Programming

1D Arrays Homework 1

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Teaching, Training and Coaching for more than a decade!

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Problem #1: Is the Array Increasing?

- Read in a positive integer N, then read N (<= 200) integers.
- Print YES if the array is increasing
  - An array is increasing if every element is >= the previous number
- Inputs
  - 4 **1 2 2 5** ⇒ YES
  - 5 **1 0 7 8 9** ⇒ NO [0 is < 1, the previous number]
  - 2 **-10 10** ⇒ YES

Problem #2: Replace MinMax

- Read a positive integer N (< 200), then read N integers
  - Assume all values are in the range [0, 2000]
- Print the array after doing the following operations:
  - Find the minimum number among these numbers
  - Find the maximum number among these numbers
  - Replace **each** minimum number with the maximum number, and vice versa
- Example input ⇒ output
  - 7 4 **1** 3 10 8 **10 10** ⇒ 4 10 3 1 8 1 1

Problem #3: Unique Numbers of an Ordered List

- Read in a positive integer N (< 1000), followed by N integers (0 <= value <= 500)
- The N number input must be ordered from small to large
- Print the **unique** list of the numbers, but **preserve** their given order
- Input: 12 **1 1 2 2 2 5 6 6 7 8 9 9**
- Output: 1 2 5 6 7 8 9
  - Observe: the input remains a sorted list
- Optional Constraints:
  - Don’t use nested loops!
  - Only use 1 array
  - Or, try doing it without any arrays at all

Problem #4: Is it a Palindrome?

- Read in a positive integer N (< 1000), then read N integers of an array
- Determine if the array is a palindrome or not, printing out “YES” or “NO”
- *An array can be called a palindrome if it reads the same backwards and forwards*
  - *For example, the arrays { 1 } and { 1,2,3,2,1 } are palindromes*
  - *Conversely, the arrays { 1,12 } and { 4,7,5,4 } are not palindromes*
- Inputs ⇒ Outputs
  - 5 **1 3 2 3 1** ⇒ YES
  - 4 **1 2 3 4** ⇒ NO

Problem #5: Smallest Pair

- Read in a positive integer N (<= 200), then read N integers of an array
- Print the smallest possible result of **A[i] + A[j] + j - i**, where i < j
- Example input ⇒ output
  - 4 **20 1 9 4** ⇒ 7
- This is a tricky problem from testing perspective

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."