

Stack – Spot Question

No students to leave:

In a classroom, there are 'n' students sitting in a row. Each student teaches the concepts he/she knows to the student sitting after him. If the number of concepts known by the student in front is less than that of the student behind him/her, then the latter student leaves the classroom in an hour. As and when students leave, the remaining set of students shift in front so that no rows are left empty and the same process continues, until a point when no student leaves the classroom. Given the number of concepts known by each student in the order in which they are seated from front to back, implement a function (numHoursForNoLeaving) using stack to determine the number of hours after which no student leaves the classroom, i.e. the time after which there is no student knowing more concepts than the student in front of him/her.

Function Declaration: int numHoursForNoLeaving(int numConcepts[], int n);

Sample:

Input: 3 6 2 7 5, n = 5, Output: 2

Explanation:

Row	Number of concepts
1	3
2	6
3	2
4	7
5	5

In the 1st hour, students at rows 2 and 4 leave. Now,

Row	Number of concepts
1	3
2	2
3	5

In the 2nd hour, student at row 3 leaves. Now,

Row	Number of concepts
1	3
2	2

No more student leaves. Hence, after 2 hours no student leaves.

Input: 6 5 8 4 7 10 9, n = 7, Output: 2

Input: 10 3 8 2 5 6 7 4 11 13 21 3, n = 12, Output: 3

Input: 3 5 11 20 1 4 2 12 3 6 5 4 3 4, n = 14, Output: 4

Input: 1 2 3 4 5 6 7 8 9, n = 9, Output: 1

Input: 9 8 7 6 5 4 3 2 1, n = 9, Output: 0

Input: 10 21 9 30 10 10 8 5 10 6 7 2 10, n = 13, Output: 3