Nearest Smallest Integer

Given an array, find the nearest smaller element G[i] for every element A[i] in the array such that the element has an index smaller than i.

More formally,

Elements for which no smaller element exist, consider next smaller element as -1.

G[i] for an element A[i] = an element A[j] such that

j is maximum possible AND

j < i AND

A[j] < A[i]

Input	Output
[4, 5, 2, 10]	[-1, 4, -1, 2]
[3, 2, 1]	[-1, -1, -1 s]

Evaluate the Postfix Expression

Operators are written after their operands. The infix expression (A * (B + C)) / D is equivalent to

A B C + * D /

The order of evaluation of operators is always left-to-right, and brackets cannot be used to change this order. Because the "+" is to the left of the "*" in the example above, the addition must be performed before the multiplication.

Operators act on values immediately to the left of them. For example, the "+" above uses the "B" and "C". We can add (totally unnecessary) brackets to make this explicit:

((A (B C +) *) D /)

Thus, the "*" uses the two values immediately preceding: "A", and the result of the addition. Similarly, the "/" uses the result of the multiplication and the "D".

Evaluate the Postfix Expression

Evaluate the value of an arithmetic expression in Reverse Polish Notation.

Valid operators are +, -, *, /. Each operand may be an integer or another expression.

E.g – [“2” ,“1”, “+”, “3”, “*”] -> ((2 + 1) * 3) - > 9

["4", "13", "5", "/", "+"] -> (4 + (13 / 5)) -> 6

Hint – You can use atoi() and stoi()

Min Stack

Design a stack that supports push, pop, top, and retrieving the minimum element in constant time.

push(x) – Push element x onto stack.

pop() – Removes the element on top of the stack.

top() – Get the top element.

getMin() – Retrieve the minimum element in the stack.

Note that all the operations have to be constant time operations.

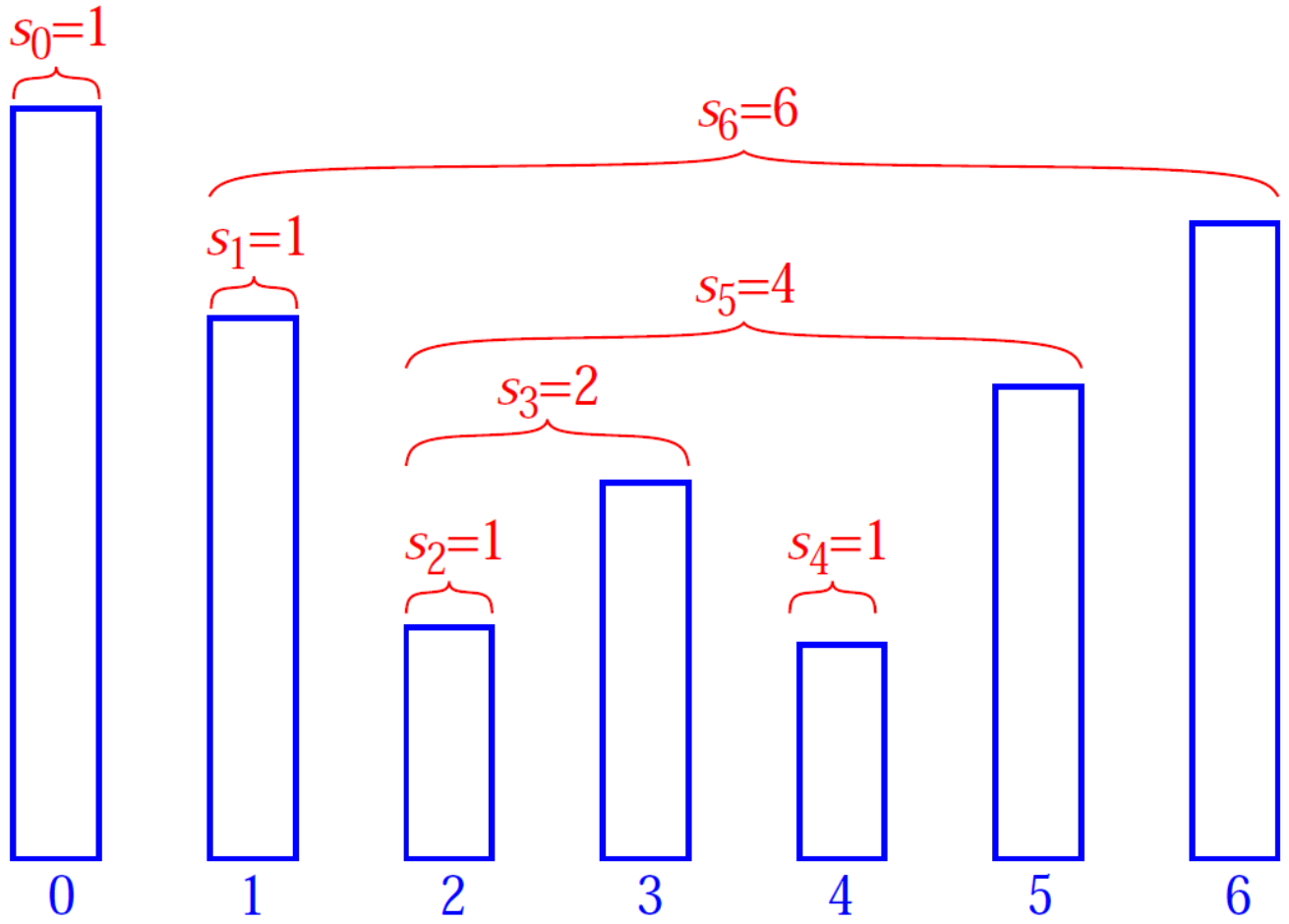
Stock Span Problem

The stock span problem is a financial problem where we have a series of n daily price quotes for a stock and we need to calculate span of stock's price for all n days.

The span Si of the stock's price on a given day i is defined as the maximum number of consecutive days just before the given day, for which the price of the stock on the current day is less than or equal to its price on the given day.

For example, if an array of 7 days prices is given as {100, 80, 60, 70, 60, 75, 85}, then the span values for corresponding 7 days are {1, 1, 1, 2, 1, 4, 6}

Stock Span Problem



Next Largest Element

Given an array, find the next greater element G[i] for every element A[i] in the array. The Next greater Element for an element A[i] is the first greater element on the right side of A[i] in array.
More formally,

G[i] for an element A[i] = an element A[j] such that

j is minimum possible AND

j > i AND

A[j] > A[i]

Ques

1. Implement Stack, queue in which elements are strings rather than int/ char.
2. Print binary expression of all the numbers from 1 to n. (Any Method will suffice, but think and understand about how it can be done.)
3. Implement Queue and Circular Queue.
4. Implement all the questions done in class and write executable code for all.
5. The questions I gave as homework two days before i.e. Insertion Sort, Selection Sort, Bubble Sort and Binary Search questions will be discussed after the completion of the Data Structure.