Breakdown of Files

Source Code:

All source code files are stored in one folder: src

AdityaBhatkarProject1\src\

Three algorithms are implemented as three different programs.

Each program is stored in separate file.

Supporting classes are stored in separate files. They must be compiled before compiling programs for the algorithms.

Sr. No	Description	File
1	Custom Exception	AdityaBhatkarProject1\src\myProject\InvalidInputException.java
2	Utility Class	AdityaBhatkarProject1\src\myProject\MyUtility.java
3	NED Calculator	AdityaBhatkarProject1\src\myProject\NEDCalculator.java
4	LCS calculator using complete table	AdityaBhatkarProject1\src\myProject\TableLCSCalculator.java
5	LCS calculator using two arrays	AdityaBhatkarProject1\src\myProject\LinearLCS.java

Complier

Programming Language: Java

Compiler: 1.6

Works and Fails

Programs give correct LCS and NED.

The programs take absolute path of the two input files as arguments.

Programs checks whether the input sequences are empty or not but they do not check whether the inputs are character strings or not.

Data Structures

Table: Table is stored as one two dimensional array.

Rows: When table is not used the two rows are stored in two one dimensional arrays.

Stack: Stack is implemented using ArrayList.

Input Sequences: Input sequences are stored in two Strings.

Program Design

The programs that avoid use of complete table maintain two arrays to store the numbers.

In NED calculator two arrays are upper and current.

Initially upper array is initialized from 0..(length-1) and current array with first element as 1 and rest 0s.

The values for current arrays are calculated and then current array becomes upper array and upper array becomes current. Again values for new current array are calculated and so on till end of left string.

In LinearLCS calculator four such arrays are used, since there are two sub tables. For top sub table the current and upper arrays work like mentioned above. For bottom sub table we have similar arrays, lower and current. Here lower array is initialized as (length-1)…0 and current is initialized as all 0s except last element is 1. Values are calculated for current. Then lower becomes current. Current becomes lower. And values are again calculated for current. The number of iterations is determined by the horizontal split.