**Faculty Name and UID:** **Girish Kumar** **UID: 21706**

**Academic Task Number: CA-1** **Course code:** CAP680

**Course Title Programme: Programming in JAVA (Lab)** **Maximum Marks: 50**

**Academic Task Type: Assignment 3** **Reg.No : 12207313**

**Name : Himanshu singh** **Roll No : 26**

**Section : D2214** **Group : A**

**Set: Even**

| Question Number | Question Statement | Course Outcome | Bloom's level | Marks per Question |
|---|---|---|---|---|
| 1 | You are climbing a staircase. It takes n steps to reach the top.<br>Each time you can either climb 1 or 2 steps. In how many distinct ways can you climb to the top?<br>Example 1:<br>Input: n = 2<br>Output: 2<br>Explanation: There are two ways to climb to the top.<br>1. 1 step + 1 step<br>2. 2 steps | CO1 | L6 | 50 |

**CODE :**

```
public class MyProgram {
    public static int countDistinctWays(int n) {
        if (n == 1) {
            return 1;
        }
        int[] dp = new int[n + 1];
        dp[1] = 1;
        dp[2] = 2;
        for (int i = 3; i <= n; i++) {
            dp[i] = dp[i - 1] + dp[i - 2];
        }
        return dp[n];
    }
```

```
    public static void main(String[] args) {
        int n = 5;
        int distinctWays = countDistinctWays(n);
        System.out.println("Number of distinct ways to climb " + n + " steps: " + distinctWays);
    }
}
```

## For Even Roll No

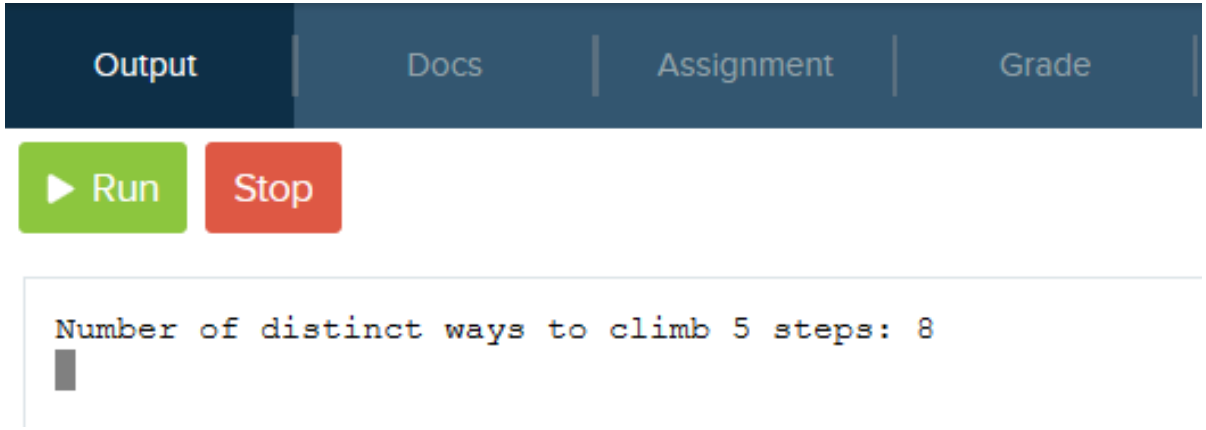
Submit + Continue | Save

MyProgram.java

```java
public class MyProgram {
    public static int countDistinctWays(int n) {
        if (n == 1) {
            return 1;
        }
        int[] dp = new int[n + 1];
        dp[1] = 1;
        dp[2] = 2;
        for (int i = 3; i <= n; i++) {
            dp[i] = dp[i - 1] + dp[i - 2];
        }
        return dp[n];
    }

    public static void main(String[] args) {
        int n = 5;
        int distinctWays = countDistinctWays(n);
        System.out.println("Number of distinct ways to climb " + n + " steps: "
    }
}
```

**OUTPUT :**


Output
Docs
Assignment
Grade
Run
Stop
Number of distinct ways to climb 5 steps: 8