKATA GOKUL*** 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

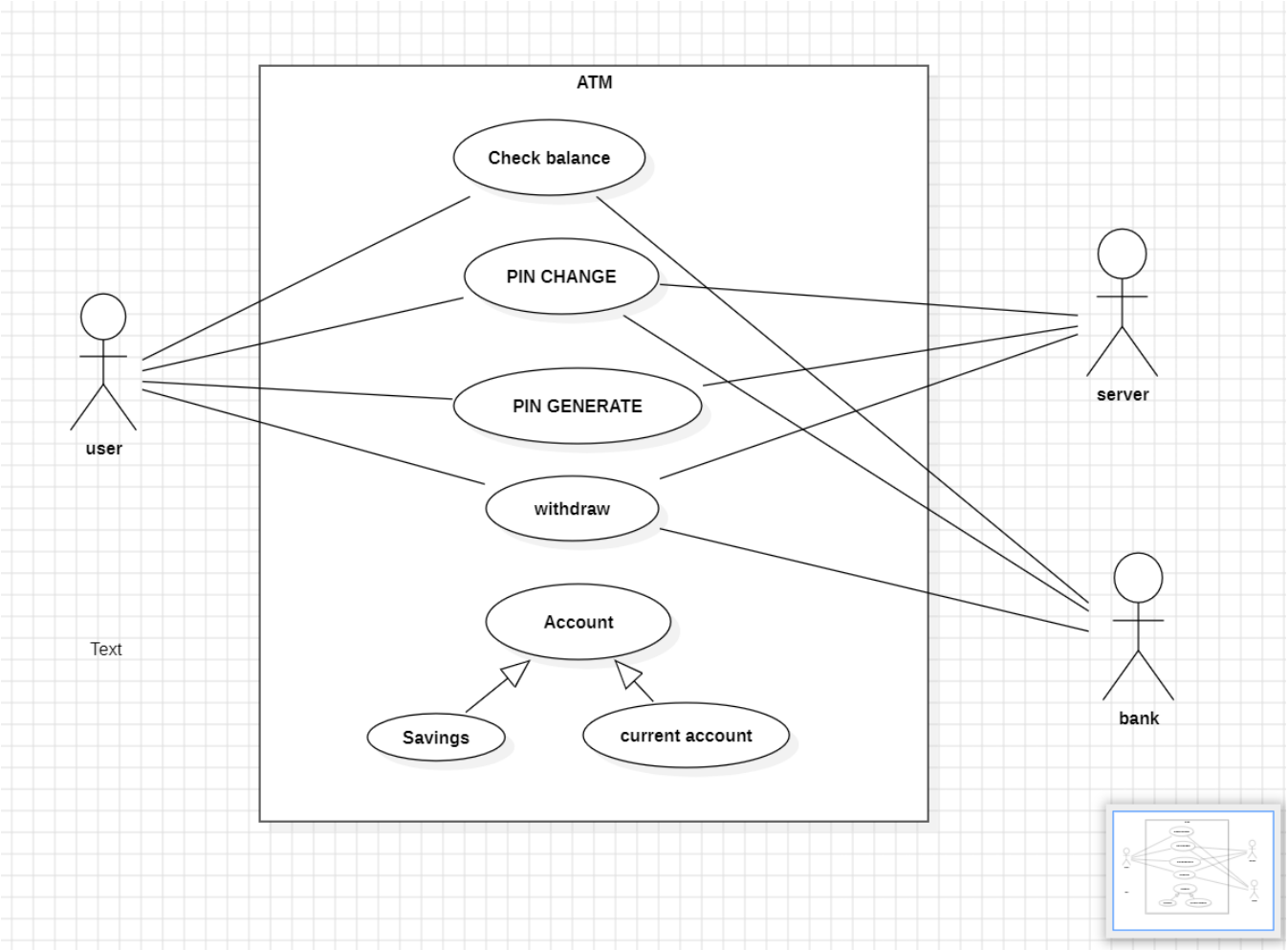
Internal Examiner 1 Internal Examiner 2

INDEX

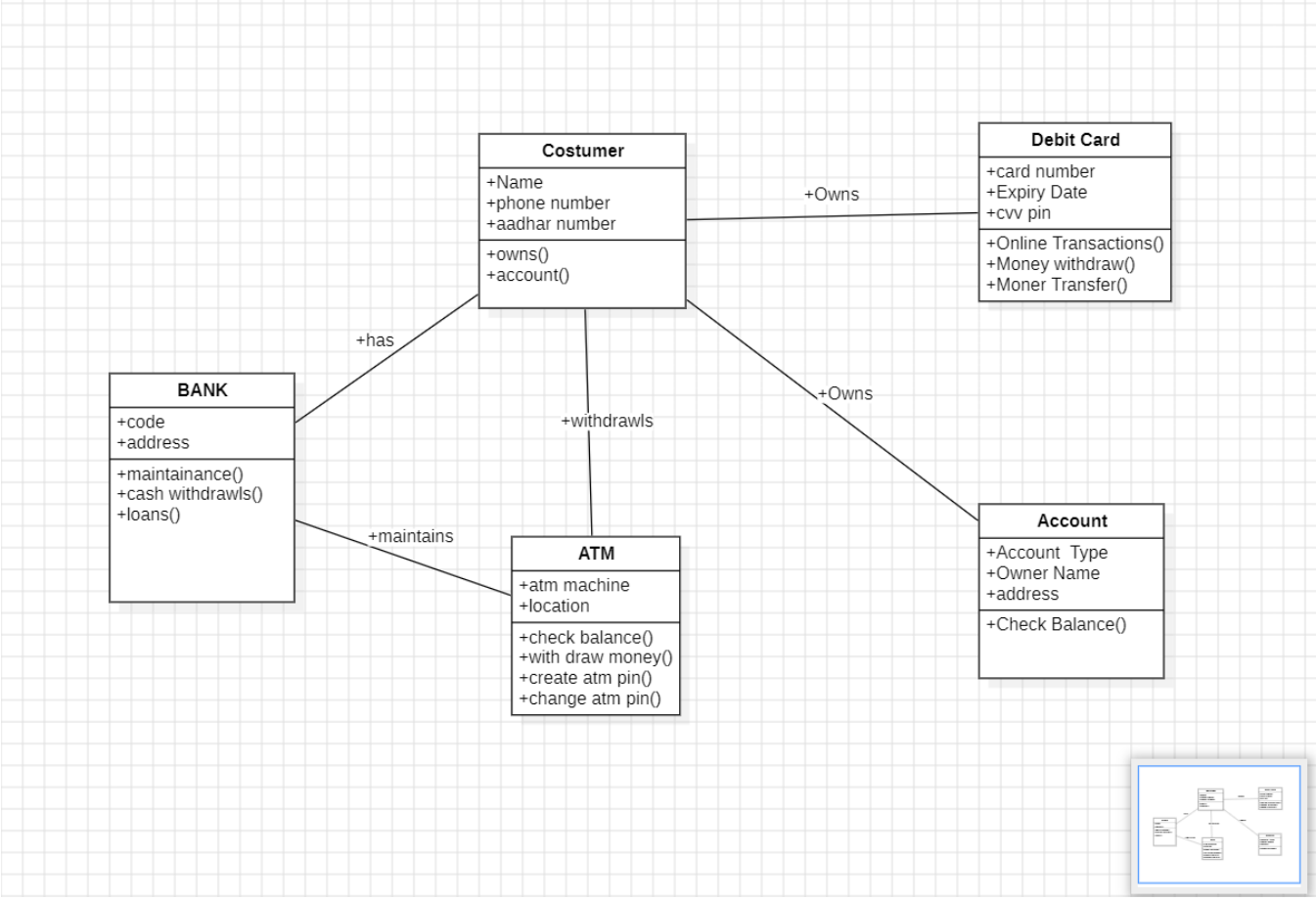
UML DIAGRAMS

1. ATM Withdraw

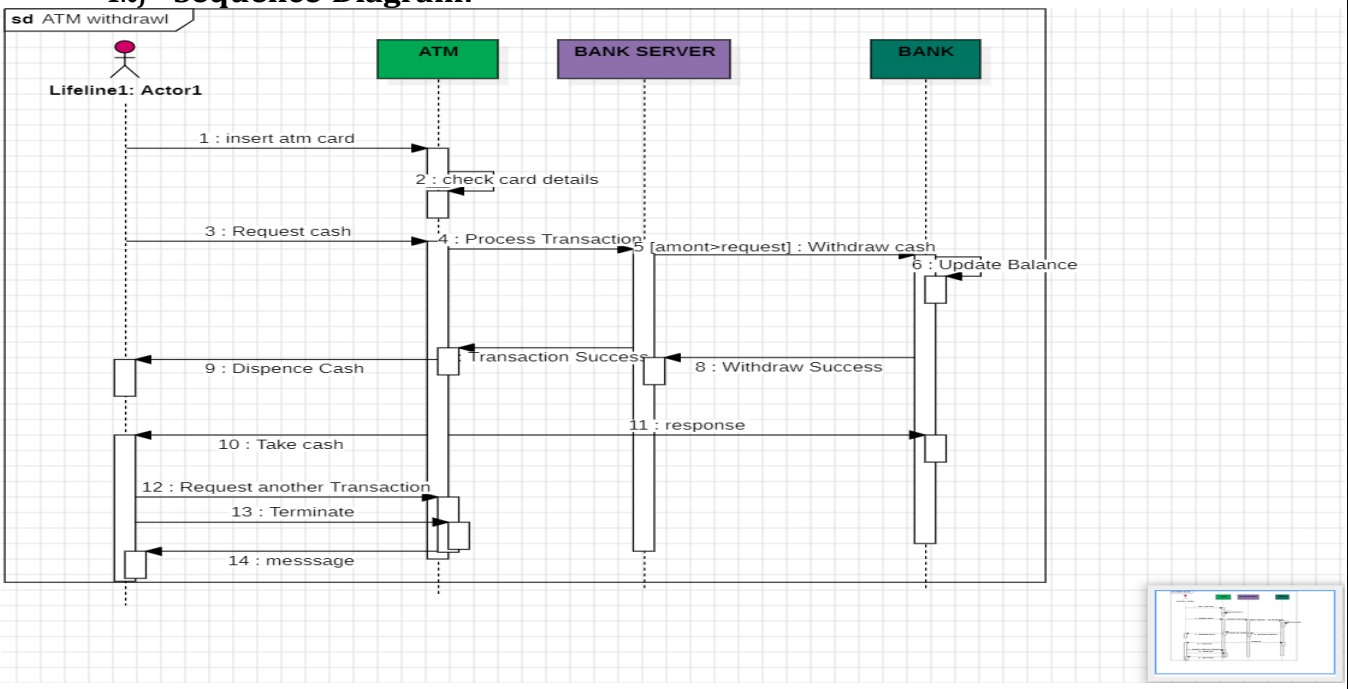
1.a) Use Case Diagram:



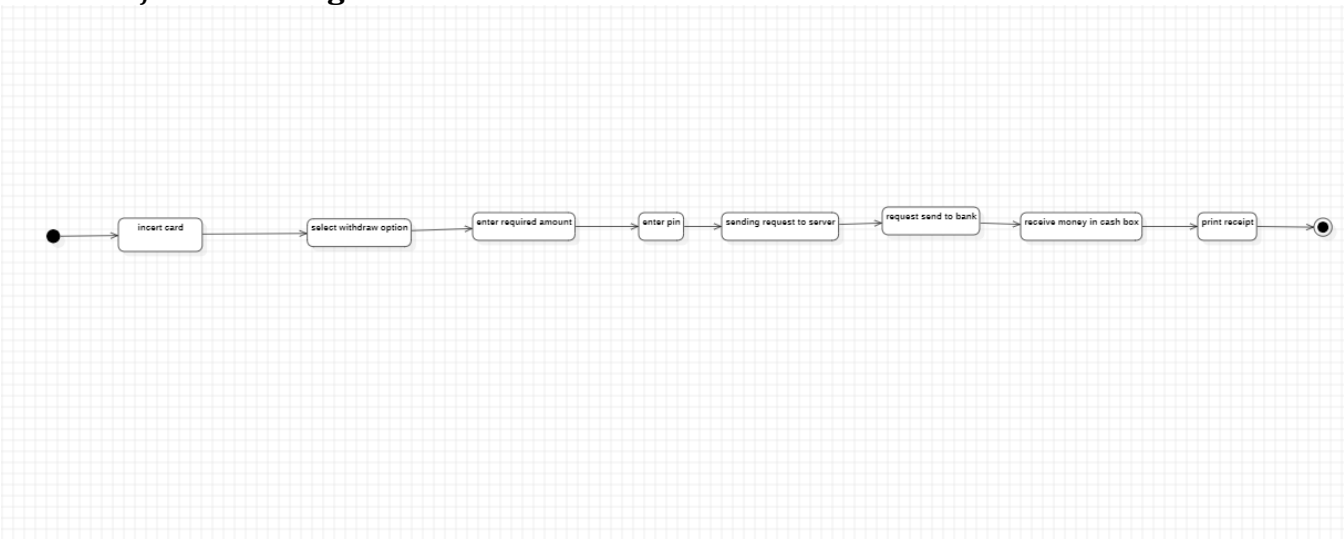
1.b) Class Diagram:



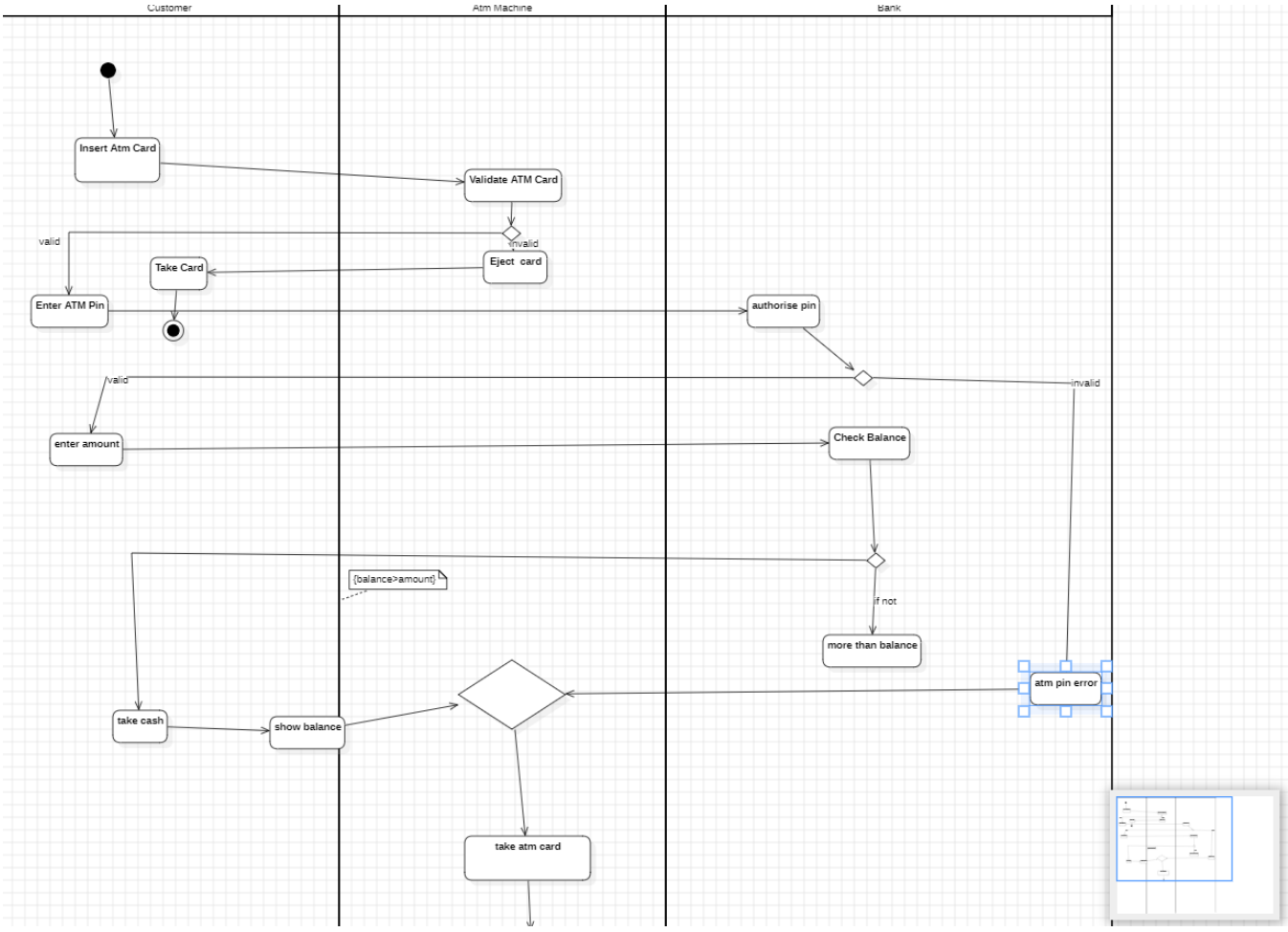
1.c) Sequence Diagram:



1.d) State- Diagram:

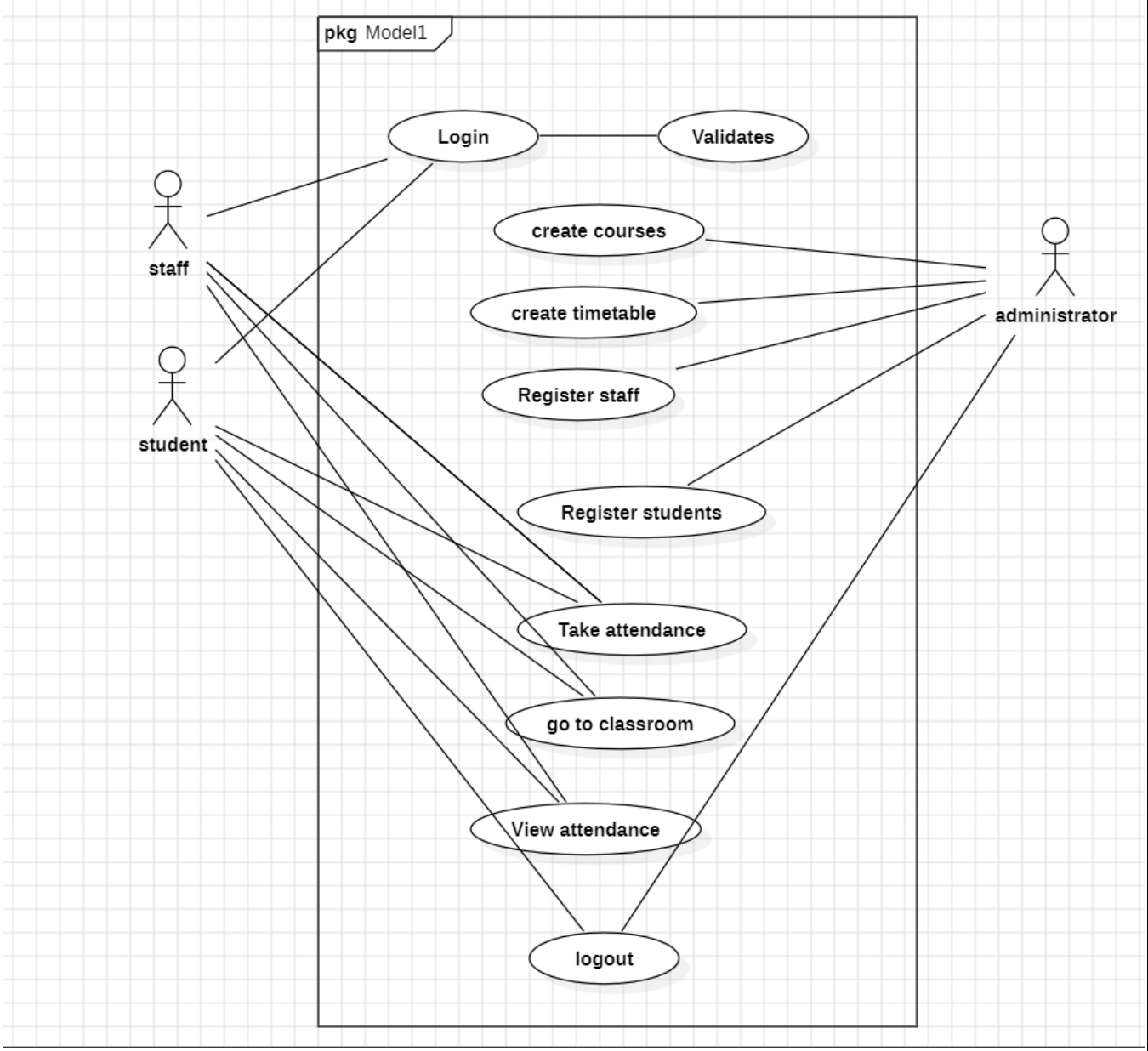


1.e) Activity Diagram:

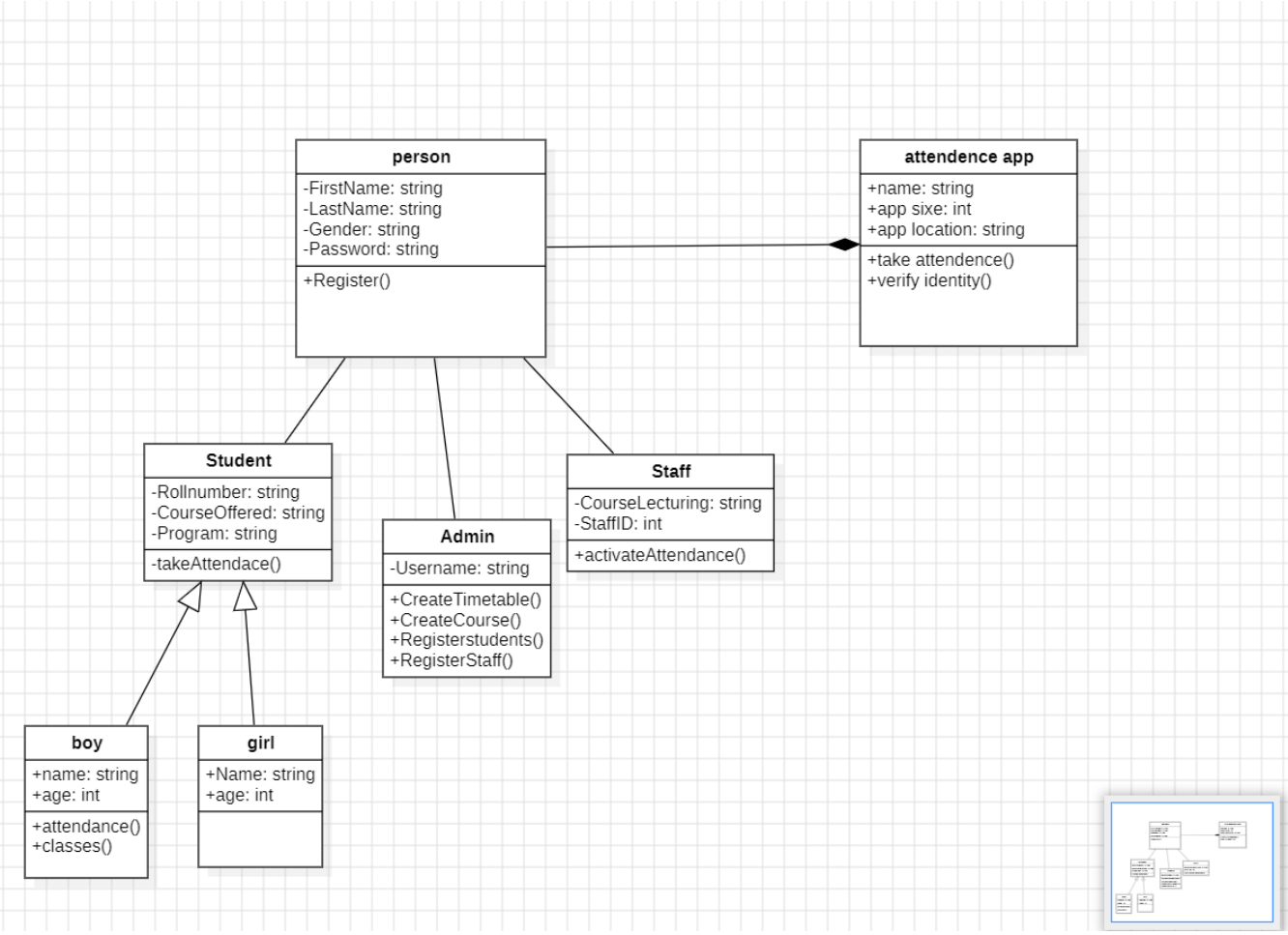


2. Online Attendence App

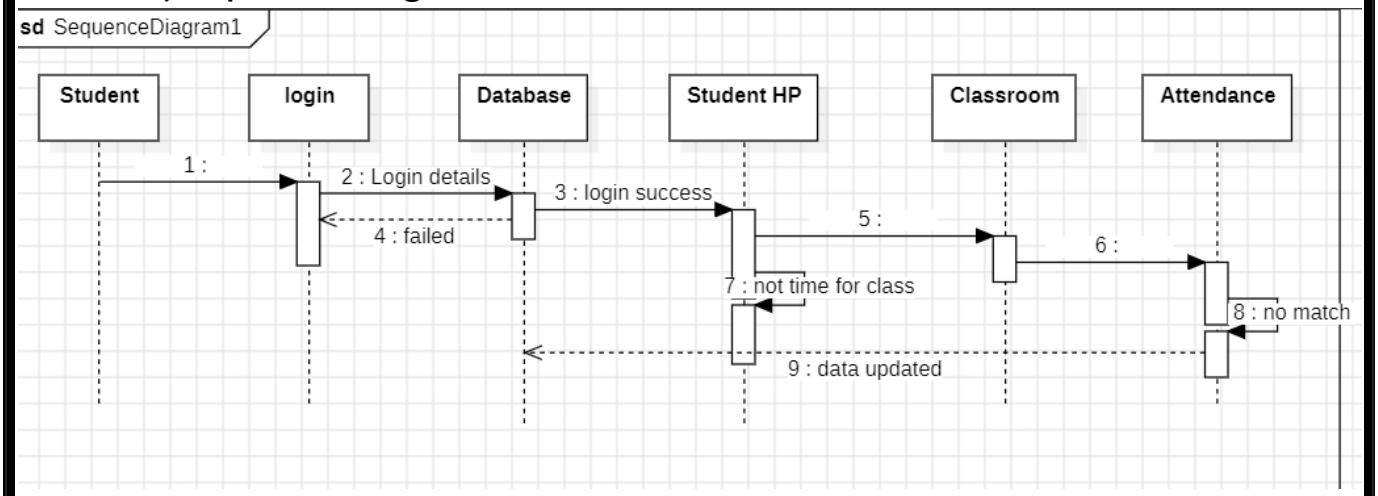
2.a) Use Case Diagram:



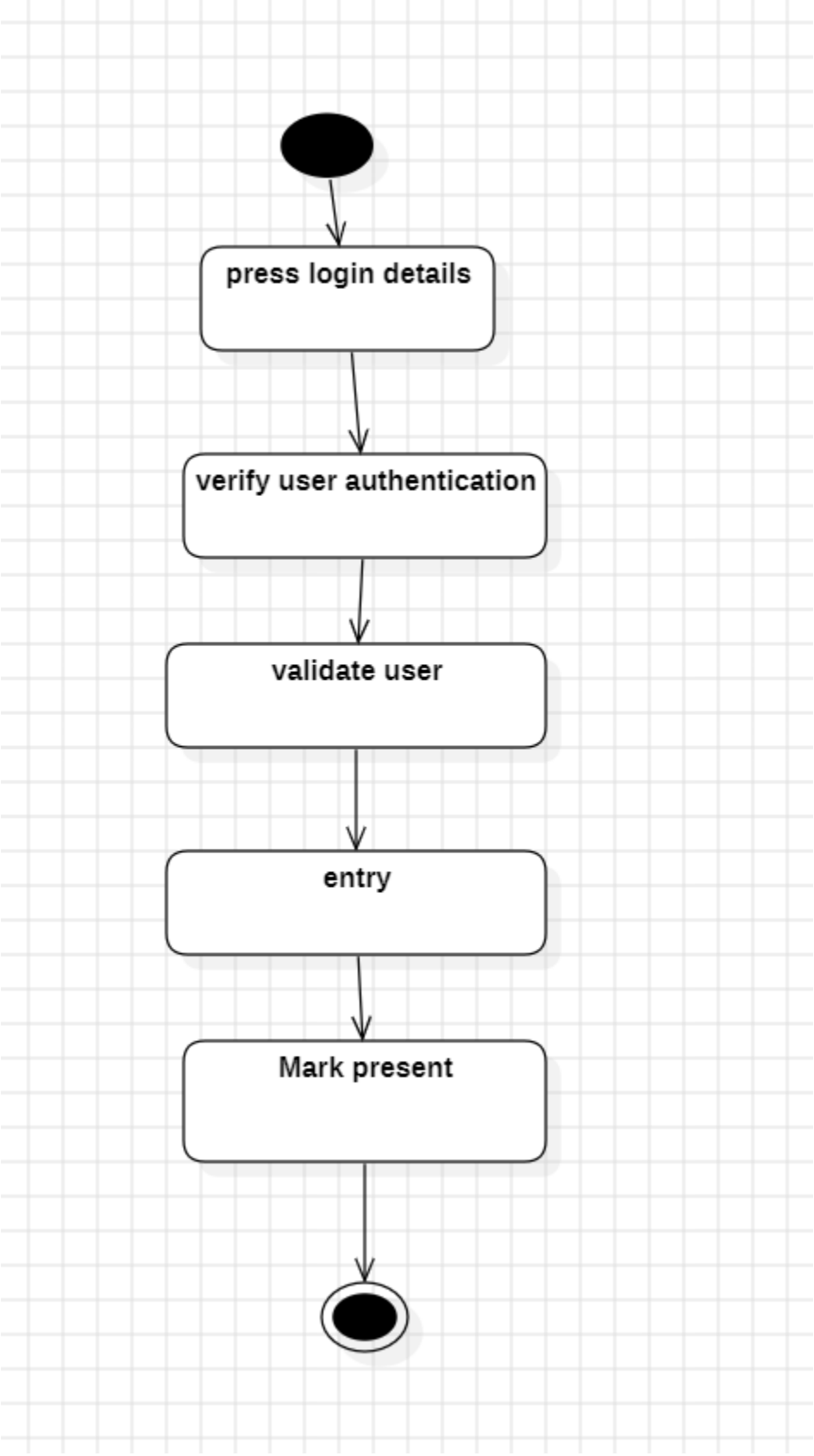
2.b) Class Diagram:



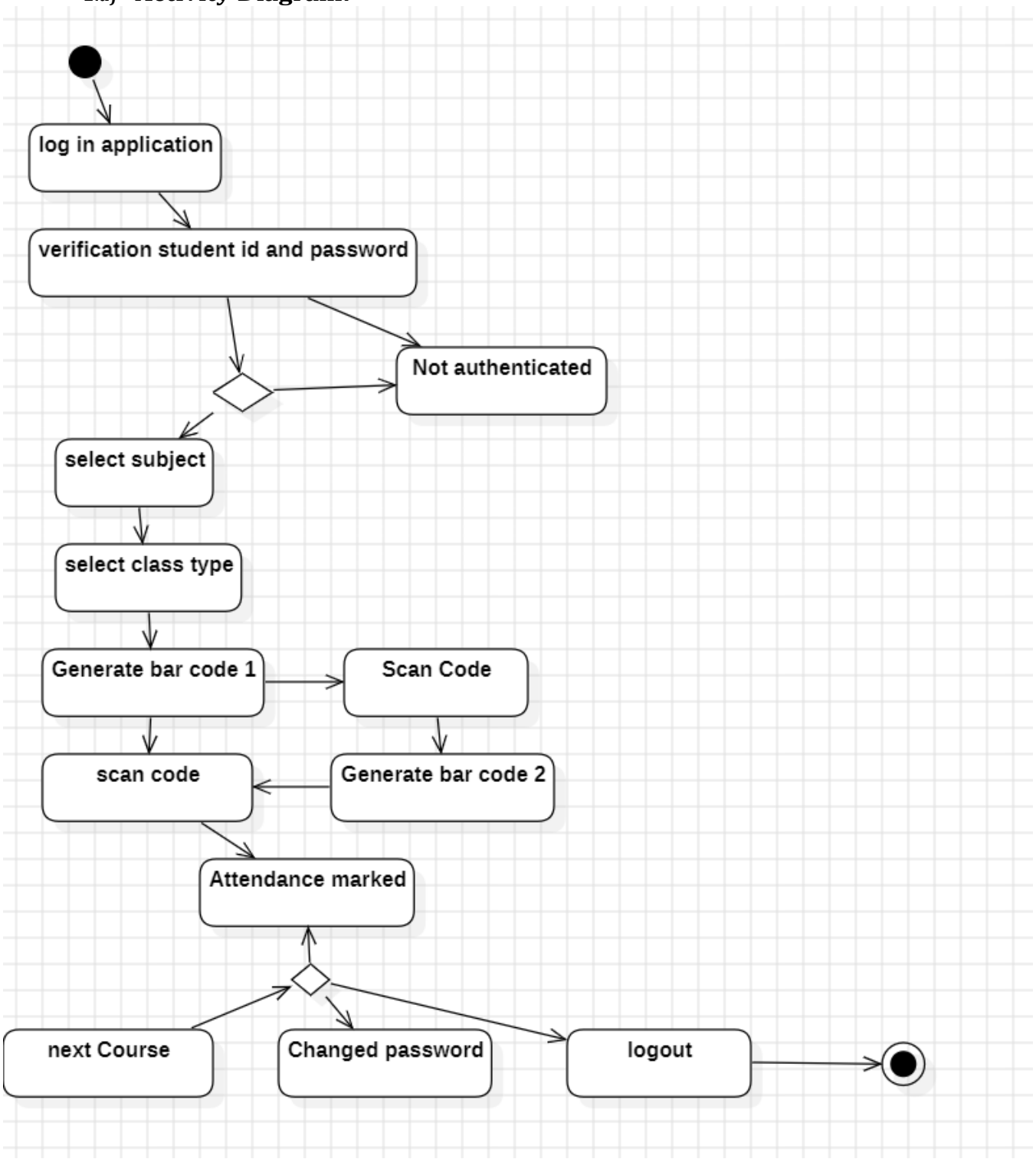
2b)Sequence Diagram:



2.c) State Diagram:



2.d) Activity Diagram:



3. Basic Java Programs

3.a) Calculate two numbers:

Code:

```
import java.util.Scanner;

public class Calculate {
   public static void main(String[] args) {
      int m, n, opt, add, sub, mul;
      double div;
      Scanner s = new Scanner(System.in);

      System.out.print("Enter first number: ");
      m = s.nextInt();
      System.out.print("Enter second number: ");
      n = s.nextInt();

      while (true) {
         // Displaying the menu
         System.out.println("\nChoose an operation:");
         System.out.println("1. Addition");
         System.out.println("2. Subtraction");
         System.out.println("3. Multiplication");
         System.out.println("4. Division");
         System.out.println("5. Exit");
         System.out.print("Enter your choice: ");

         opt = s.nextInt();

         switch (opt) {
            case 1:
               add = m + n;
               System.out.println("Result: " + add);
               break;

            case 2:
               sub = m - n;
               System.out.println("Result: " + sub);
               break;

            case 3:
               mul = m * n;
               System.out.println("Result: " + mul);
               break;

            case 4:
```

```
                if (n != 0) {
                    div = (double) m / n;
                    System.out.println("Result: " + div);
                } else {
                    System.out.println("Division by zero is not allowed.");
                }
                break;

            case 5:
                System.out.println("Exiting program...");
                s.close(); // Close scanner before exit
                System.exit(0);

            default:
                System.out.println("Invalid option. Please try again.");
        }
    }
  }
}
```

Output:

```
Enter first number: 55
Enter second number: 55

Choose an operation:
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Exit
Enter your choice: 1
Result: 110
```

3.b) CompoundInterest :

Code:

```
import java.util.Scanner;

class CompoundInterest {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter principal amount: ");
        double principal = sc.nextDouble();

        System.out.print("Enter annual interest rate (in %): ");
        double rate = sc.nextDouble();

        System.out.print("Enter time (in years): ");
        int time = sc.nextInt();

        System.out.print("Enter number of times interest is compounded
per year: ");
        int n = sc.nextInt();

        double amount = principal * Math.pow(1 + (rate / (n * 100)), n
* time);
        double compoundInterest = amount - principal;

        System.out.println("Compound Interest: " + compoundInterest);
        System.out.println("Total Amount: " + amount);

        sc.close();
    }
}
```

Output:

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>javac CompoundIntrest.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>java CompoundIntrest.java
Enter principal amount: 200
Enter annual interest rate (in %): 300
Enter time (in years): 2
Enter number of times interest is compounded per year: 3
Compound Interest: 12600.0
Total Amount: 12800.0
```

3.c) Even or Odd :

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\Java programs>javac EvenOdd.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>java EvenOdd.java
Enter a number: 8
8 is Even.
```

3.d) Factorial :

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\Java programs>javac Factorial.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>java Factorial.java
Enter a number: 7
Factorial of 7 is 5040
```

3.e) Fibonacci Series :

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\Java programs>javac Fibonacci.java

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

3.f) Palindrone :

Code:

```
public class Palindrome
{
  public static void main(String[] args) {
  String str = "madam";    boolean isPalindrome = true;

 for (int i = 0; i < str.length() / 2; i++)
 {
  if (str.charAt(i) != str.charAt(str.length() - 1 - i))
  {
   isPalindrome = false;
   break;
  }
}
 if (isPalindrome)
 {
  System.out.println(str + " is a palindrome.");
 }
 else
 {
 System.out.println(str + " is not a palindrome.");
 }
}
}
```

Output:

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>javac Palindrome.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>java Palindrome.java
madam is a palindrome.
```

3.g) Prime Checker:

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\Java programs>javac PrimeNumber.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>java PrimeNumber.java
Enter a number: 65
65 is not a Prime Number.
```

:

3h)Reverse String :

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\Java programs>javac ReverseString.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>java ReverseString.java
Enter a string: Have a great day
Reversed String: yad taerg a evaH
```

3.h) Sum of digits :

Code:

```
import java.util.Scanner;
public class Sum
{
public static void main(String args[])
{
int m, n, sum = 0;
Scanner s = new Scanner(System.in);
System.out.print("Enter the number:");
m = s.nextInt();
while(m > 0)
        {
            n = m % 10;
            sum = sum + n;
            m = m / 10;
        }
        System.out.println("Sum of Digits:"+sum);
    }
}
```

Output:

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>javac Sum.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>java Sum.java
Enter the number:23
Sum of Digits:5
```

3.i) Retail :

Code:

```
import util.java.*;

class retail
{
  public static void main(String[] args) {

int  itema=100; int itemb=200; int itemc=400;
double price;

price=((itema*2)+(itemb*5)+(itemc*4));
price=price-(0.01*price);
price=price+(0.1*price);

if(price>=2000);
  price=price-(0.1*price);
System.out.println("total price" +price);
else
  System.out.primtln("not applicable for discount");
}
}
```

Output:

```
C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>javac retail.java

C:\Users\mkrjp\OneDrive\Desktop\Amritha PDF\Sem 2\staruml\Java programs>java retail.java
total price2744.2799999999997
```