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Question 4:

To make sure Use the minimum number of stack to ensure that the conditions are met

Just need to make sure A[i]+1 = A[i+1] for n> i >=1 which will met A[i] < A[i+1]

And for A[1] and A[2], In order to meet the conditions and save stacks, A[1] = 1 and A[2] = 2 is optimum(Let's say the first pile can't be zero) A[3] need to = 3 and A[4] need to = 4 and so on.

In order to satisfy this condition A[1]+A[2]+...A[i] must greater than or equals to (i+i-1+i-2+....+2+1+0) which is (i-1)*i/2 for A[i]

So the process is, from front to end, check if A[1]+A[2]+...A[i] greater than or equals to (i-1)*i/2 , it takes O(1) and if satisfy, move to A[i+1] until i = n
Else,such movements not exist. In the worst case it will take O(n) time

Total cost is O(1) * O(n) = O(n)