Q1.

1. Next Smaller Element

   i/p : {2,1,5,6,2,3}

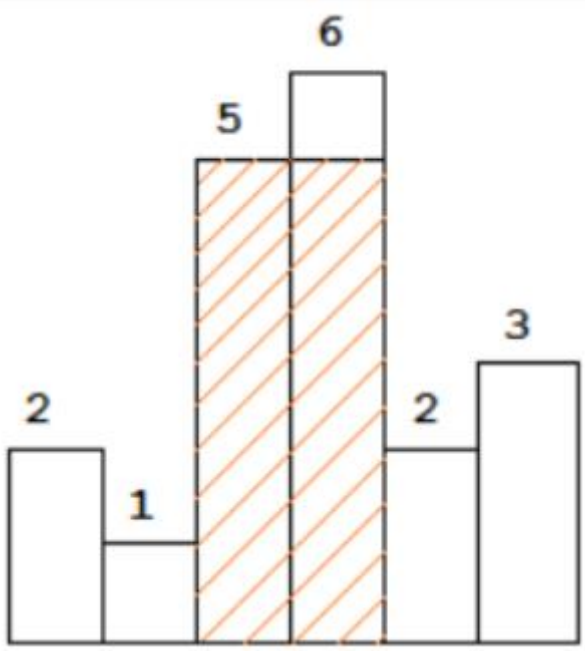
   o/p: {1,6,4,4,6,6}

2. Previous Smaller Element

   i/p: {2 , 1, 5, 6, 2, 3}

   o/p: {-1,-1,1,2, 1, 4}

3. Largest Area in Histogram



   i/p: {2,1,5,6,2,3} -- This inputs represents heights of each bar.

   o/p: 10

Q2. Trapping Rain water:

Given n non-negative integers representing an elevation map where the width of each bar is 1, compute how much water it can trap after raining.

Test Case 1:

height = [0,1,0,2,1,0,1,3,2,1,2,1]

output = 6;

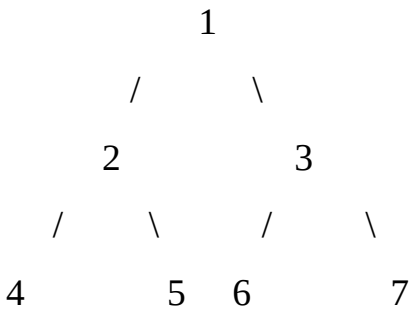
Explanation: The above elevation map (black section) is represented by array [0,1,0,2,1,0,1,3,2,1,2,1]. In this case, 6 units of rain water (blue section) are being trapped.

Test Case 2:

Input: height = [4,2,0,3,2,5]

Output: 9

Q3. Binary Tree leaves to Linked List.



Output: 4->5->6->7

Q4. Delete the nth node from the end of the Linked List

Detect loop in a link list, find the length of loop in LL and then delete the loop (if it exists)

Q5. Minimum cost to wrap word

Given an array nums[] of size n, where nums[i] denotes the number of characters in one word. Let K be the limit on the number of characters that can be put in one line (line width). Put line breaks in the given sequence such that the lines are printed neatly. Assume that the length of each word is smaller than the line width. When line breaks are inserted there is a possibility that extra spaces are present in each line. The extra spaces include spaces put at the end of every line except the last one.

You have to minimize the following total cost where total cost = Sum of cost of all lines, where cost of line is = (Number of extra spaces in the line)2.

Test Case: 1

Input: nums = {3,2,2,5}, k = 6

Output: 10

Explanation: Given a line can have 6 characters,

Line number 1: From word no. 1 to 1

Line number 2: From word no. 2 to 3

Line number 3: From word no. 4 to 4

So total cost = $(6-3)^2 + (6-2-2-1)^2 = 3^2+1^2 = 10$. As in the first line word length = 3 thus

extra spaces = 6 - 3 = 3 and in the second line there are two word of length 2 and there already 1 space between two word thus extra spaces = 6 - 2 -2 -1 = 1. As mentioned in the problem description there will be no extra spaces in the last line. Placing first and second word in first line and third word on second line would take a cost of $0^2 + 4^2 = 16$ (zero spaces on first line and 6-2 = 4 spaces on second), which isn't the minimum possible cost.

Test Case: 2

Input: nums = {3,2,2}, k = 4

Output: 5

Explanation: Given a line can have 4

characters,

Line number 1: From word no. 1 to 1

Line number 2: From word no. 2 to 2

Line number 3: From word no. 3 to 3

Same explaination as above total cost = $(4 - 3)^2 + (4 - 2)^2 = 5$.

Q6. Maximizing a number

Complete the function: MaximizingNumber(arr[], n, rep[], m)

The function accepts two arrays ‘arr’ and ‘rep’ with lengths ‘n’ and ‘m’ respectively. The digits of the array ‘arr’ represents a number. You are required to maximize this numbers by using rep array and put them in modified(new) array.

Example:

Input:

arr: 1 0 2 4 5, n = 5

rep: 1 9 6, m =3

Output:

9 6 2 4 5

Explaination: the digits 1 and 0 of array ‘arr’ got replaced by the digit 9 and 6 to maximize the number represented by ‘arr’.

Input:

arr: 3 0 7 8 2 3, n =6

rep: 6 1 9 9, m = 4

Output:

9 9 7 8 6 3