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CH.SC.U4CSE24149

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.U4CSE24149 – VIGHRANTH SK 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.

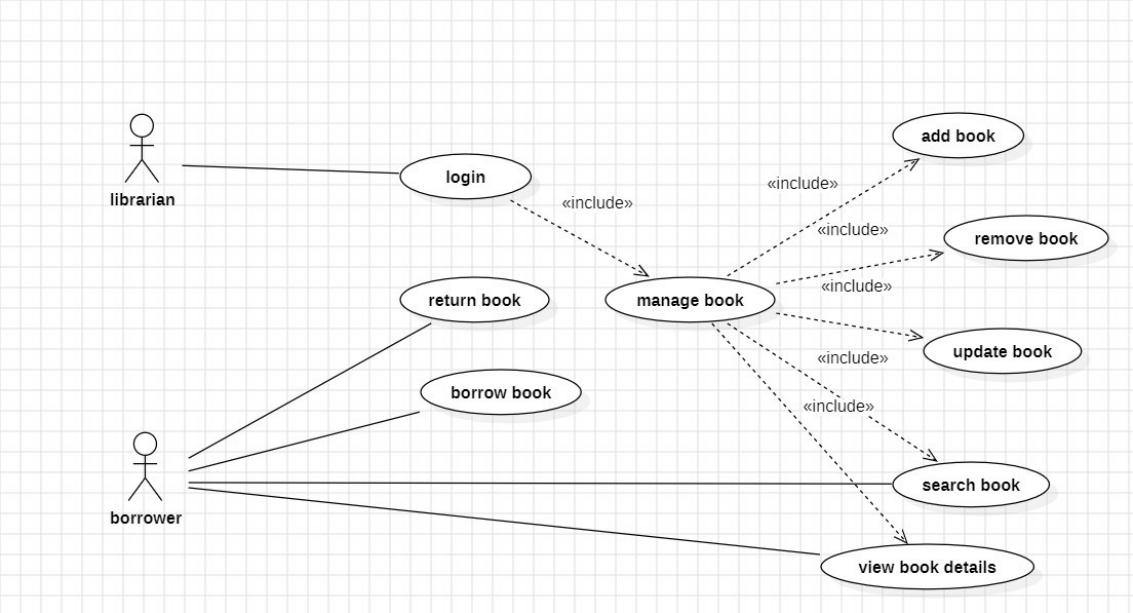
This Lab examination held on :

Inernal examiner 1 Inernal examiner 2

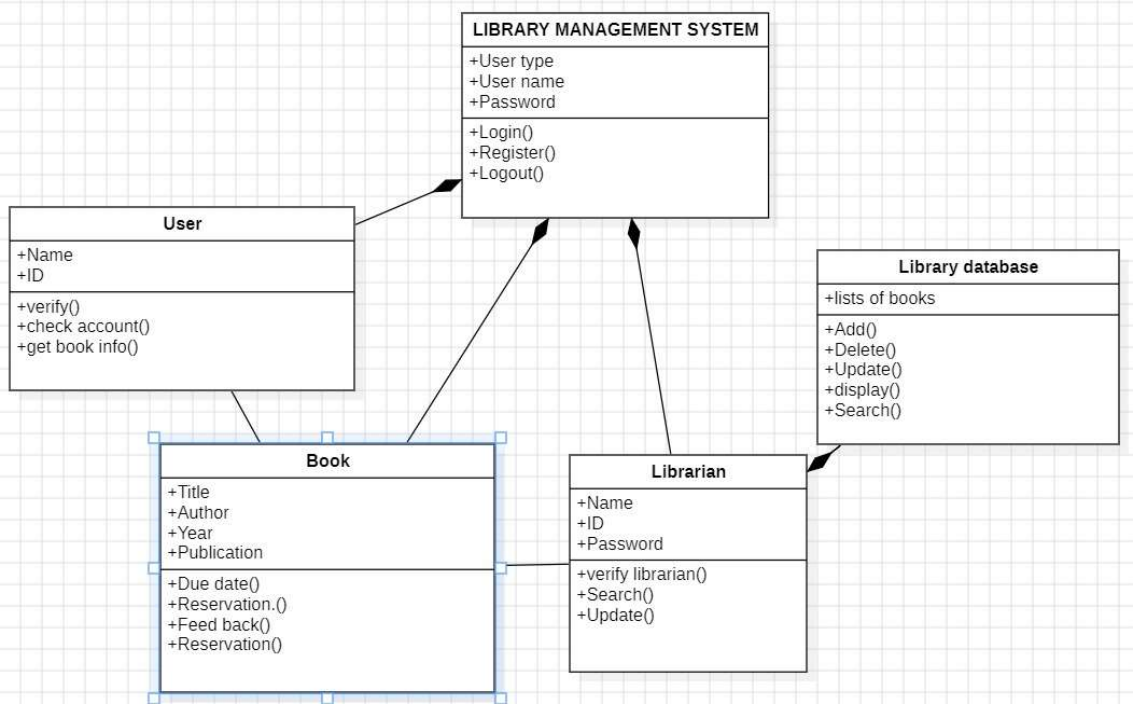
UML DIAGRAMS

1. LIBRARY MANAGEMENT

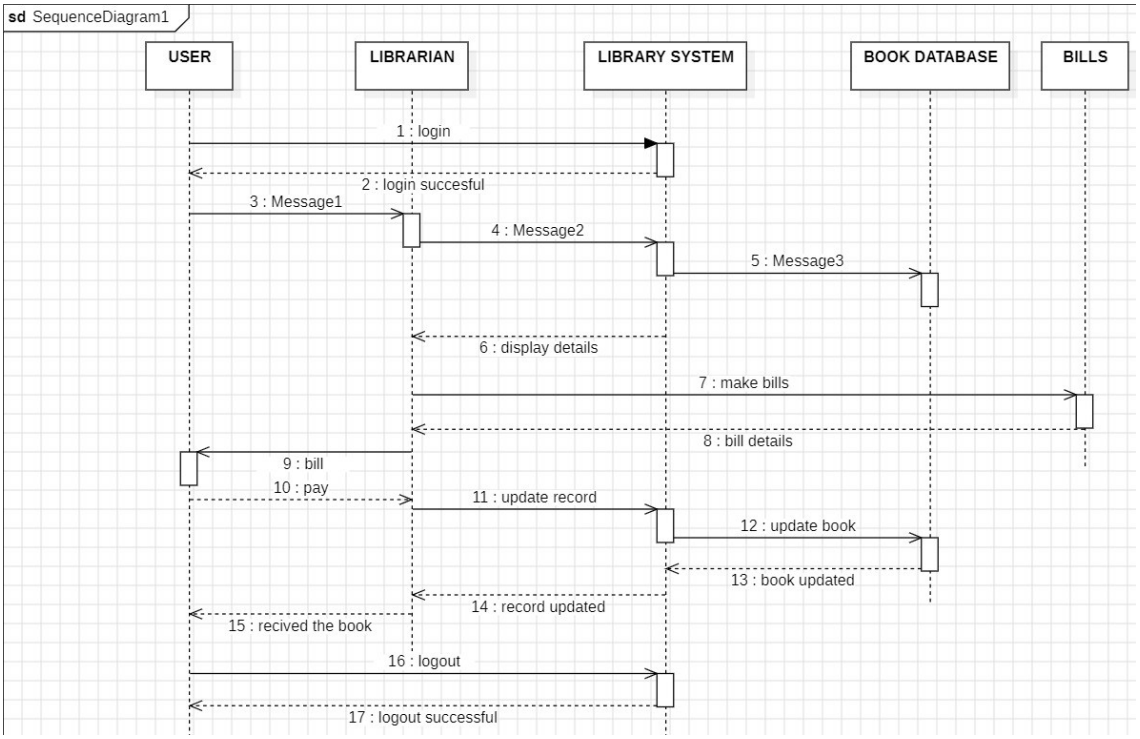
a) USE CASE DIAGRAM



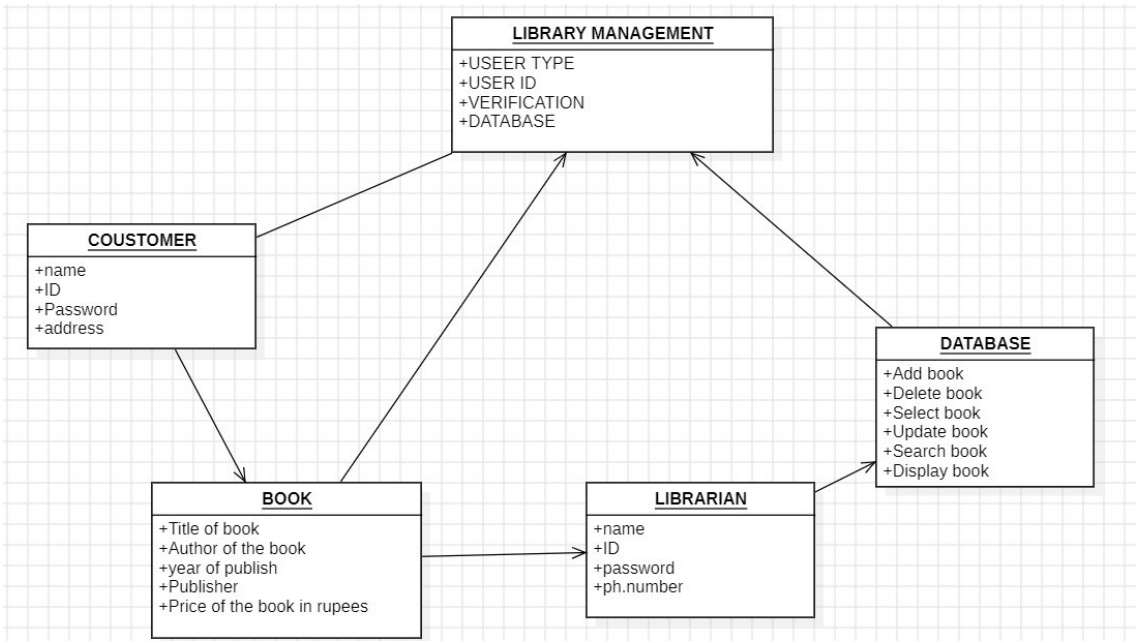
b) CLASS DIAGRAM



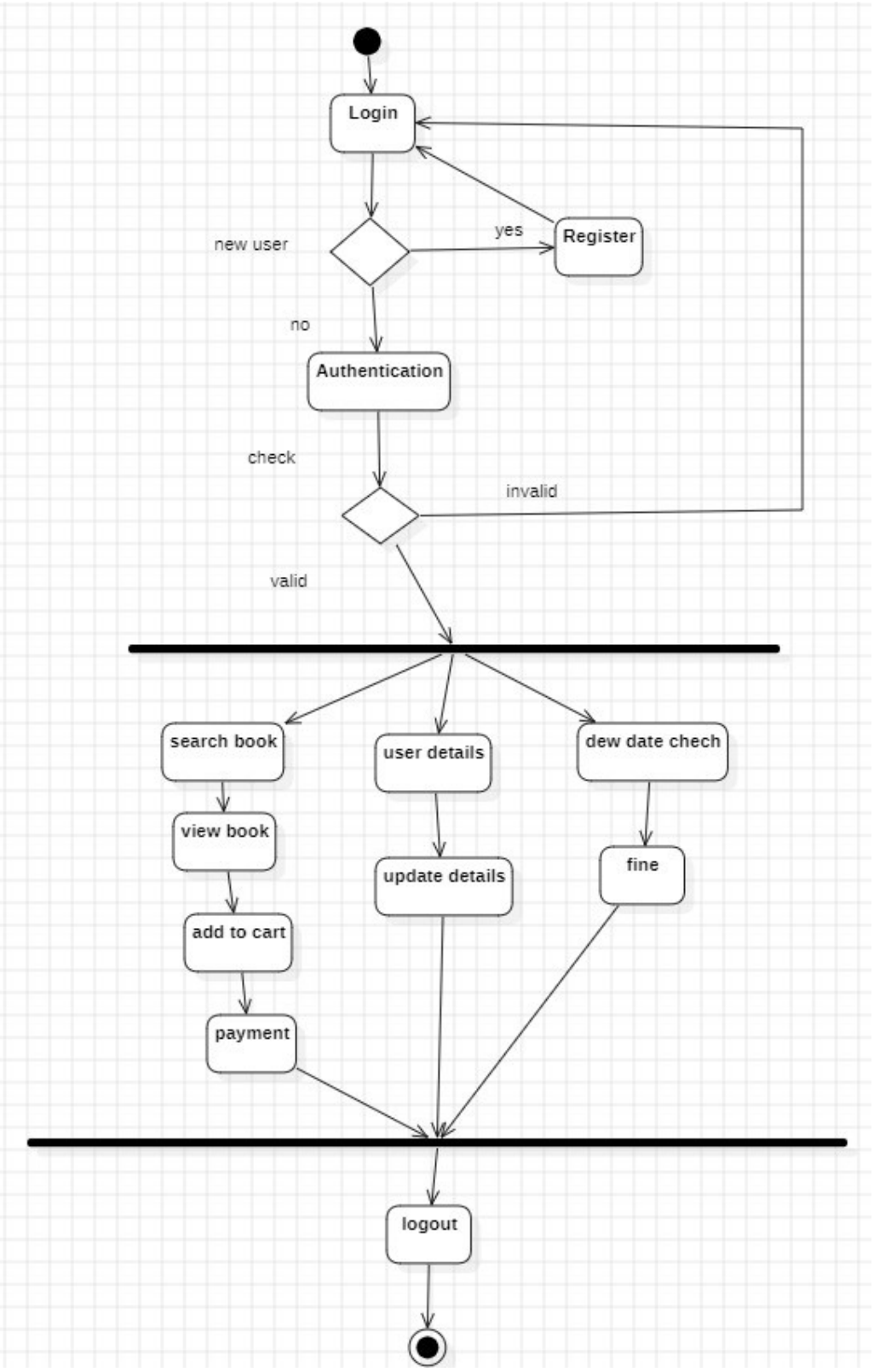
C) SEQUENCE DIAGRAM



d) OBJECT DIAGRAM

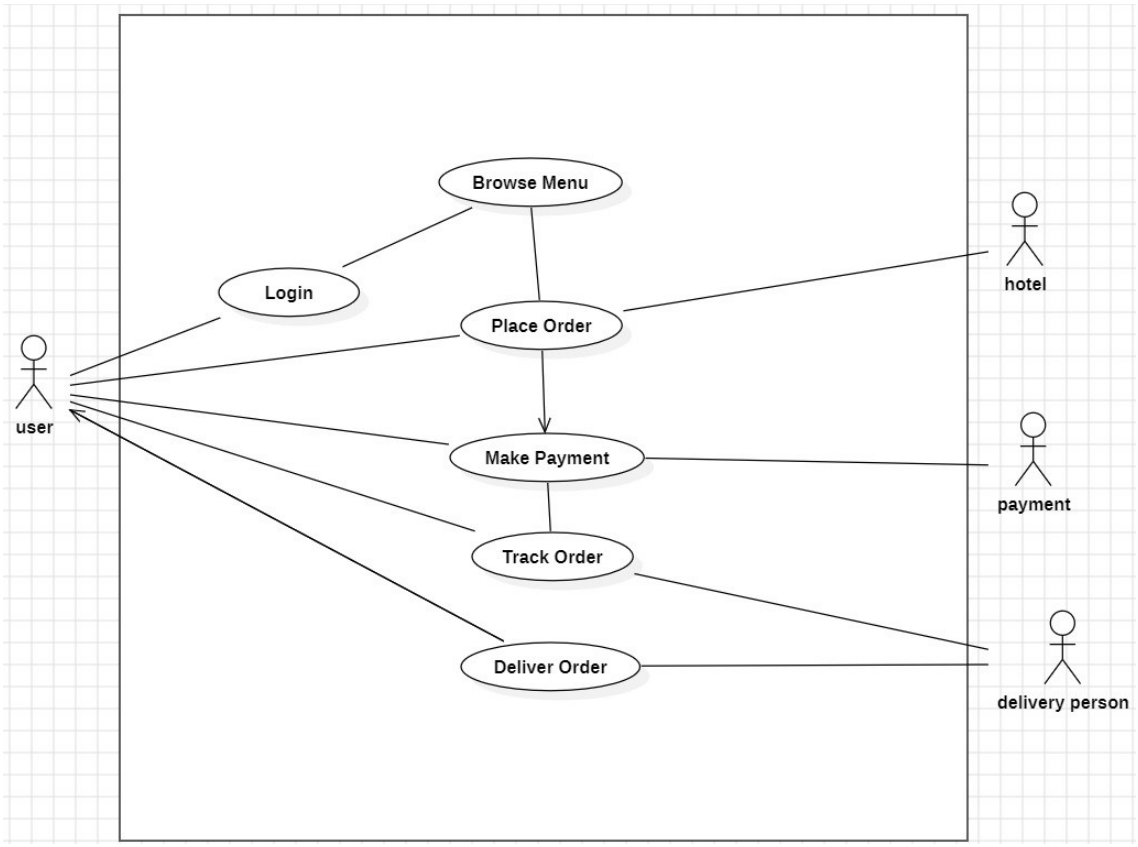


e) STATE-ACTIVITY DIAGRAM

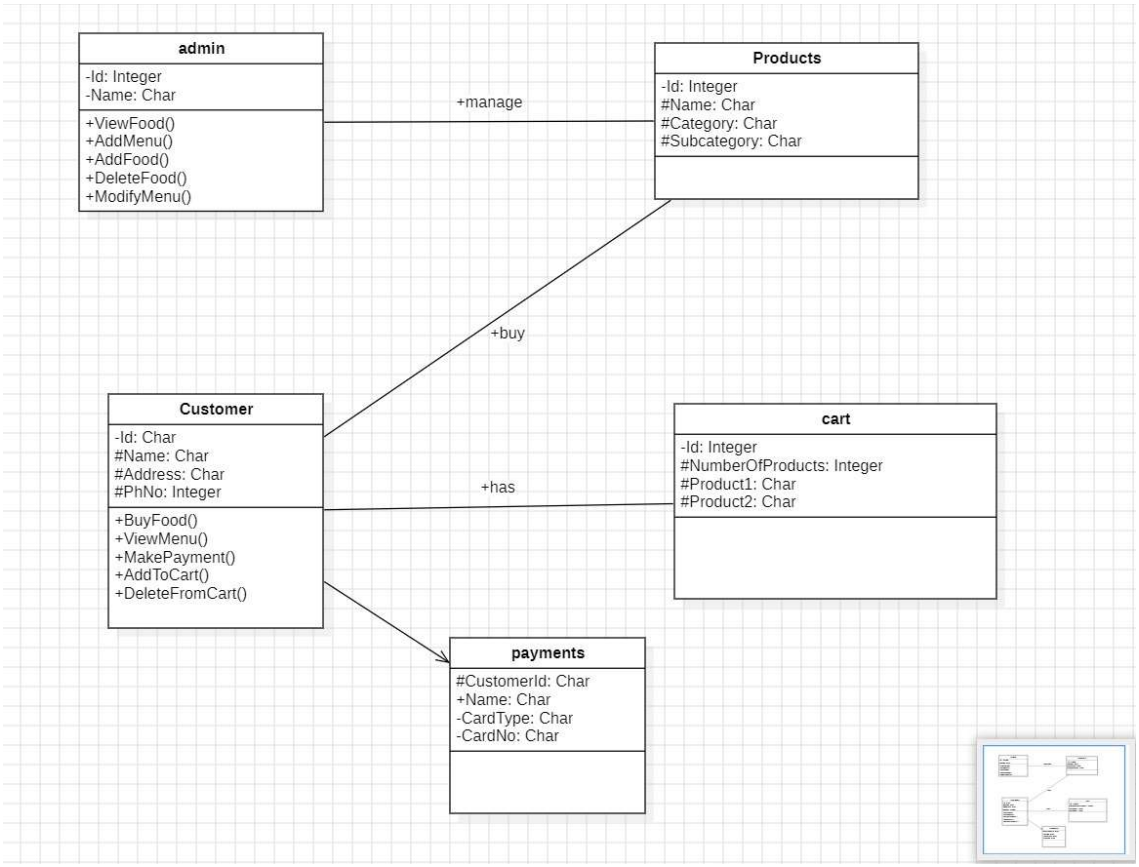


2.FOOD ORDERING MANAGEMENT

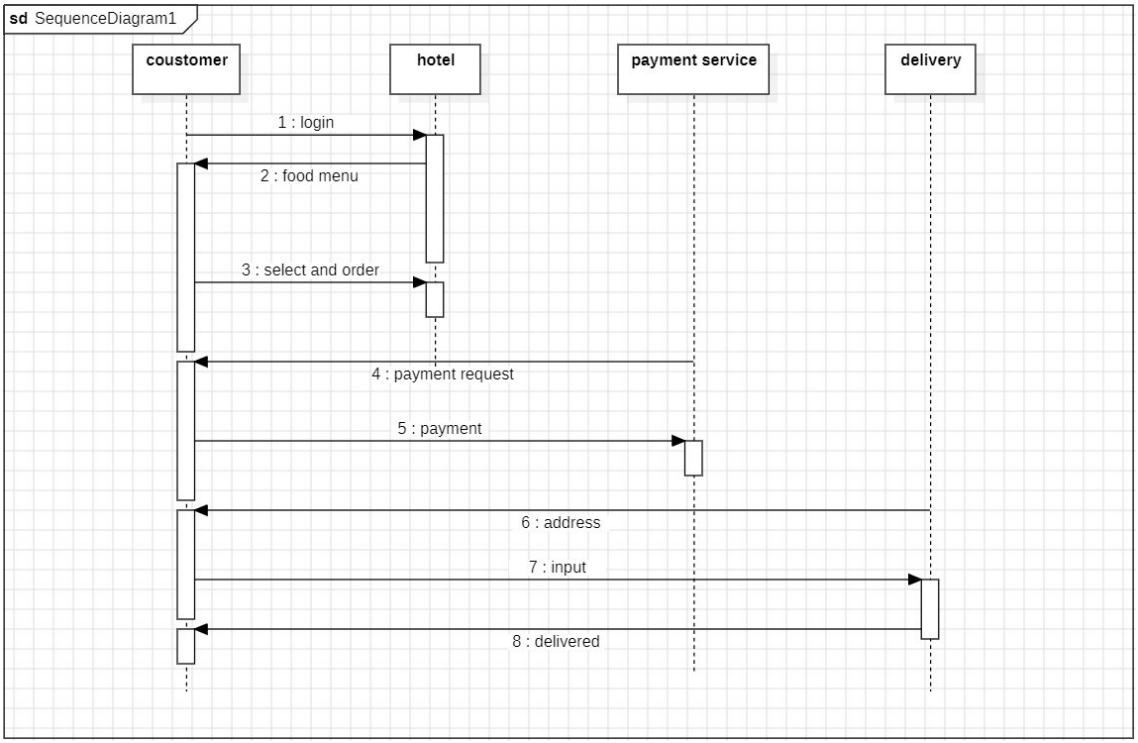
a) USE CASE DIAGRAM



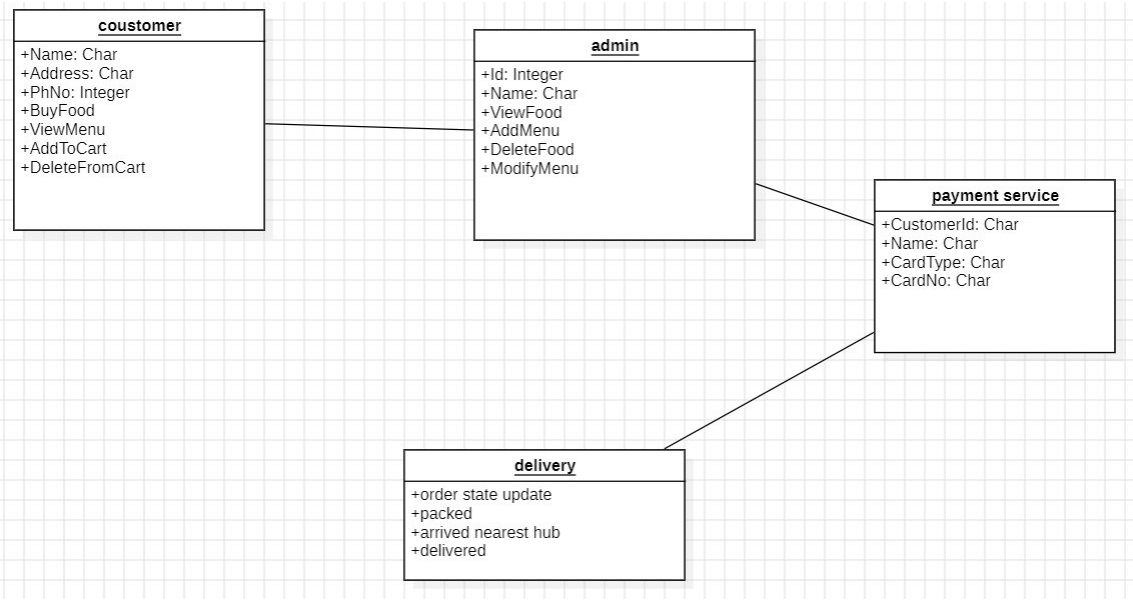
b) CLASS DIAGRAM



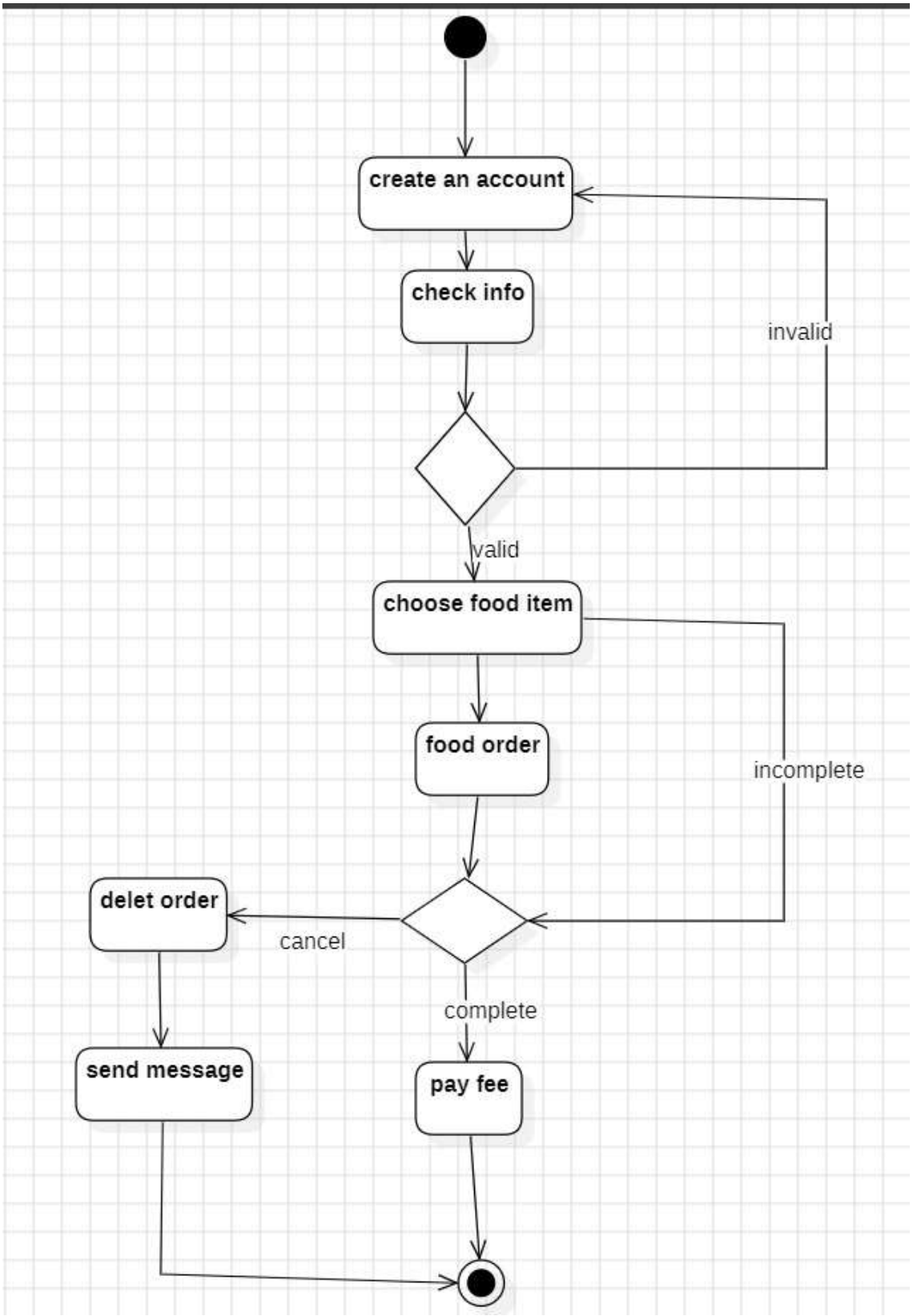
c) SEQUENCE DIAGRAM



d) OBJECT DIAGRAM



e) STATE-ACTIVITY DIAGRAM



3. BASIC JAVA PROGRAMS

a) Simple Addition

code:

```
public class Addition {
   public static void main(String[] args) {
      int num1 = 10, num2 = 20, sum;
      sum = num1 + num2;
      System.out.println("Sum: " + sum);
   }
}
```

output:

```
Sum: 30
```

b) Odd or Even

code:

```
import java.util.Scanner;


public class OddEven {
   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.");
      }
   }
```

output:

```
15 is odd.
```

c) Simple Calculator

code:

```
import java.util.Scanner;

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

      System.out.println("Select operation (+, -, *, /): ");
      char operator = sc.next().charAt(0);

      double result;
      switch (operator) {
         case '+': result = num1 + num2; break;
         case '-': result = num1 - num2; break;
         case '*': result = num1 * num2; break;
         case '/': result = num1 / num2; break;
         default: System.out.println("Invalid operator!"); return;
      }
      System.out.println("Result: " + result);
   }
}
```

output:

```
Result: 50.0
```

d) 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();
      long fact = 1;
      for (int i = 1; i <= num; i++) {
         fact *= i;
      }
      System.out.println("Factorial of " + num + " is " + fact);
   }
}
```

output:

```
Factorial of 5 is 120
```

e) Prime Number Check

code:

```
import java.util.Scanner;

public class PrimeNumber {
   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;

      for (int i = 2; i <= num / 2; i++) {
```

```
            if (num % i == 0) {
                isPrime = false;
                break;
            }
        }

        if (isPrime && num > 1) {
            System.out.println(num + " is a prime number.");
        } else {
            System.out.println(num + " is not a prime number.");
        }
    }
}
```

output:

```
7 is a prime number.
```

f) Fibonacci Series

code:

```
import java.util.Scanner;

public class Fibonacci {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the number of terms: ");
        int terms = sc.nextInt();
        int n1 = 0, n2 = 1, n3;

        System.out.print(n1 + " " + n2 + " ");
        for (int i = 2; i < terms; i++) {
            n3 = n1 + n2;
            System.out.print(n3 + " ");
```

```
            n1 = n2;
            n2 = n3;
        }
    }
}
```

output:

```
0 1 1 2 3 5 8
```

g) Array Sum

code:

```
public class ArraySum {
    public static void main(String[] args) {
        int[] numbers = {10, 20, 30, 40, 50};
        int sum = 0;

        for (int num : numbers) {
            sum += num;
        }

        System.out.println("Sum of array elements: " + sum);
    }
}
```

output:

```
Sum of array elements: 150
```

h) Palindrome Check

code:

```
import java.util.Scanner;

public class Palindrome {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter a string: ");
      String str = sc.nextLine();
      String reversed = new StringBuilder(str).reverse().toString();

      if (str.equals(reversed)) {
         System.out.println(str + " is a palindrome.");
      } else {
         System.out.println(str + " is not a palindrome.");
      }
   }
}
```

output:

```
madam is a palindrome.
```

i) Multiplication Table

code:

```
import java.util.Scanner;

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

```
        System.out.println("Multiplication Table of " + num + ":");
        for (int i = 1; i <= 10; i++) {
            System.out.println(num + " x " + i + " = " + (num * i));
        }
    }
}
```

output:

```
Multiplication Table of 5:
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
```

j) 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);
    }
}
```

output:

```
Reversed number: 54321
```