SCHOOL OF
COMPUTING

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CH.SC.U4CSE24118

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.U4CSE24118 – Ganath Avinash G.R*** 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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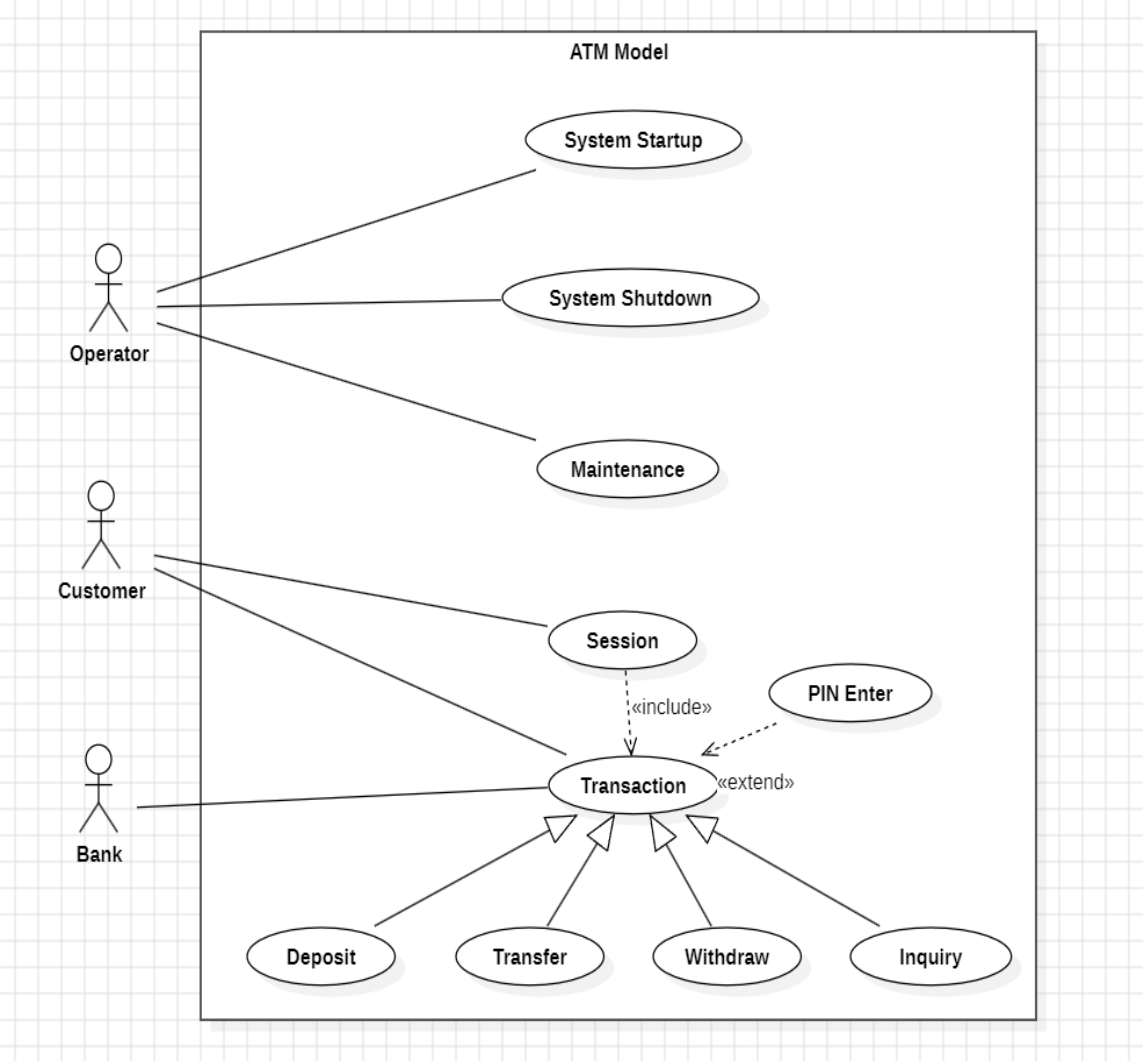
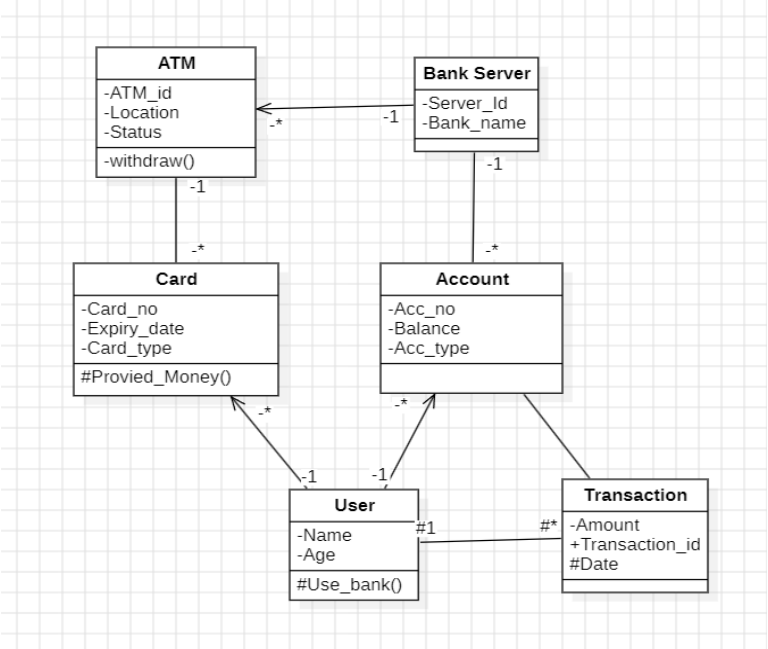
UML DIAGRAMS

1. ATM Model Application

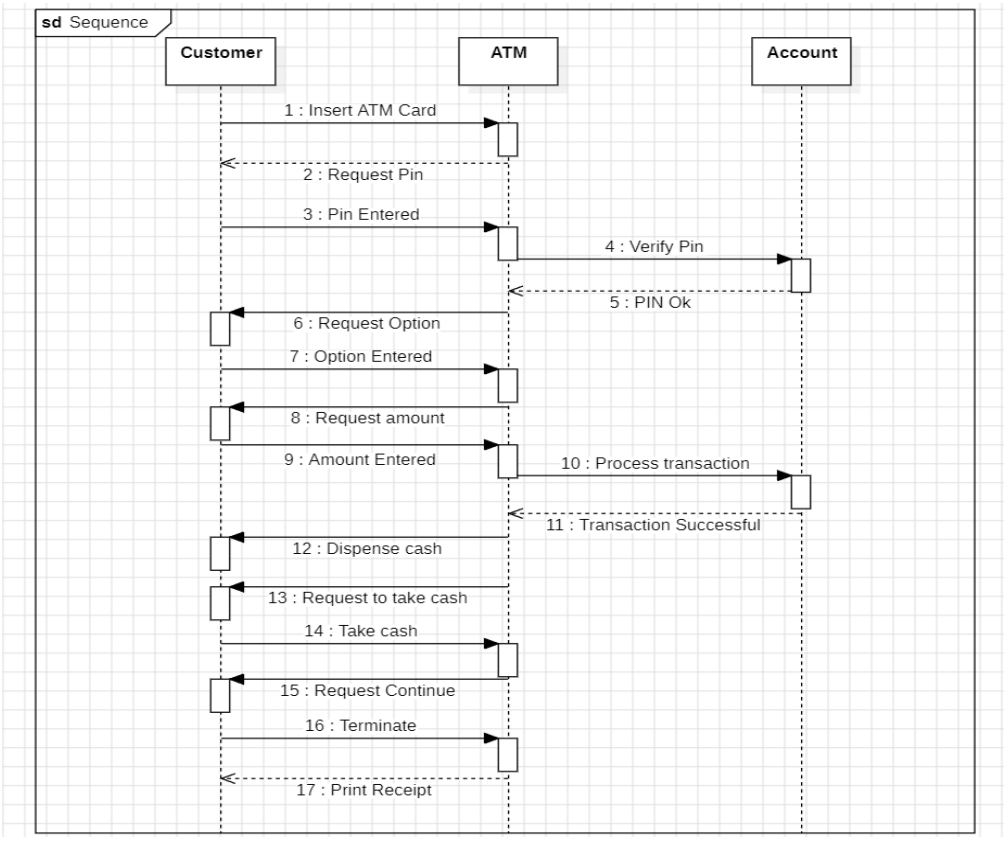
1.a) Use Case Diagram:



1.b) Class Diagram:



1.c) Sequence Diagram:



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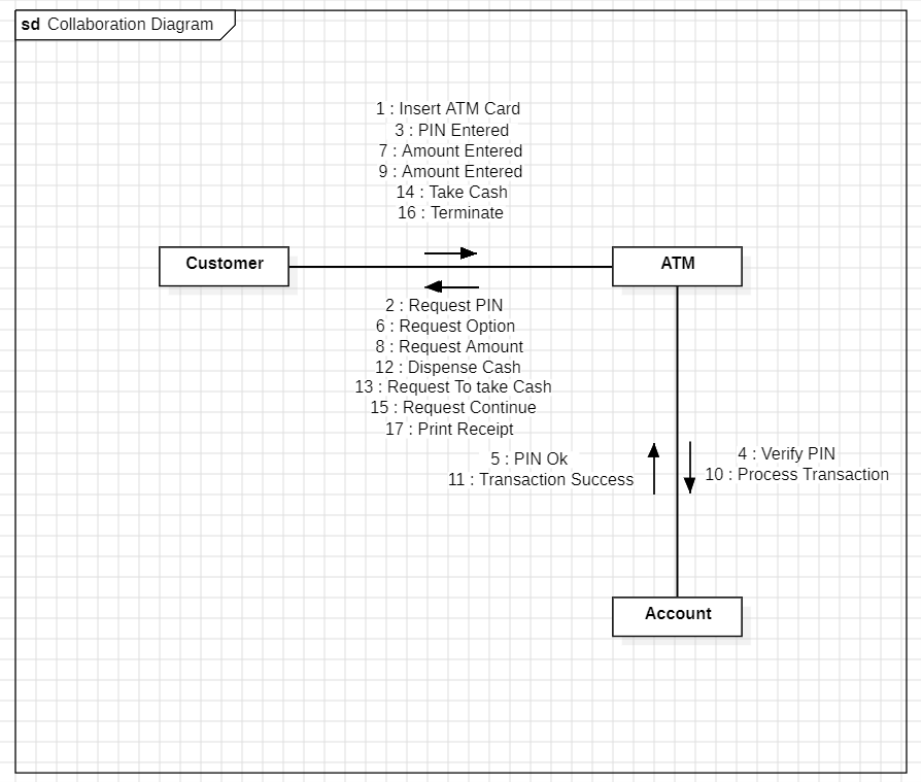

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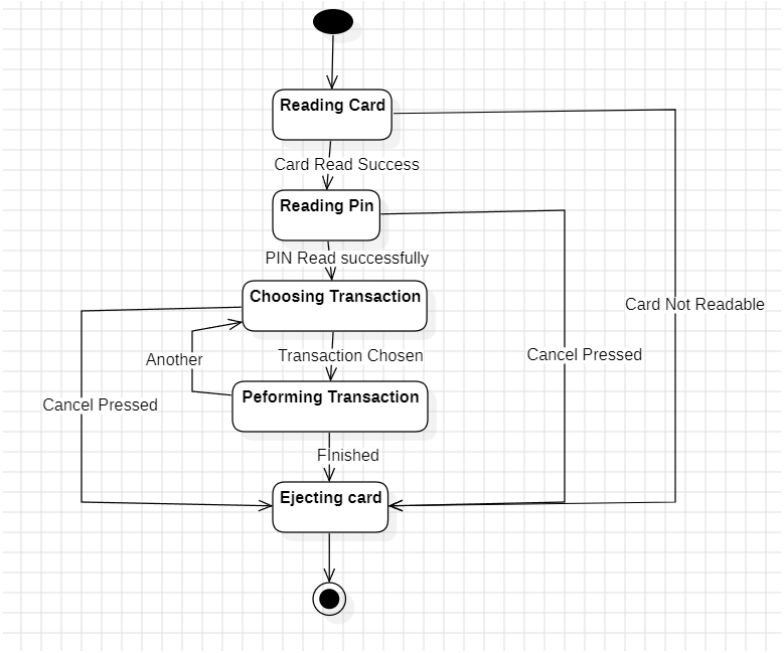
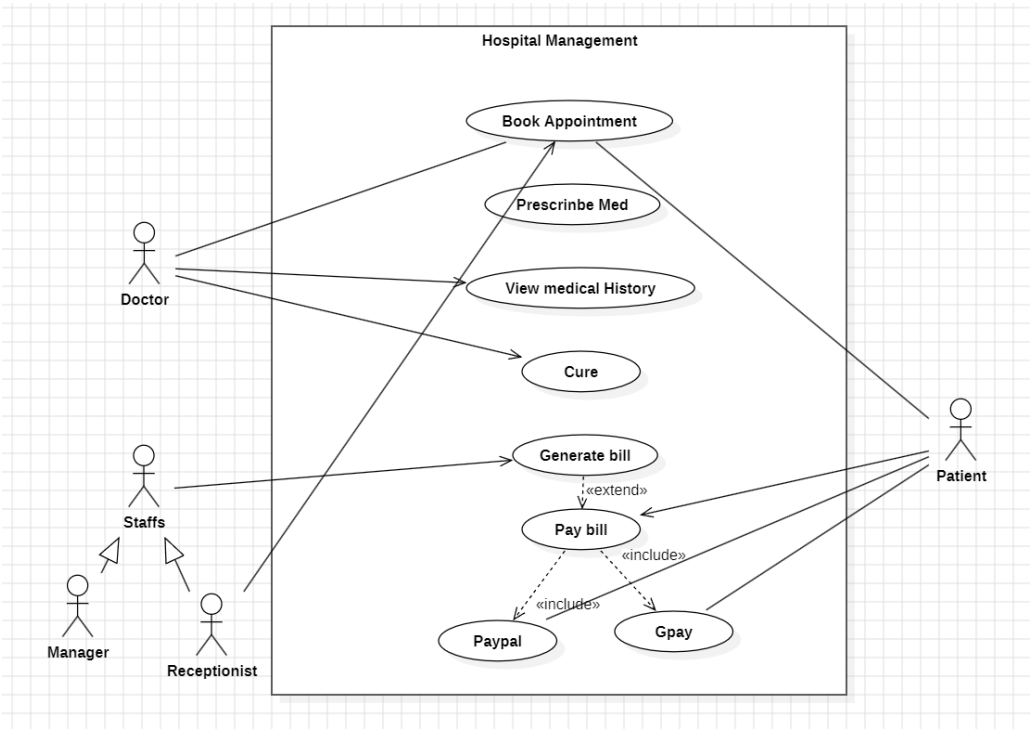


2. Hospital Management

2.a) Use Case Diagram:



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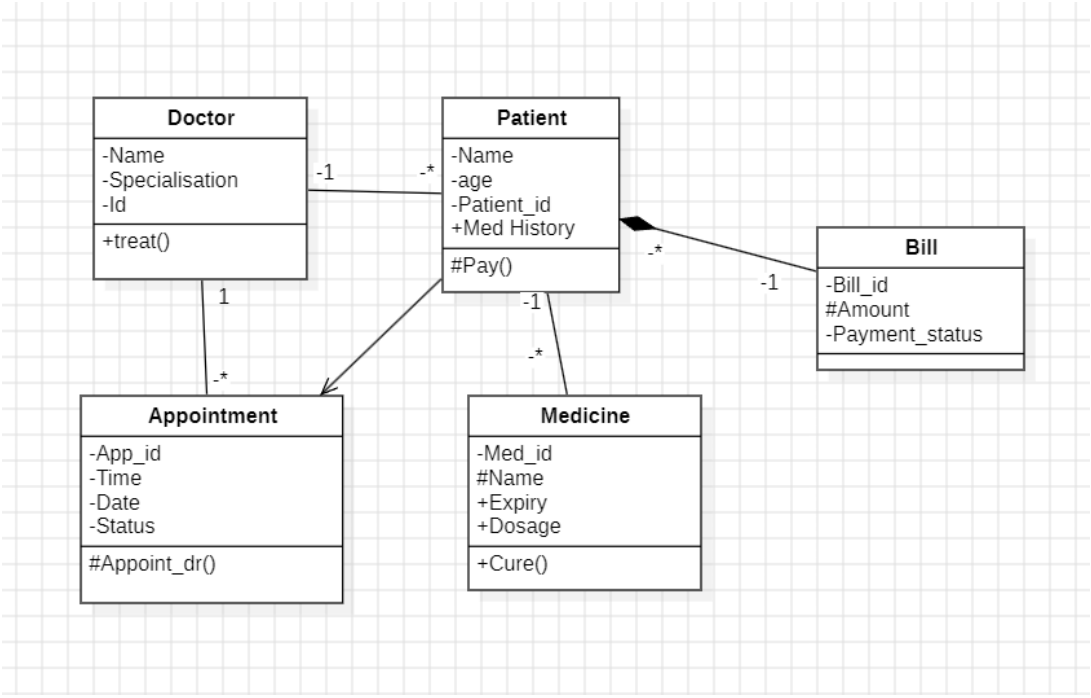

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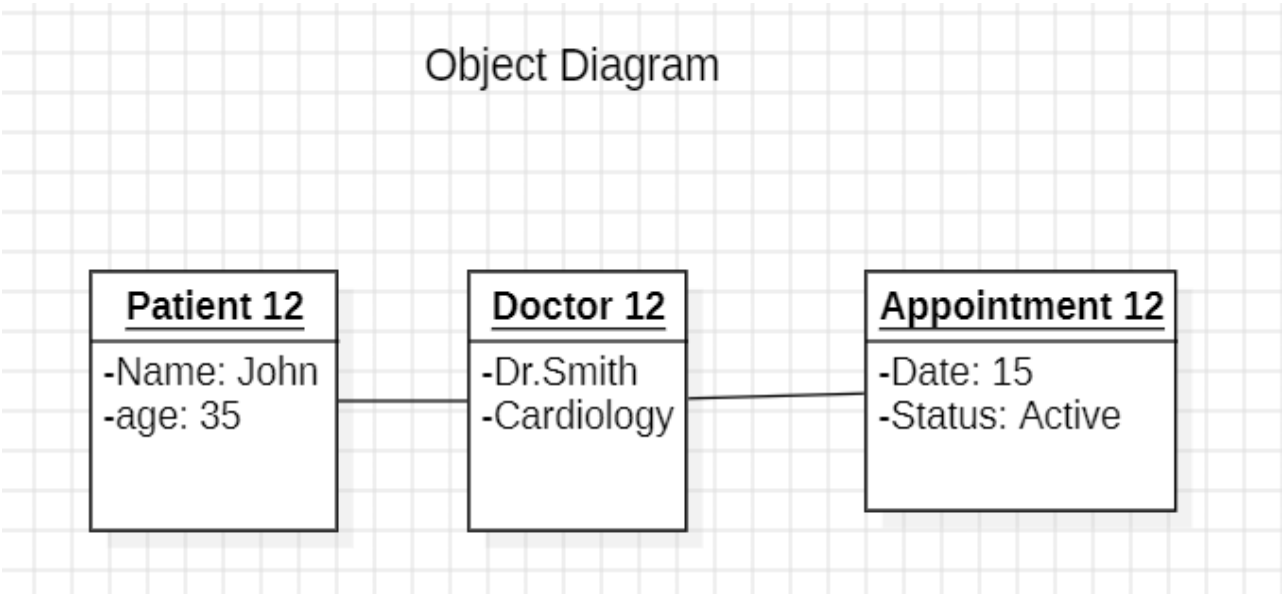
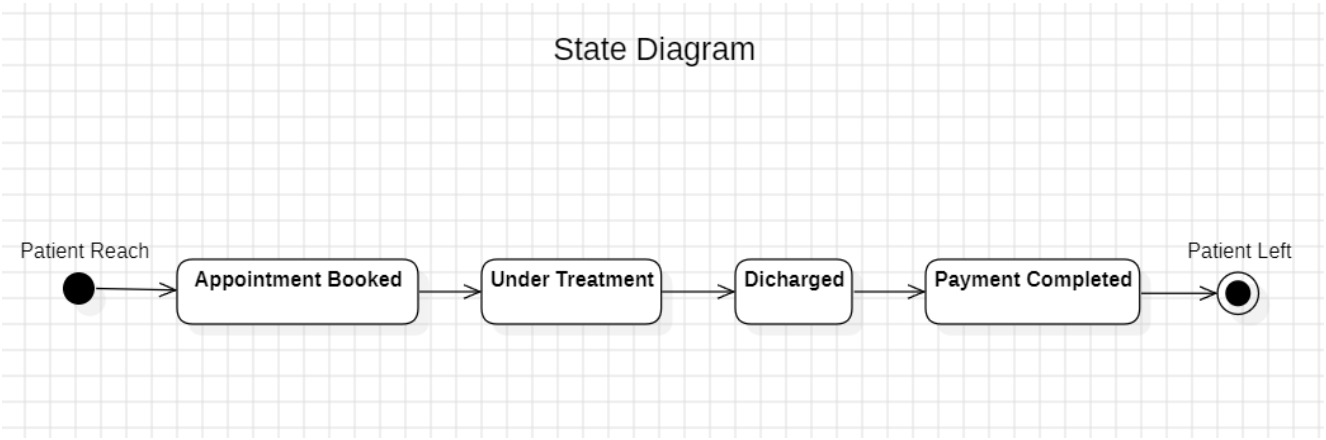
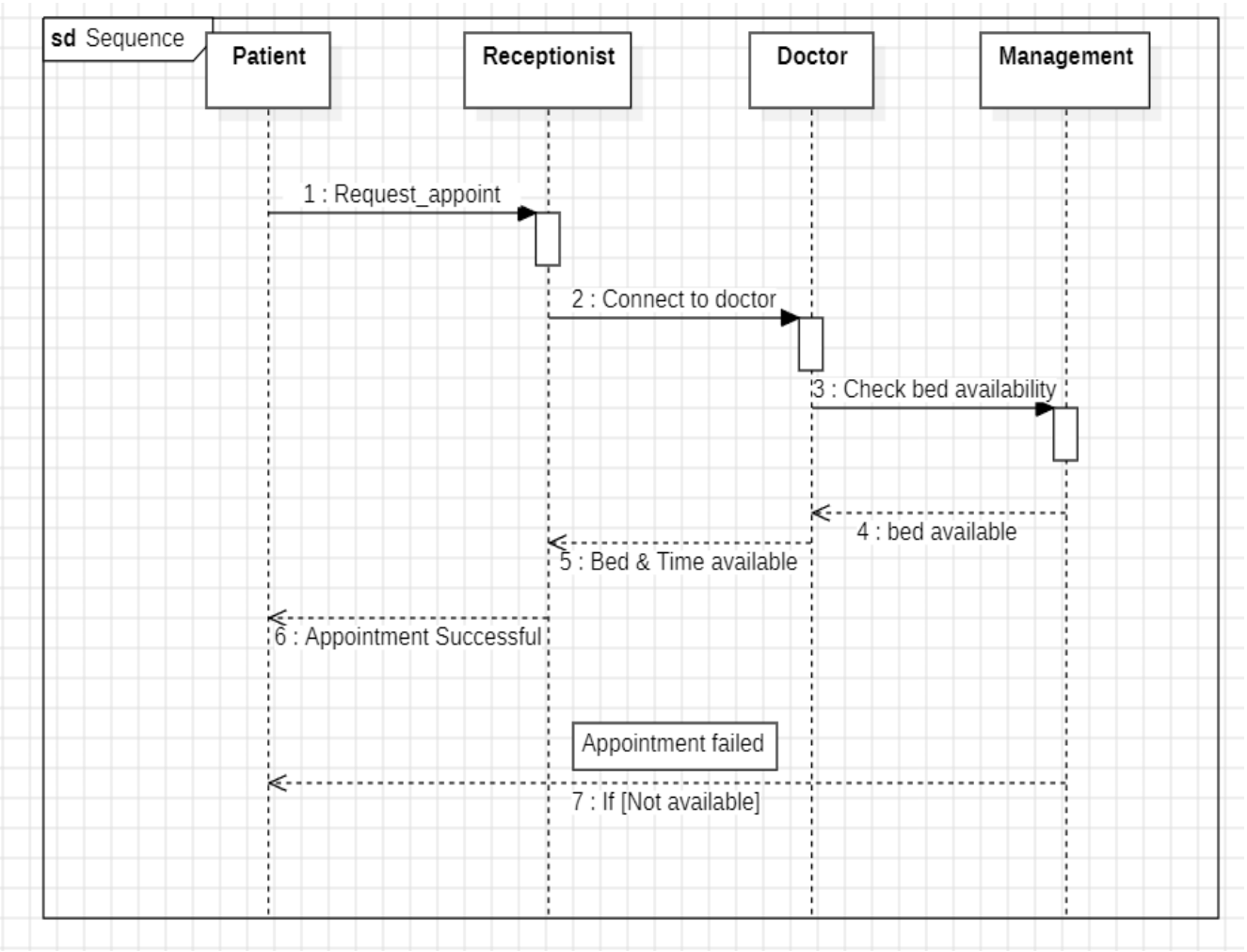


2d)State Diagram:



2e)Sequence Diagram:



Basic Java Questions

3a) Even Or Odd with Scanner:

Code:

```
import java.util.Scanner;
public class even{
    public void find(int a){
        if(a>=0){
            if (a%2==0){
                System.out.println("It is even!");
            }
            else{
                System.out.println("It is odd!");
            }}
        else{
            System.out.println("Enter a number greater than or equalt to
0!!");
        }
    }
    public static void main(String[]args){
        Scanner ip = new Scanner(System.in);
        even ob1=new even();
        System.out.print("Enter no to check: ");
        int a=ip.nextInt();
        ob1.find(a);
    }}
```

Output:

```
PS C:\Users\Ganath Avinash\OneDrive\ドキュメント\Back-end\Java>  &
s' '-cp' 'C:\Users\Ganath Avinash\AppData\Roaming\Code\User\workspa
Enter no to check: 5
It is odd!
PS C:\Users\Ganath Avinash\OneDrive\ドキュメント\Back-end\Java>
```

3b) Count Number Of Digits :

Code:

```
import java.util.Scanner;

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

        int count = 0;
        while (num != 0) {
            num /= 10;
            count++;
        }

        System.out.println("Number of digits: " + count);
        scanner.close();
    }
}
```

Output:

```
3.11-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages'
.java\jdt_ws\Java_d395ceba\bin' 'YY'
Enter a number: 1234567890
Number of digits: 10
PS C:\Users\Ganath Avinash\OneDrive\ドキュメント\Back-end\Java>
```

3c) Factorial:

Code:

```
import java.util.Scanner;

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

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

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

Output:

```
3.11-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages'
.java\jdt_ws\Java_d395ceba\bin' 'YY'
Enter a number: 6
Factorial of 6 is 720
PS C:\Users\Ganath Avinash\OneDrive\ドキュメント\Back-end\Java>
```

3d) Fibonacci Series:

Code:

Code:

```
import java.util.Scanner;

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

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

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

Output:

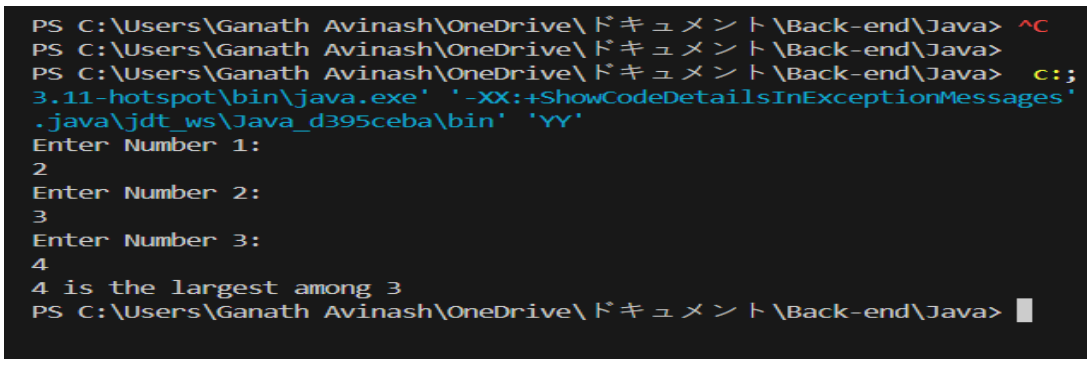
```
3.11-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages'
.java\jdt_ws\Java_d395ceba\bin' 'YY'
Enter the number of terms: 8
Fibonacci Series: 0 1 1 2 3 5 8 13
PS C:\Users\Ganath Avinash\OneDrive\ドキュメント\Back-end\Java>
```

3e) Largest Number Calculator:

Code:

```
import java.util.Scanner;

public class Largest{
    int a,b,c;
        void lar(int a,int b, int c){
            if(a>b && a>c){
                System.out.println(a + "Is the largest among 3");
            }
            else if(b>a && b>c){
                System.out.println(b + "Is the largest among 3");
            }
            else if(c>a && c>b){
                System.out.println(c + "Is the largest among 3");
            }
            else{
                System.out.println("All are equal no larger number");
            }
        }
    }

class call{
    public static void main(String[]args){
        Largest l1= new Largest();
        Scanner ip=new Scanner(System.in);
        System.out.println("Enter Number 1: ");
        int a=ip.nextInt();
        System.out.println("Enter Number 2: ");
        int b=ip.nextInt();
        System.out.println("Enter Number 3: ");
        int c=ip.nextInt();
        l1.lar(a,b,c);
    }
}
```

Output:



3f) Multiplication Table :

Code:

```
import java.util.Scanner;

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

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

        scanner.close();
    }
}
```

Output:

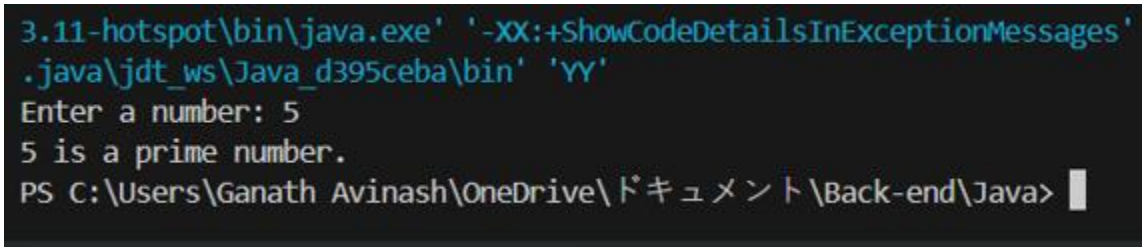
```
3.11-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages'
.java\jdt_ws\Java_d395ceba\bin' 'YY'
Enter a number: 9
9 x 1 = 9
9 x 2 = 18
9 x 3 = 27
9 x 4 = 36
9 x 5 = 45
9 x 6 = 54
9 x 7 = 63
9 x 8 = 72
9 x 9 = 81
9 x 10 = 90
PS C:\Users\Ganath Avinash\OneDrive\ドキュメント\Back-end\Java>
```

3g) Prime Check:

Code:

```
import java.util.Scanner;

public class PrimeCheck {
    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 <= num / 2; 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:



3h) Reverse Number:

Code:

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

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

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

Output:

```
3.11-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages'
.java\jdt_ws\Java_d395ceba\bin' 'YY'
Enter a number: 3456789
Reversed Number: 9876543
PS C:\Users\Ganath Avinash\OneDrive\ドキュメント\Back-end\Java>
```

3i) Sum Of N Natural Numbers:

Code:

```
import java.util.Scanner;

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

        int sum = 0, i = 1;
        while (i <= n) {
            sum += i;
            i++;
        }

        System.out.println("Sum of first " + n + " natural numbers is " +
sum);
        scanner.close();
    }
}
```

Output:

```
aming\Code\User\workspaceStorage\afd6b2237c60b38d7152fc1021122a0e\rec
Enter a number: 5
Sum of first 5 natural numbers is 15
PS C:\Users\Ganath Avinash\OneDrive\ドキュメント\Back-end\Java>
```

3j) Sum of Digits:

Code:

```
import java.util.Scanner;

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

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

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

Output:

```
3.11-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages'
.java\jdt_ws\Java_d395ceba\bin' 'YY'
Enter a number: 56789
Sum of digits: 35
PS C:\Users\Ganath Avinash\OneDrive\ドキュメント\Back-end\Java>
```