

The **Longest Common Subsequence (LCS)** problem is finding the longest sequence which exists in both the given strings.

### **Subsequence**

A subsequence of a string is a sequence that can be derived from the given string by deleting zero or more elements **without changing the order** of the remaining elements.

E.g. BSD, BHS are subsequences of ABSDHS

### **Common Subsequence**

Suppose, X and Y are two sequences over a finite set of elements. We can say that Z is a common subsequence of X and Y, if Z is a subsequence of both X and Y.

E.g.

X = "ABSDHS"

Y = "ABDHSP"

Common Subsequences - A, AB, ABDHS

### **Longest Common Subsequence**

If a set of sequences are given, the longest common subsequence problem is to find a common subsequence of all the sequences that is of maximal length.

E.g. in previous case, LCS is ABDHS