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CH.SC.U4CSE24127

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.U4CSE24127 – medarametla dheeraj vamsi krishna*** 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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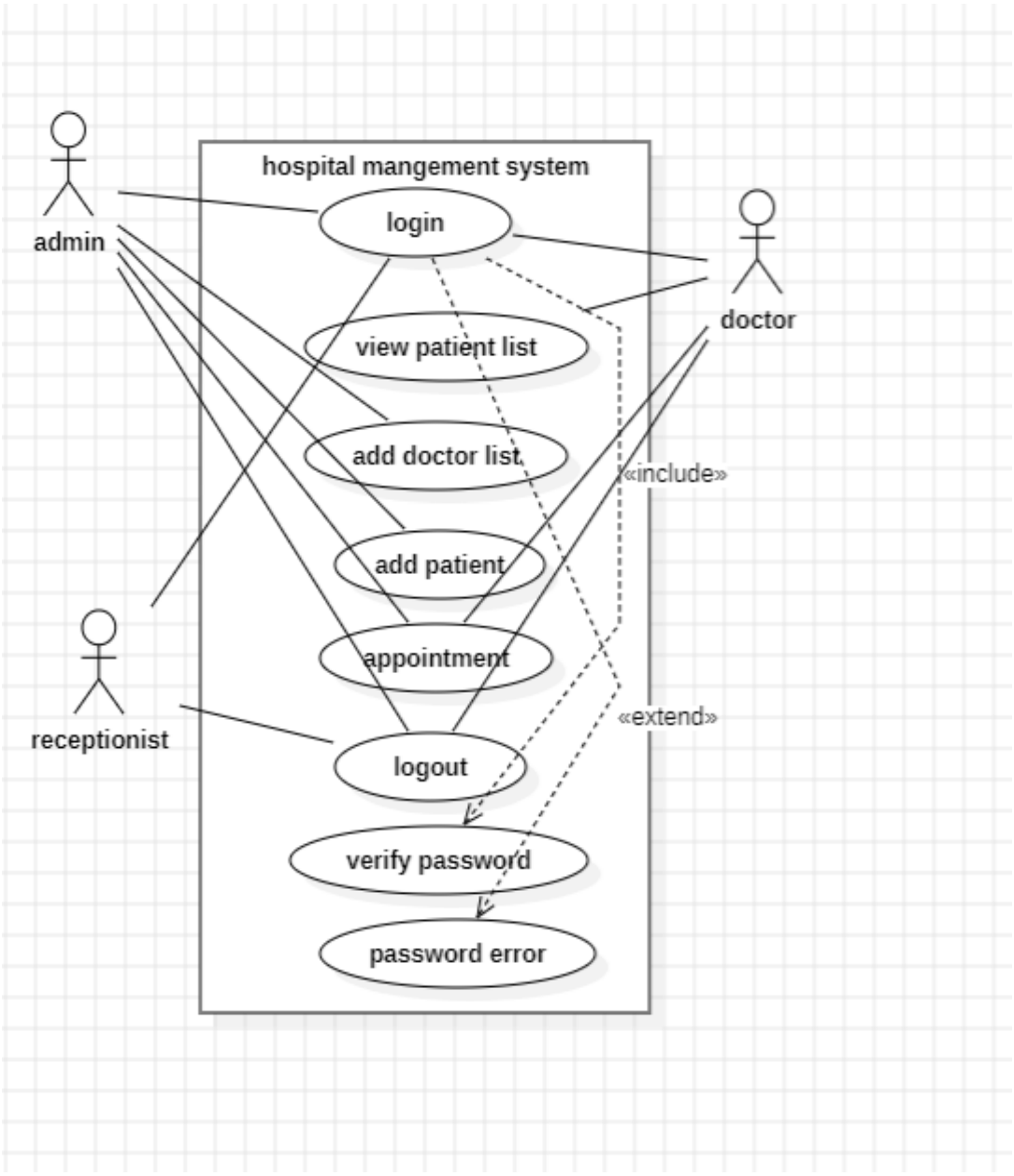
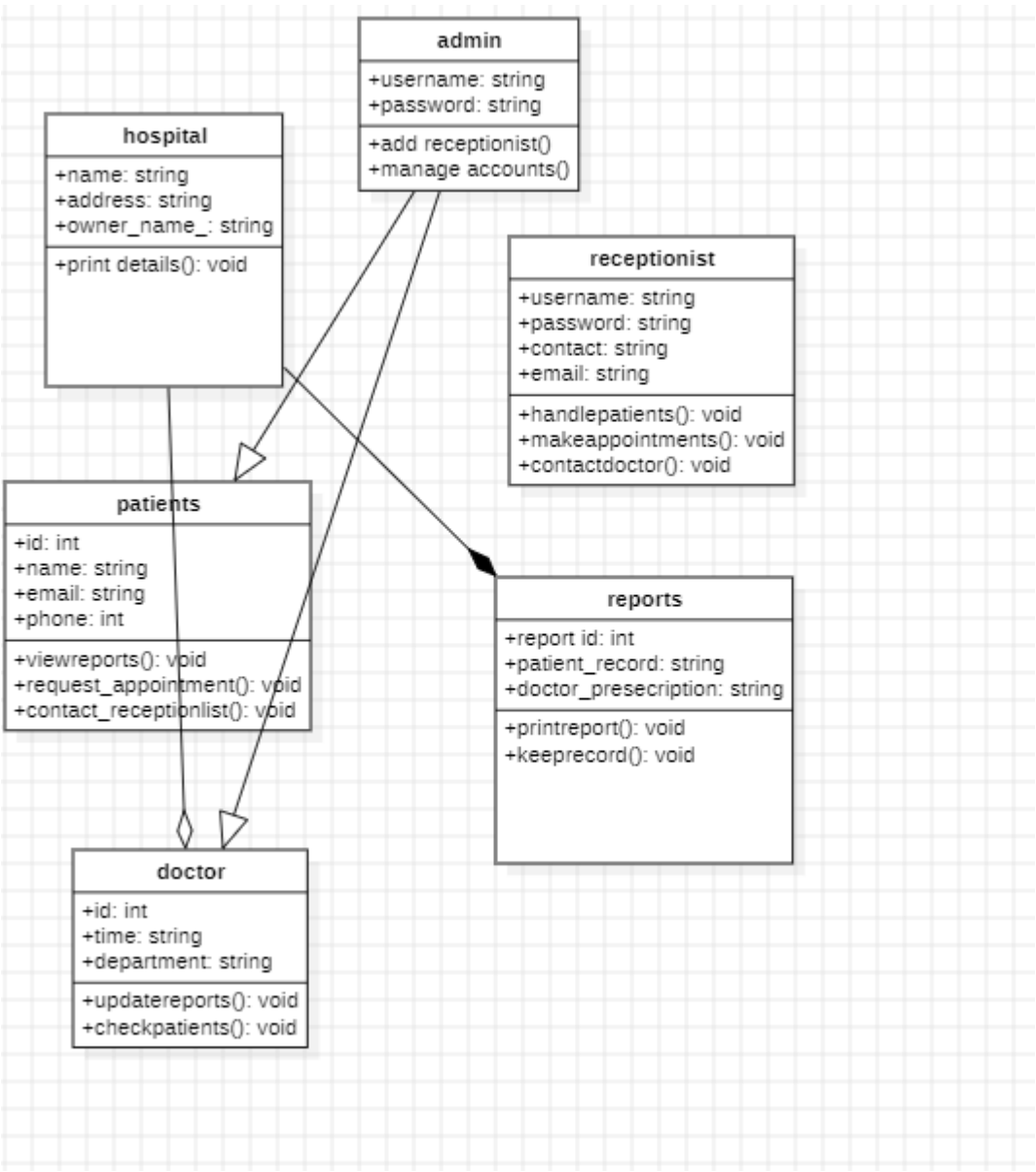
UML DIAGRAMS

1) HOSPITAL MANAGEMENT SYSTEM

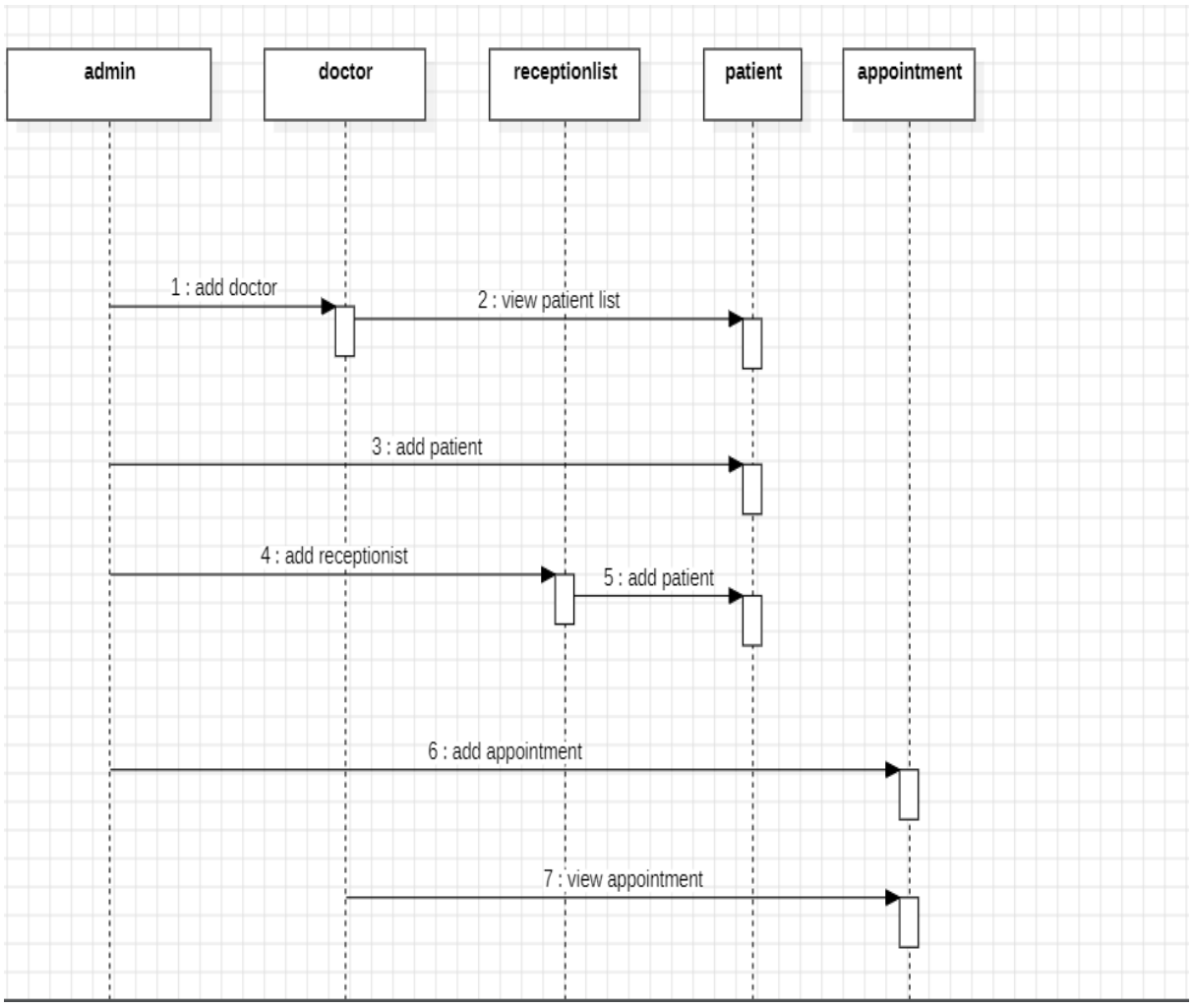
1a) USE CASE DIAGARAM:



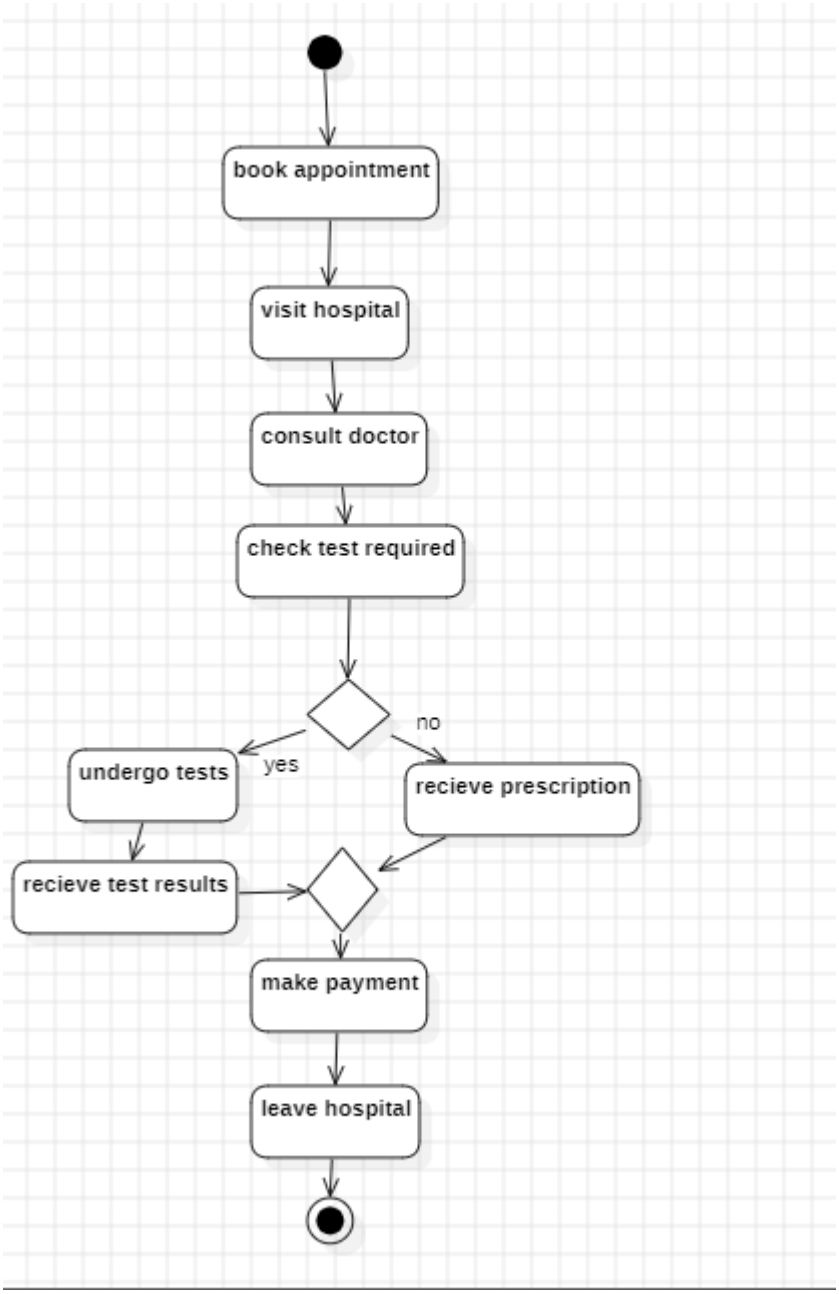
1B) class diagram:



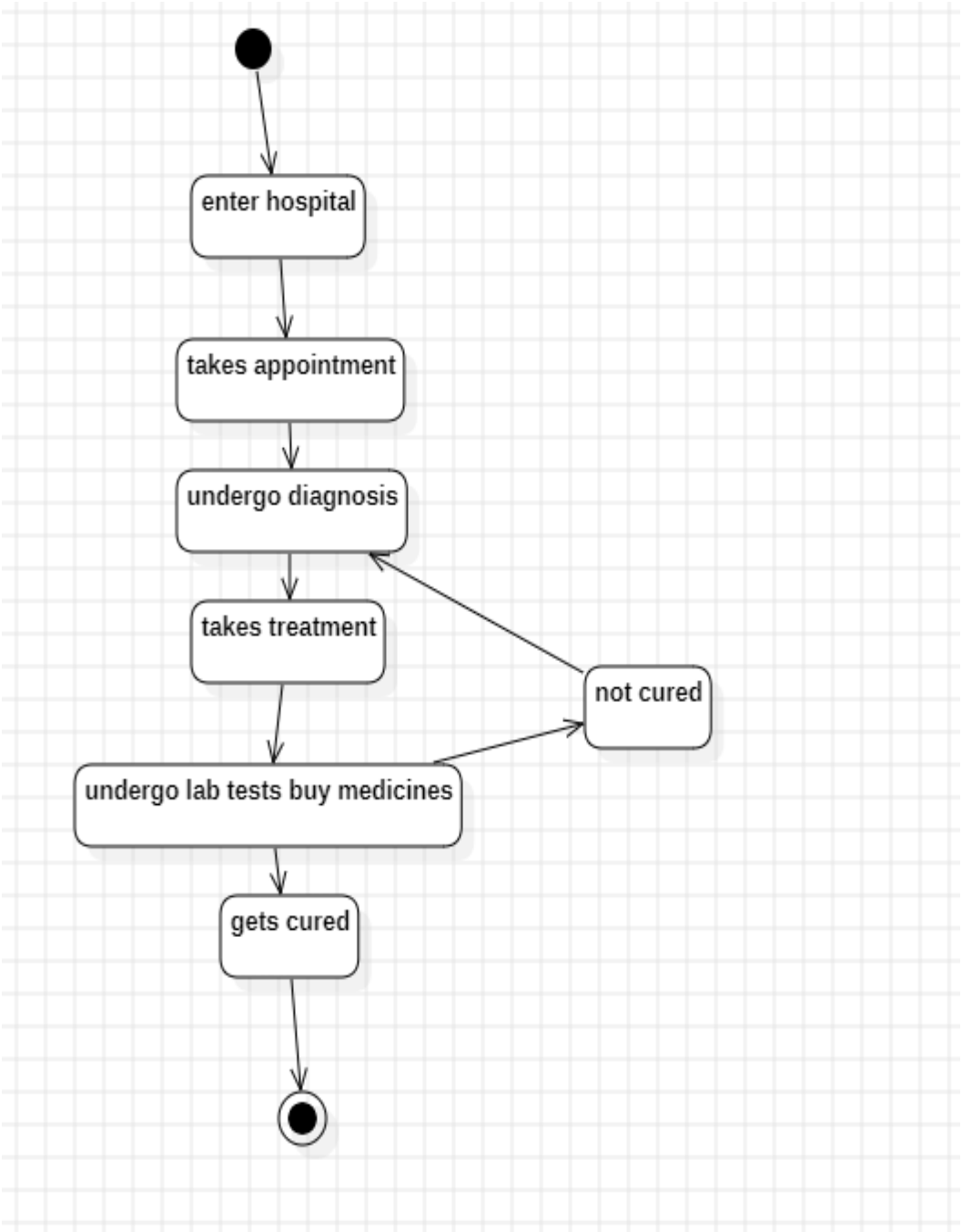
1C) sequence diagram:



1D) activity diagram

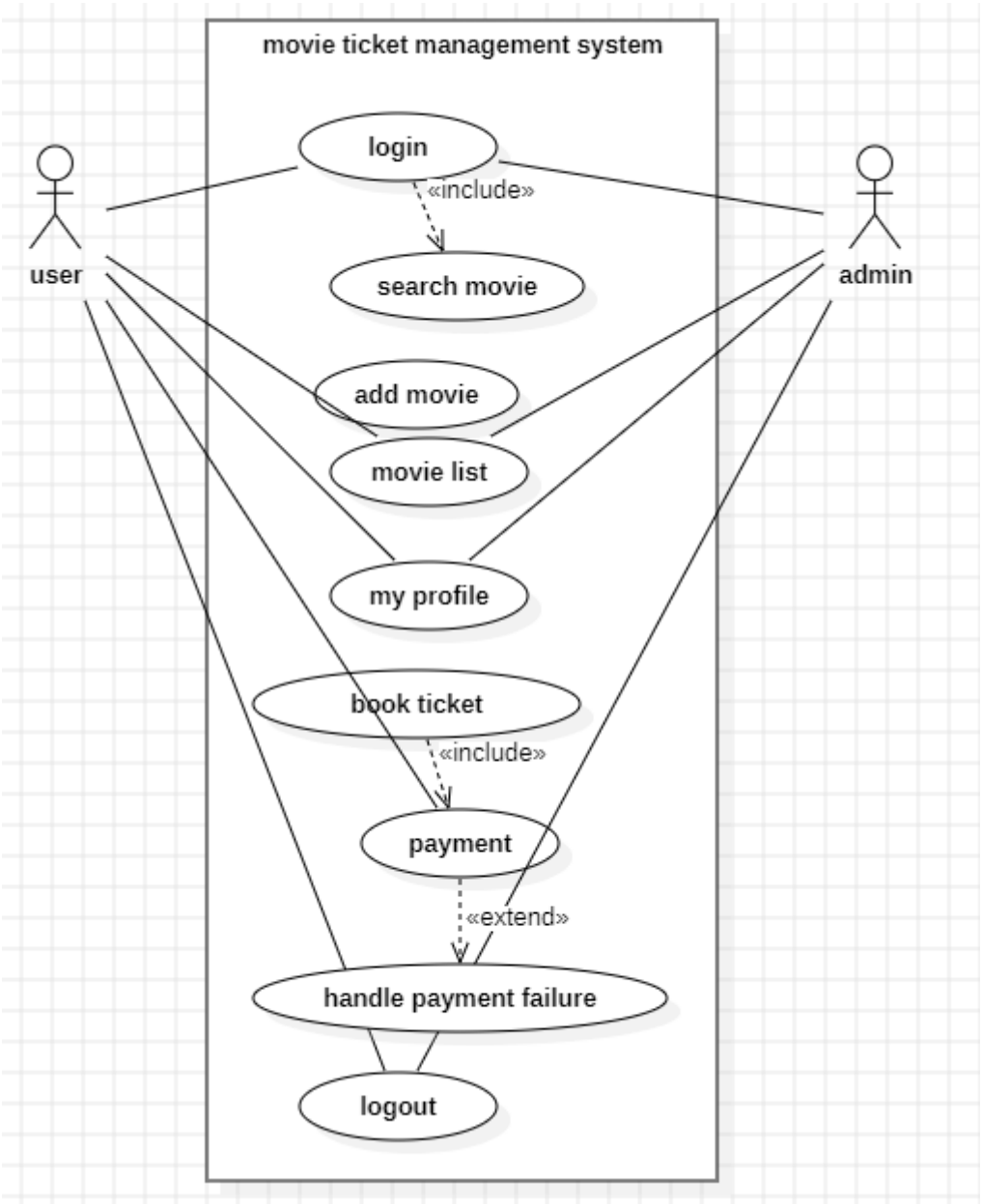


1E) state diagram:

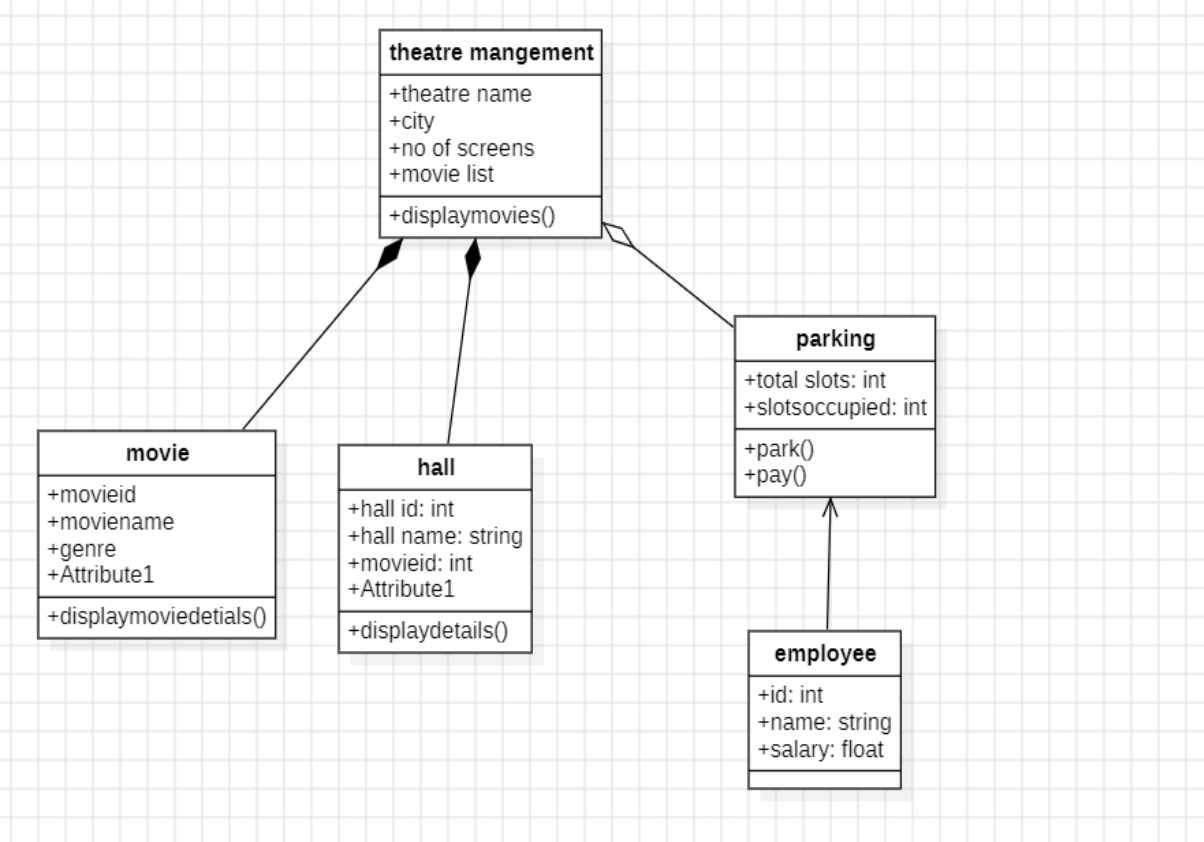


2) movie management system

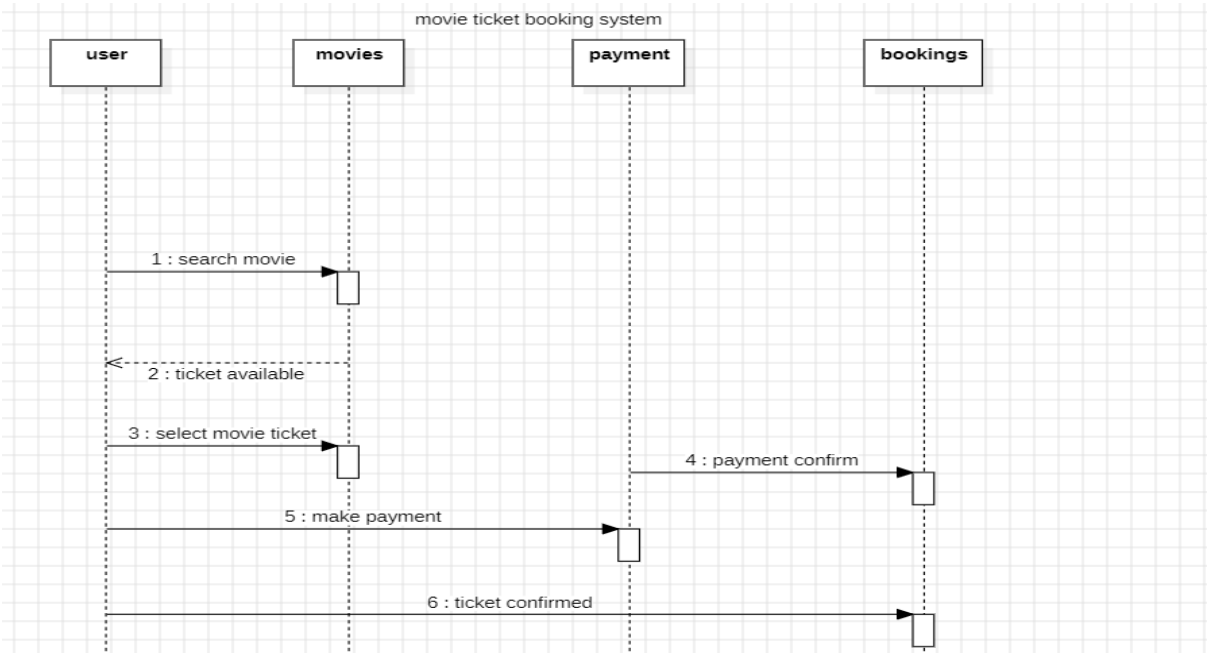
2A) use case diagram:



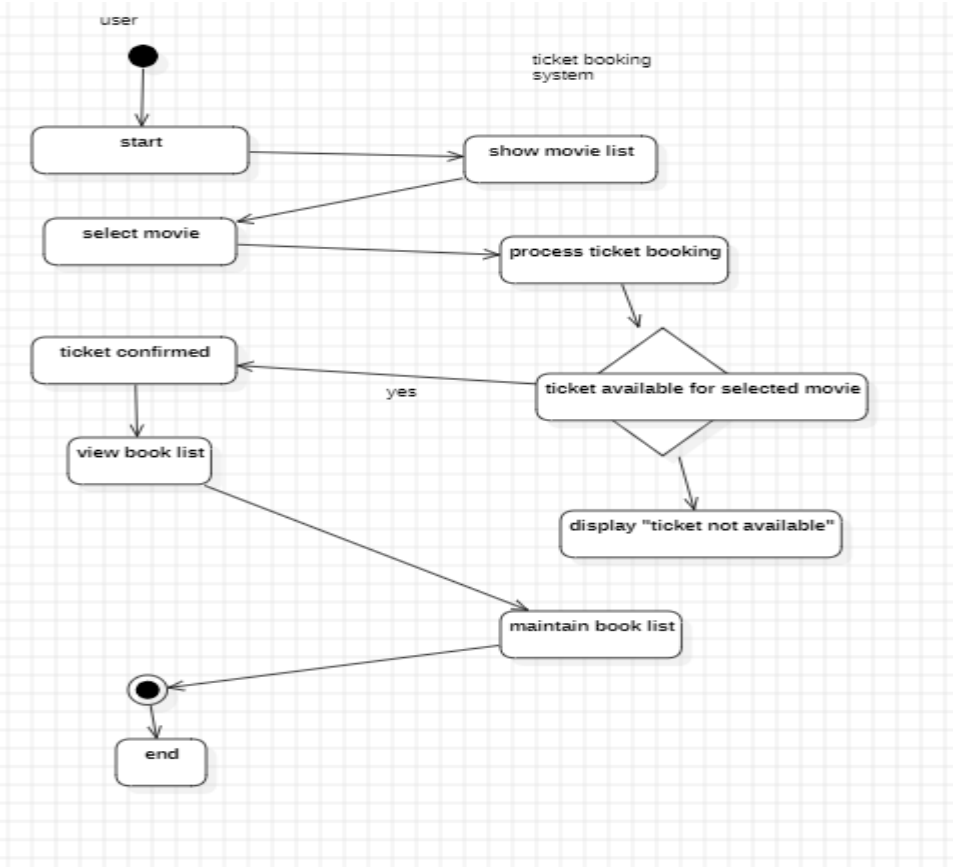
2B) class diagram:



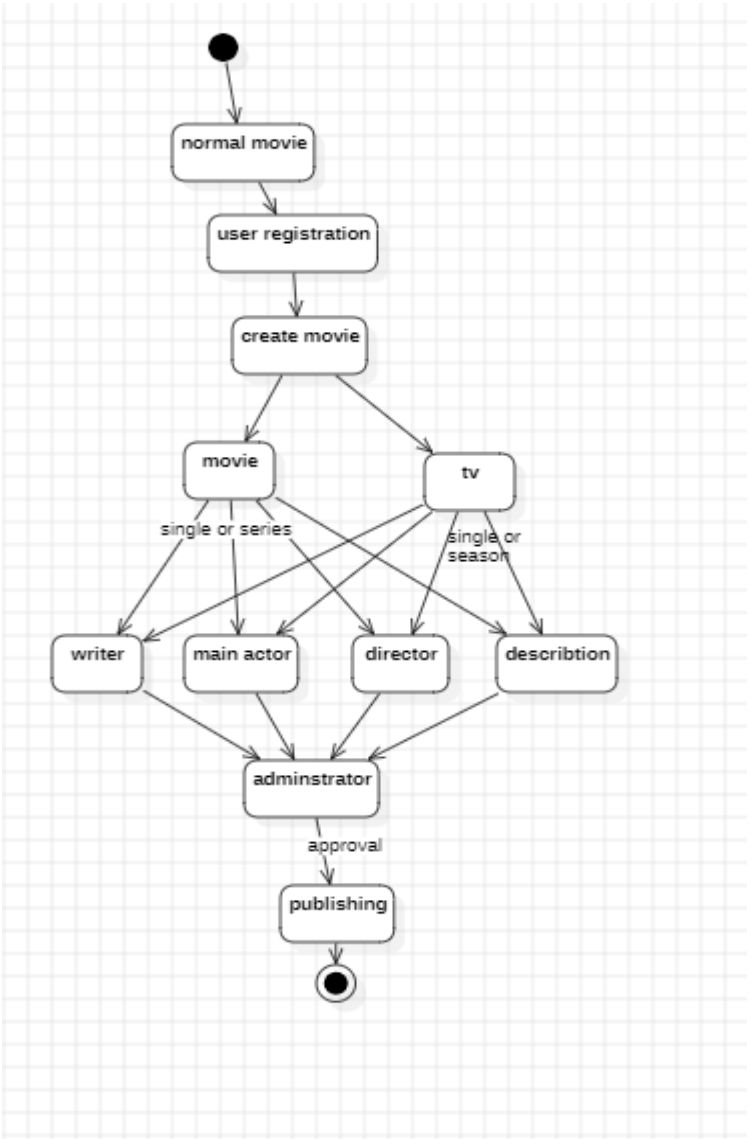
2C) sequence diagram:



2D) activity diagram:



2E) state diagram:



3) Basic java programs:

3a) arm strong number:

```
public class ArmstrongNumber {
   public static void main(String[] args) {
      int num = 153, original = num, sum = 0;
      while (num > 0) {
         int digit = num % 10;
         sum += digit * digit * digit;
         num /= 10;
      }
      if (sum == original) System.out.println(original + " is an Armstrong
number.");
      else System.out.println(original + " is not an Armstrong number.");
   }
}
```

Output:

```
C:\Users\medar\OneDrive\Desktop\Basic Jva programmes>D:

D:\>javac ArmstrongNumber.java

D:\>java ArmstrongNumber.java
153 is an Armstrong number.

D:\>
```


3b) Automorphic Number

```
public class AutomorphicNumber {
```

```
    public static void main(String[] args) {
        int num = 25, square = num * num;
        String numStr = String.valueOf(num);
        String squareStr = String.valueOf(square);
        if (squareStr.endsWith(numStr)) System.out.println(num + " is an
Automorphic Number.");
        else System.out.println(num + " is not an Automorphic Number.");
    }
}
```

Output:

```
D:\>javac AutomorphicNumber.java

D:\>java AutomorphicNumber.java
25 is an Automorphic Number.
```

3c)Count Digits

```
public class CountDigits {
    public static void main(String[] args) {
        int num = 123456, count = 0;
        while (num > 0) {
            count++;
            num /= 10;
        }
        System.out.println("Number of digits: " + count);
    }
}
```

Output:

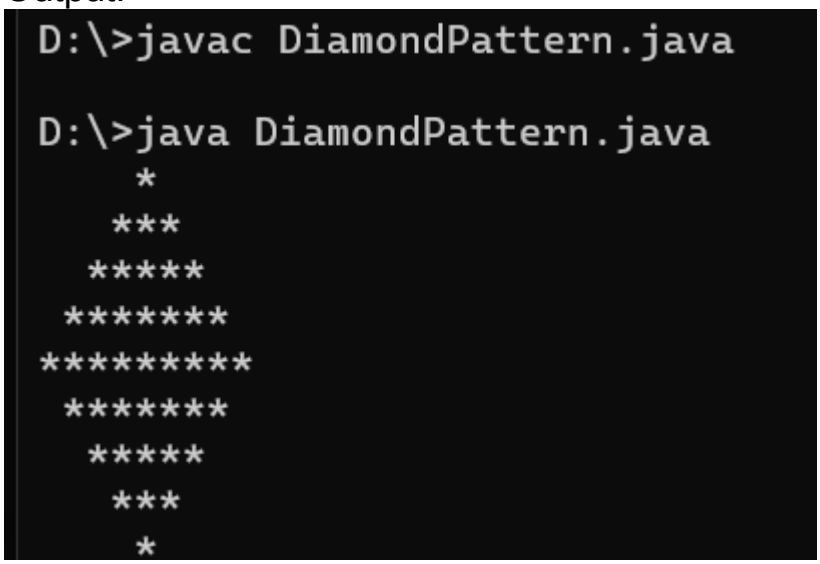
```
D:\>javac CountDigits.java

D:\>java CountDigits.java
Number of digits: 6
```

3d) Diamond Pattern

```
public class DiamondPattern {
    public static void main(String[] args) {
        int n = 5;
```

```
        for (int i = 1; i <= n; i++) {
            for (int j = n; j > i; j--) System.out.print(" ");
            for (int k = 1; k <= (2 * i - 1); k++) System.out.print("*");
            System.out.println();
        }
        for (int i = n - 1; i >= 1; i--) {
            for (int j = n; j > i; j--) System.out.print(" ");
            for (int k = 1; k <= (2 * i - 1); k++) System.out.print("*");
            System.out.println();
        }
    }
}
```

Output:



3e)GCD

```
public class GCD {
    public static void main(String[] args) {
        int a = 56, b = 98;
        while (b != 0) {
```

```
            int temp = b;
            b = a % b;
            a = temp;
        }
        System.out.println("GCD: " + a);
    }
}
```

Output:

```
D:\>javac GCD.java

D:\>java GCD.java
GCD: 14
```

3f) number to words

```
public class NumberToWords {
    public static void main(String[] args) {
        int num = 7;
        String[] words = {"Zero", "One", "Two", "Three", "Four", "Five", "Six",
"Seven", "Eight", "Nine"};
        if (num >= 0 && num <= 9) System.out.println("Number in words: "
+ words[num]);
        else System.out.println("Number out of range");
    }
}
```

Output:

```
D:\>javac NumberToWords.java

D:\>java NumberToWords.java
Number in words: Seven
```

3g) perfect number

```
public class PerfectNumber {
    public static void main(String[] args) {
        int num = 28, sum = 0;
        for (int i = 1; i < num; i++) {
            if (num % i == 0) sum += i;
        }
```

```
        if (sum == num) System.out.println(num + " is a Perfect Number.");
        else System.out.println(num + " is not a Perfect Number.");
    }
}
```

Output:

```
D:\>javac perfectNumber.java

D:\>java perfectNumber.java
28 is a Perfect Number.
```

3h) reverse number

```
public class ReverseNumber {
    public static void main(String[] args) {
        int num = 12345, reversed = 0;
        while (num != 0) {
            int digit = num % 10;
            reversed = reversed * 10 + digit;
            num /= 10;
        }
        System.out.println("Reversed Number: " + reversed);
    }
}
```

Output:

```
D:\>javac ReverseNumber.java

D:\>java ReverseNumber.java
Reversed Number: 54321
```

3i) reverse string

```
public class ReverseString {
    public static void main(String[] args) {
        String str = "Hello", reversed = "";
        for (int i = str.length() - 1; i >= 0; i--) {
            reversed += str.charAt(i);
        }
        System.out.println("Reversed String: " + reversed);
    }
```

}

Output:

```
D:\>javac ReverseString.java

D:\>java ReverseString.java
Reversed String: olleH
```

3j) sum even odd digits

```
public class SumEvenOddDigits {
    public static void main(String[] args) {
        int num = 123456, evenSum = 0, oddSum = 0;
        while (num > 0) {
            int digit = num % 10;
            if (digit % 2 == 0) evenSum += digit;
            else oddSum += digit;
            num /= 10;
        }
        System.out.println("Sum of even digits: " + evenSum);
        System.out.println("Sum of odd digits: " + oddSum);
    }
}
```

Output:

```
D:\>java SumEvenOddDigits.java
Sum of even digits: 12
Sum of odd digits: 9
```