SCHOOL OF
COMPUTING

PRASANNAA.V

CH.SC.U4CSE24138

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.U4CSE24138 – PRASANNAA.V*** 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

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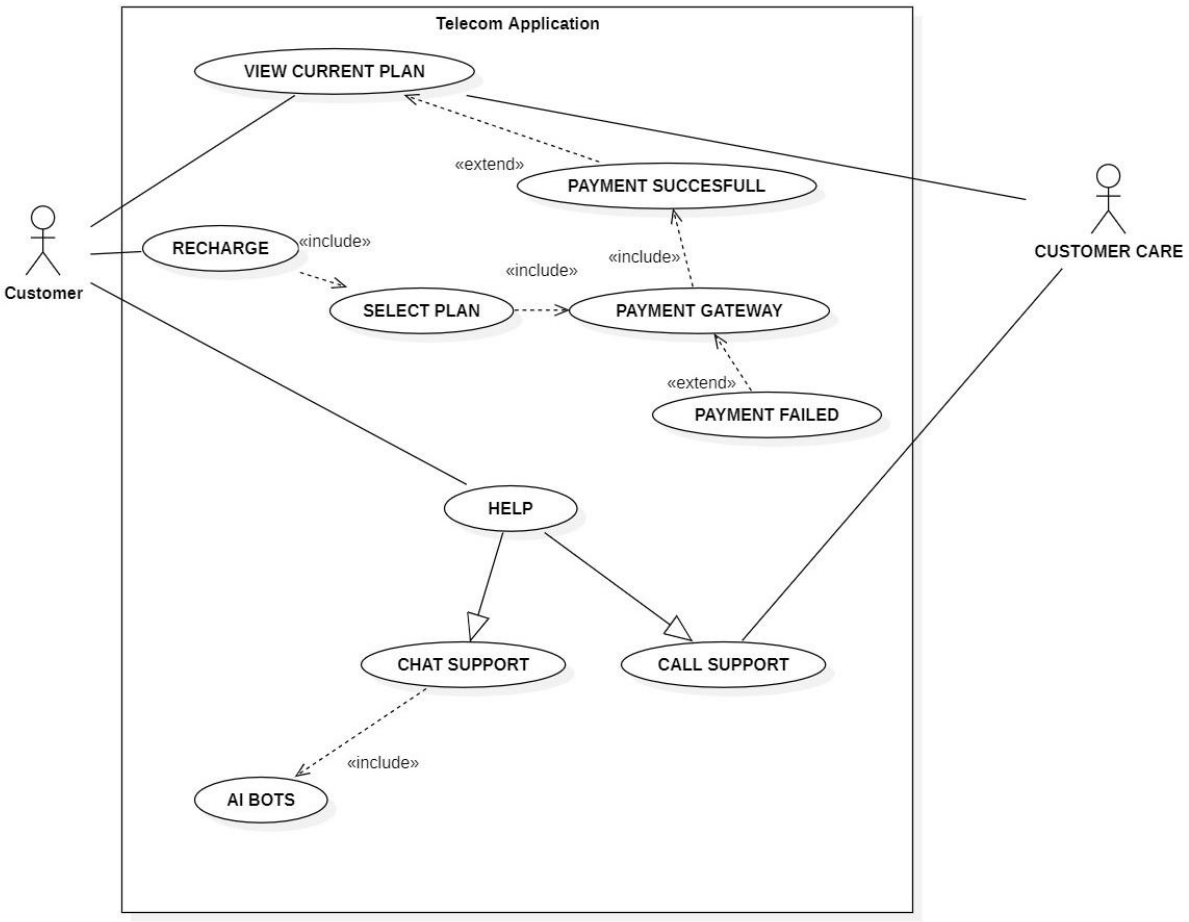
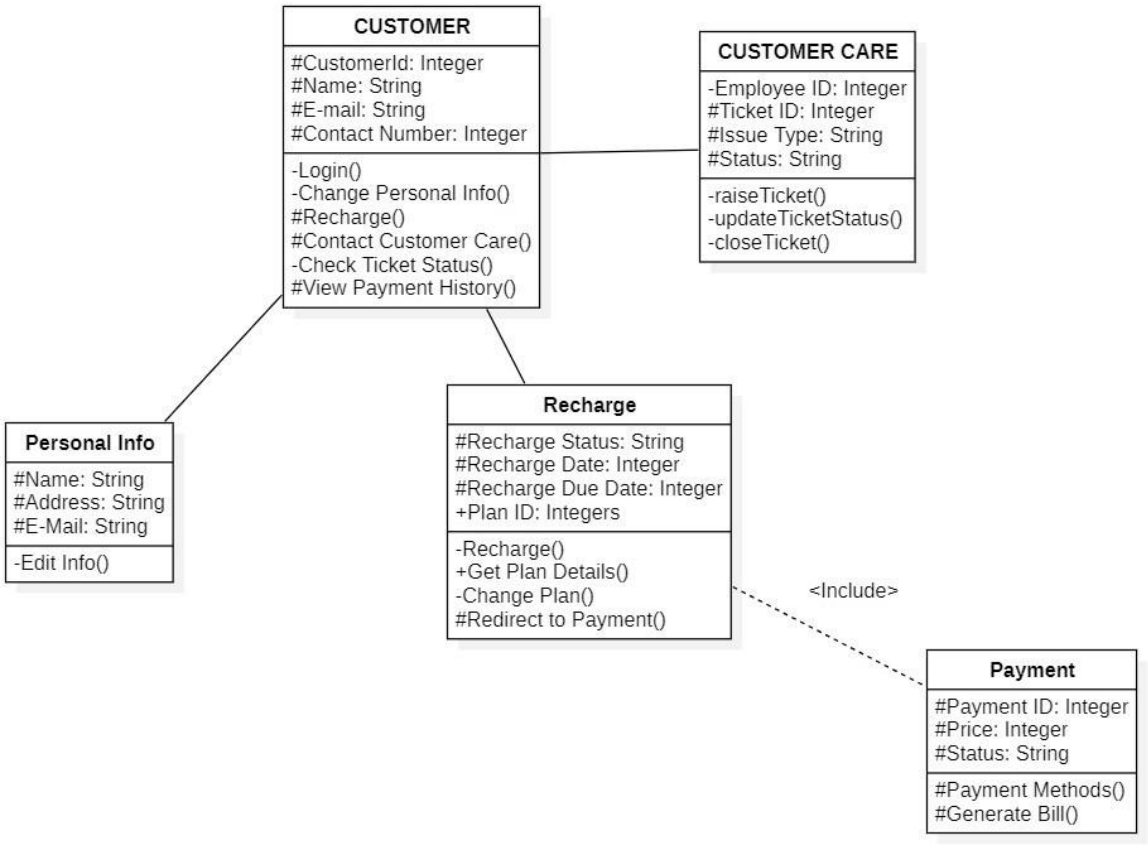
UML DIAGRAMS

1. TELECOM APPLICATION

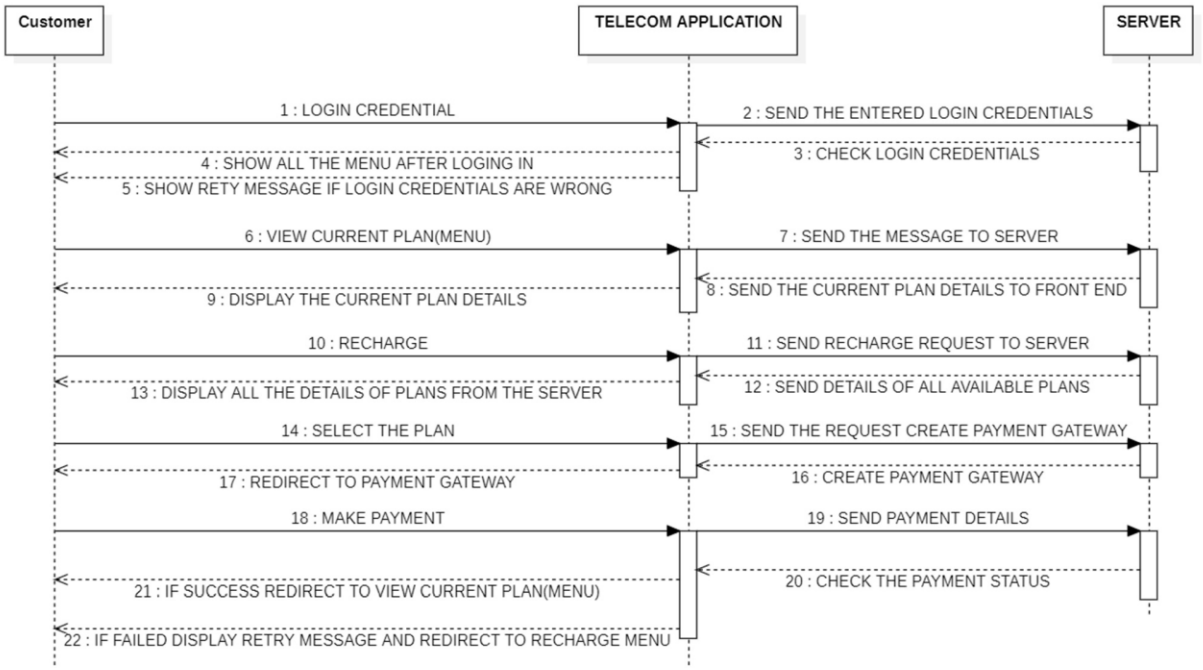
1.a) Use Case Diagram:



1.b) Class Diagram:



1.c) Sequence Diagram:



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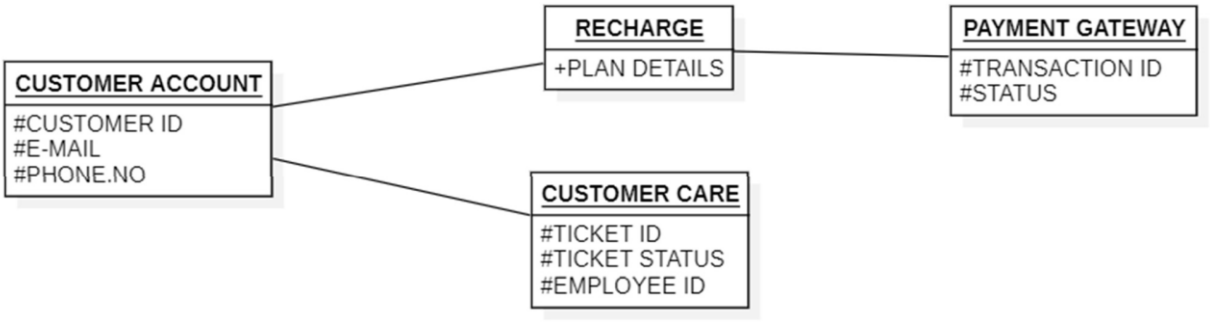
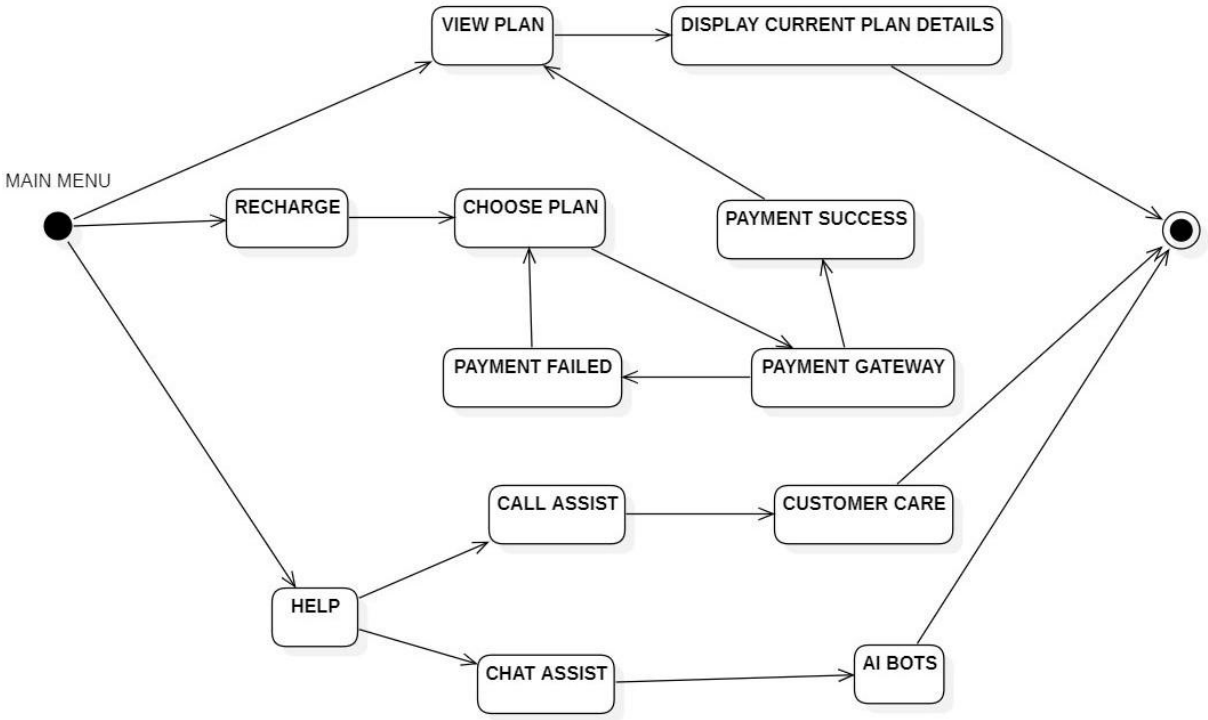
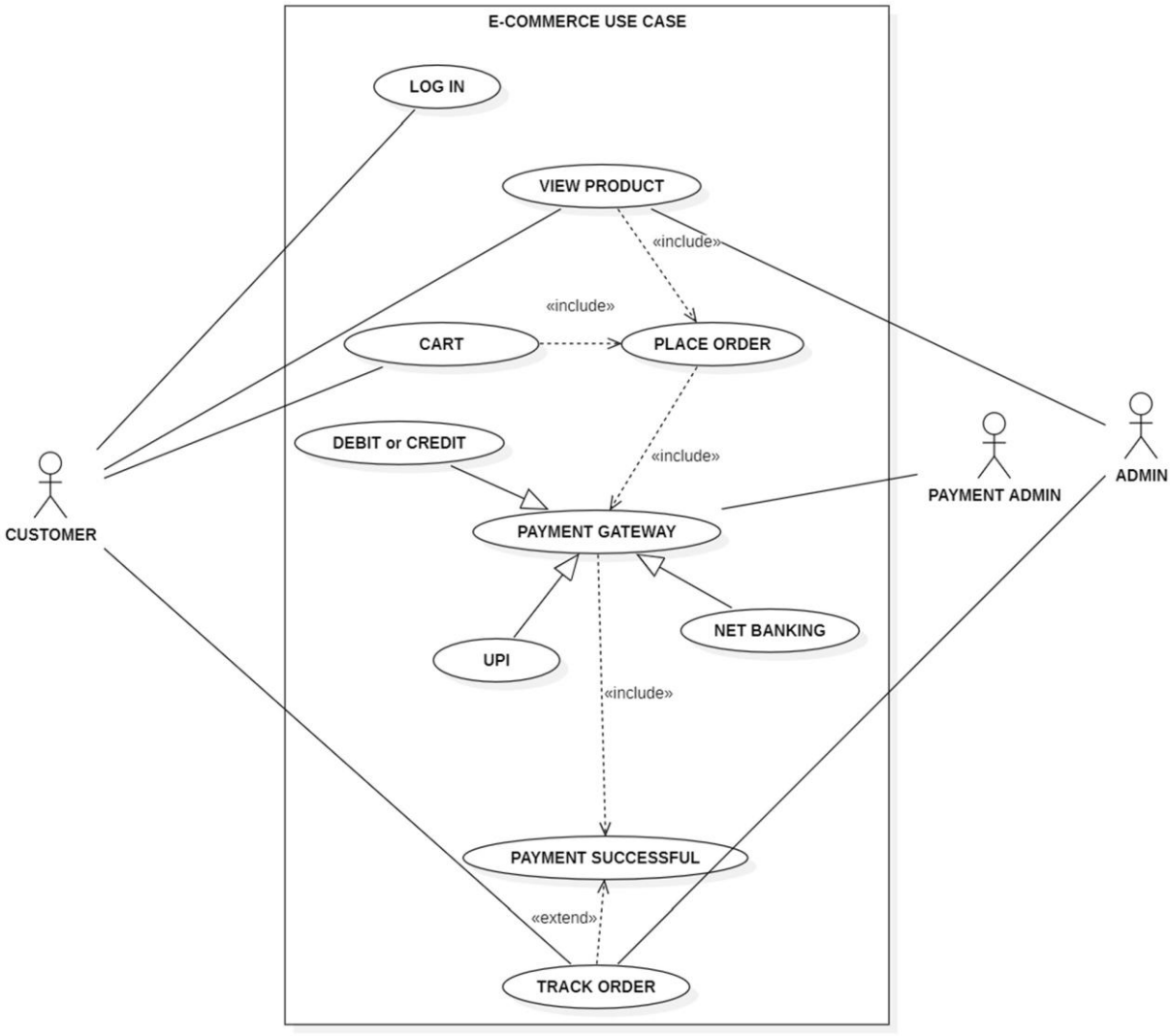


1.e) State-Activity Diagram:



2. E-COMMERCE APPLICATION

2.a) Use Case Diagram:



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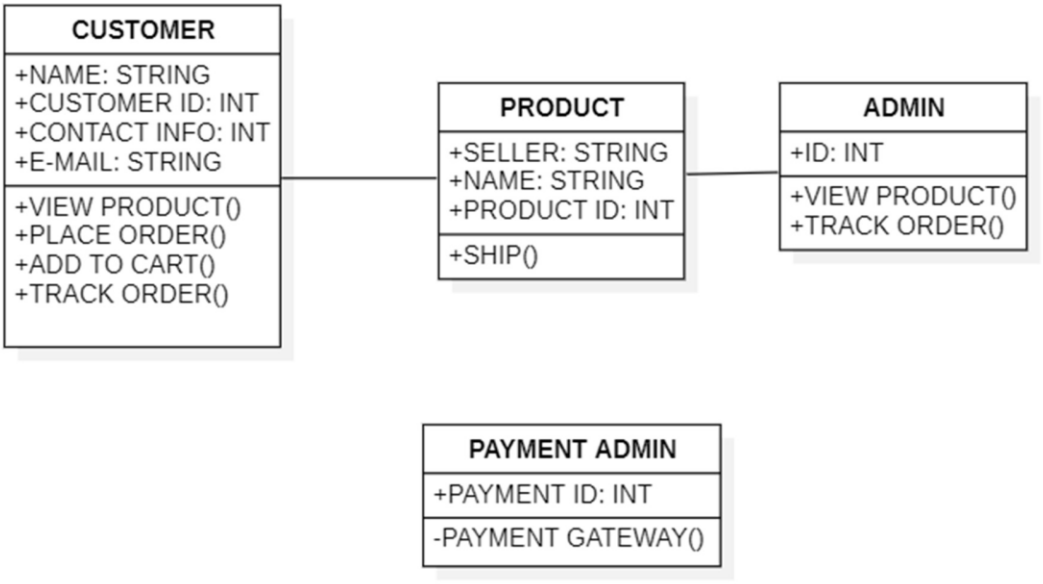
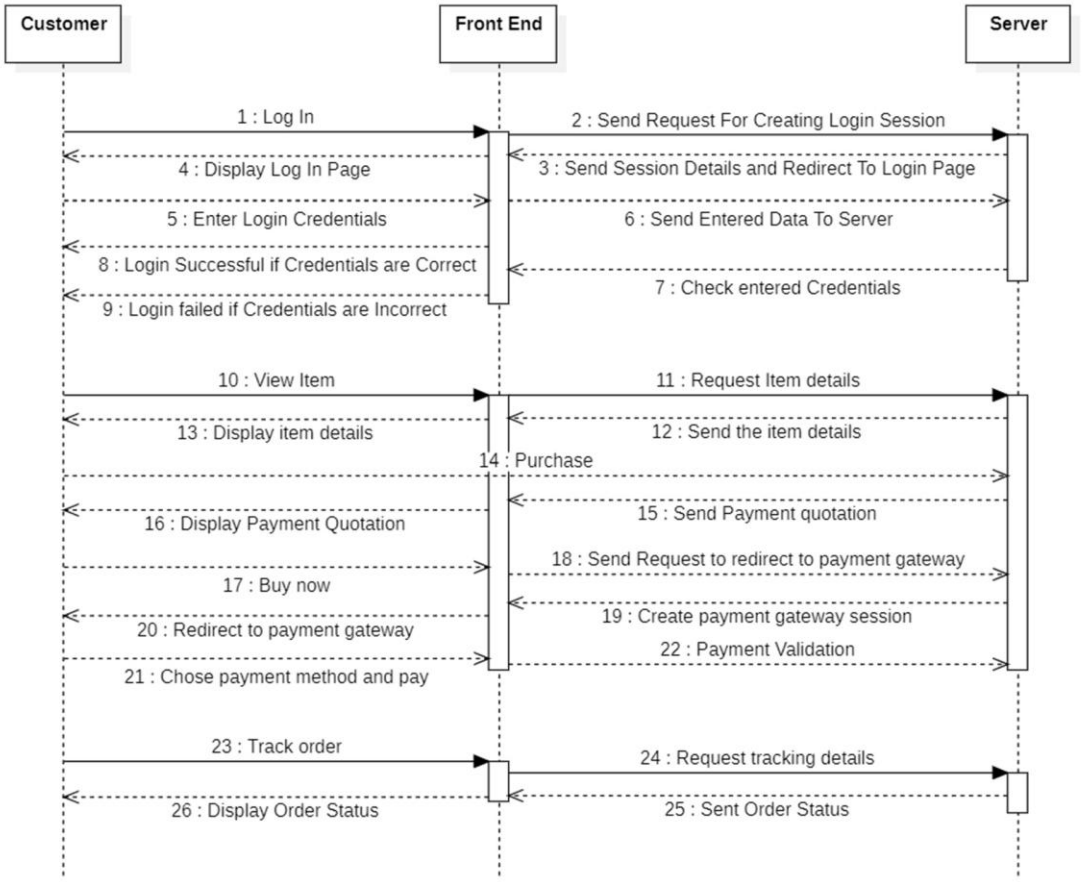
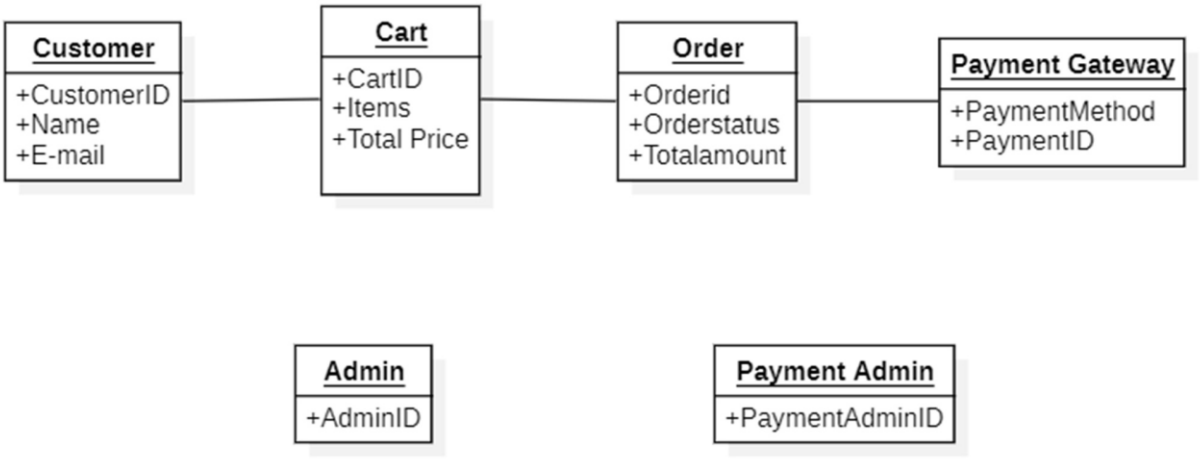


2.c) Sequence Diagram:



2.d) Object Diagram:



2.e) State-Activity Diagram:

Java Programs:

3.a.

Code:

```
import java.util.Scanner;
public class Exercise3 {



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


  System.out.print("Input the 1st number:
");
  int num1 = in.nextInt();


  System.out.print("Input the 2nd number:
");
  int num2 = in.nextInt();
```

```
  System.out.print("Input the 3rd number: ");
  int num3 = in.nextInt();



  if (num1 > num2)
   if (num1 > num3)
    System.out.println("The greatest: " + num1);


  if (num2 > num1)
   if (num2 > num3)
    System.out.println("The greatest: " + num2);


  if (num3 > num1)
   if (num3 > num2)
    System.out.println("The greatest: " + num3);
 }
}
```

Output:

```
Input the 1st number: 25
Input the 2nd number: 78
Input the 3rd number: 87
The greatest: 87
```

3.b.

Code:

```
import java.util.Scanner;
public class Exercise2 {

 public static void main(String[] args)
    {
        Scanner in = new
Scanner(System.in);
        System.out.print("Input the first
number: ");
        double x = in.nextDouble();
        System.out.print("Input the
second number: ");
        double y = in.nextDouble();
        System.out.print("Input the third
number: ");
        double z = in.nextDouble();
        System.out.print("The average
value is " + average(x, y, z)+"\n" );
    }
```

```
  public static double average(double x,
double y, double z)
    {
        return (x + y + z) / 3;
    }
}
```

Output:

```
Input the first number: 25
Input the second number: 45
Input the third number: 65
The average value is 45.0
```

3.c.

Code:

```
import java.util.Scanner;
public class Exercise4 {
  public static void main(String[] args)
    {
        Scanner in = new
Scanner(System.in);
        System.out.print("Input the
string: ");
        String str = in.nextLine();
```

```
        System.out.print("Number of
Vowels in the string: " +
count_Vowels(str)+"\n");
    }
 public static int count_Vowels(String
str)
    {
        int count = 0;
        for (int i = 0; i < str.length();
i++)
        {
            if (str.charAt(i) == 'a' ||
str.charAt(i) == 'e' || str.charAt(i) ==
'i'
                    || str.charAt(i) ==
'o' || str.charAt(i) == 'u')
            {
                count++;
            }
        }
        return count;
    }
}
```

Output:

```
Input the string: w3resource
Number of  Vowels in the string: 4
```

3.d.
Code:

```
import java.util.Scanner;
public class Exercise6 {

  public static void main(String[] args)
    {
      Scanner in = new
Scanner(System.in);
      System.out.print("Input an integer:
");
      int digits = in.nextInt();
               System.out.println("The sum
is " + sumDigits(digits));
    }

 public static int sumDigits(long n) {
             int result = 0;

             while(n > 0) {
                result += n % 10;
                n /= 10;
             }

             return result;
            }

 }
```

Output:

```
Input an integer: 25
The sum is 7
```

3.e

Code:

```
import java.util.Scanner;
public class Exercise13 {

   public static void main(String[] args)

{
    int i,n;

    System.out.print("Input number of
terms : ");
    Scanner in = new Scanner(System.in);
                 n = in.nextInt();

     for(i=1;i<=n;i++)
     {
     System.out.println("Number is : "
+i+" and cube of " +i+" is : "+(i*i*i));
    }
 }
```

Output:

```
Input number of terms : 4
Number is : 1 and cube of 1 is : 1
Number is : 2 and cube of 2 is : 8
Number is : 3 and cube of 3 is : 27
Number is : 4 and cube of 4 is : 64
```

3.f.

Code:

```
import java.util.Scanner;
public class Exercise16 {

   public static void main(String[] args)

{
   int i,j,n;
   System.out.print("Input number of rows
: ");
 Scanner in = new Scanner(System.in);
                  n = in.nextInt();

   for(i=1;i<=n;i++)
   {
            for(j=1;j<=i;j++)
              System.out.print(j);

    System.out.println("");
    }
}
}
```

Output:

```
Input number of rows : 10
1
12
123
1234
12345
123456
1234567
12345678
123456789
12345678910
```

3.g.
Code:

```
import java.util.Scanner;
public class Exercise17 {

  public static void main(String[] args)

                  {
                        int i,j,n;

                System.out.print("Input
number of n : ");
             Scanner in = new
Scanner(System.in);
```

```
                    n = in.nextInt();

                  for(i=1;i<=n;i++)
                  {
                          for(j=1;j<=i;j++)

System.out.print(i);

System.out.println("");
                  }
              }
              }
```

Output:

```
Input number of n : 4
1
22
333
4444
```

3.h.

Code:

```
import java.util.Scanner;
public class Exercise19 {

  public static void main(String[] args)
{
```

```
    int i,j,n,s,x;
    System.out.print ("Input number of
rows : ");
    Scanner in = new Scanner(System.in);
                   n = in.nextInt();

    s=n+4-1;
     for(i=1;i<=n;i++)
    {
    for(x=s;x!=0;x--)
     {
    System.out.print(" ");
     }
     for(j=1;j<=i;j++)
     {
      System.out.print(i+" ");
      }
              System.out.println();
     s--;
    }
}
}
```

Output:

```
Input number of rows : 4
       1
      2 2
     3 3 3
    4 4 4 4
```

3.i.

Code:

```
import java.util.*;
import java.lang.System;

public class Loan {

    public static void main(String[]
args) {

        Scanner scan=new
Scanner(System.in);
        System.out.print("Enter the value
for Salary:");
        int Salary=scan.nextInt();
        System.out.print("Enter the value
for age:");
        int age=scan.nextInt();
        if(age>=25 || Salary>=20000)
        {
            System.out.println("Loan is
eligible");
```

```
            System.out.print("Enter the
value for Loan:");

            int Loan=scan.nextInt();

            if(Loan<=50000){
                System.out.println("Loan
is approved");
            }
            else{
                System.out.println("Loan
is not approved");
            }
        }
        else{
            System.out.println("Loan is
not approved");
        }


    }

}
```

Output:

```
Enter the value for age:19
Loan is eligible
Enter the value for Loan:20000
Loan is approved
```

3.j.

Code:

```
import java.util.Scanner;
public class Exercise23 {
   public static void main(String args[])
    {
        Scanner in = new
Scanner(System.in);
        System.out.print("Input the
number: ");
        int n = in.nextInt();
        for (int i = n; i > 0; i--)
        {
            for (int spc = n - i; spc >
0; spc--)
            {
                System.out.print(" ");
            }
            for (int j = 0; j < i; j++)
            {
                System.out.print("*");
            }
            System.out.println();
        }
    }

}
```

Output:

```
Input the number: 6
******
 *****
  ****
   ***
    **
     *
```

3.k.
Code:

```
import java.util.Scanner;
public class Exercise29 {

   public static void main(String[] args)
    {
        Scanner in = new
Scanner(System.in);
        System.out.print("Input an
integer number less than ten billion: ");

        if (in.hasNextLong())
        {

            long n = in.nextLong();
```

```
            if (n < 0)
            {
                n *= -1;
            }
            if (n >= 10000000000L)
            {

System.out.println("Number is greater or
equals 10,000,000,000!");
            }
            else
            {
                int digits = 1;
                if (n >= 10 && n < 100)
                {
                    digits = 2;
                }
                else if (n >= 100 && n <
1000)
                {
                    digits = 3;
                }
                else if (n >= 1000 && n <
10000)
                {
                    digits = 4;
                }
                else if (n >= 10000 && n
< 100000)
```

```
                {
                    digits = 5;
                }
                else if (n >= 100000 && n
< 1000000)
                {
                    digits = 6;
                }
                else if (n >= 1000000 &&
n < 10000000)
                {
                    digits = 7;
                }
                else if (n >= 10000000 &&
n < 100000000)
                {
                    digits = 8;
                }
                else if (n >= 100000000
&& n < 1000000000)
                {
                    digits = 9;
                }
                else if (n >= 1000000000
&& n < 10000000000L)
                {
                    digits = 10;
                }
```

```
System.out.println("Number of digits in
the number: " + digits);
            }
        }
        else
        {
            System.out.println("The
number is not an integer");
        }
    }
}
```

Output:

```
Input an integer number less than ten billion: 125463
Number of digits in the number: 6
```