Data Structures Lab

[12-Jan-2024]

1. Write a Program with setUnion, setIntersection and setDifference functions. All the functions takes as input two arrays (possibly array of integers) integers and compute and return the union, intersection and difference of two set of integers respectively. You have to write a main Program to test your functions.

2. The following is the simple way to compress the text. Use n[str] to mean that str appears n times. For example, "3[ab3[cd]]" denotes "abcdcdcdabcdcdcdabcdcdcd". Write functions to *encode* and *decode* a string properly. You have to write a main Program to test your functions.

3. You are given an array A[1..n] of integers. A subarray of A is defined as a contiguous segment of A. The subarray from position k to position l is written as A[k..l]. The subarray A[k..l] is called as an ascent if $A[j] \leq A[j + 1]$ for all j where $k \leq j < l$. It means, an ascent is a nondecreasing segment of A. You are required to compute the maximal length of an ascent in the array A.

   Example: For the array A = [3, 1, 4, 2, 4, 4, 5, 3], the maximal length of an ascent would be 4, because the subarray A[4..7] = [2, 4, 4, 5] is the longest ascent in that array