EXPERIMENT NO:- 11

Aim:- To implement a Java program that finds the Longest Common Subsequence (LCS) of two given strings using dynamic programming.

```
import java.util.Scanner;

public class lcs {
   public static String lcs(String X, String Y) {
      int m = X.length();
      int n = Y.length();
      int[][] dp = new int[m + 1][n + 1];

      for (int i = 1; i <= m; i++) {
         for (int j = 1; j <= n; j++) {
            if (X.charAt(i - 1) == Y.charAt(j - 1)) {
               dp[i][j] = 1 + dp[i - 1][j - 1];
            } else {
               dp[i][j] = Math.max(dp[i - 1][j], dp[i][j - 1]);
            }
         }
      }
      int i = m, j = n;
      StringBuilder lcsString = new StringBuilder();
      while (i > 0 && j > 0) {
         if (X.charAt(i - 1) == Y.charAt(j - 1)) {
            lcsString.append(X.charAt(i - 1));
            i--;
            j--;
         } else if (dp[i - 1][j] > dp[i][j - 1]) {
            i--;
         } else {
            j--;
         }
      }
      return lcsString.reverse().toString();
   }
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);

      System.out.print("Enter first string: ");
      String X = scanner.nextLine();

      System.out.print("Enter second string: ");
      String Y = scanner.nextLine();

      String lcsResult = lcs(X, Y);
      System.out.println("Longest Common Subsequence: " + lcsResult);
      System.out.println("Length of Longest Common Subsequence: " + lcsResult.length());
   }
}
```

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OUTPUT:-