Algorithms (COT 6405): Assignment 7
Due date: October 9 (Thursday)

Problem 1 (5 points)
Let $A[1..n]$ be a *sorted* array of n distinct integer numbers. Write an efficient algorithm
INDEX-SEARCH(A, n) that finds an index i such that $A[i] = i$. If the array does not have
such an element, the algorithm should return 0.

Problem 2 (5 points)
We consider an array $A[1..n]$ and define a segment sum from p to r, where $1 \leq p \leq r \leq n$:

$$sum(p, r) = \sum_{p \leq i \leq r} A[i].$$

In other words, $sum(p, r)$ is the sum of all array elements in the segment $A[p..r]$. Note that
the total number of distinct segments is $\frac{n(n+1)}{2}$. Write an efficient algorithm that determines
the maximum over all segments sums; for the full credit, its running time should be $\Theta(n)$.