

Coding Question:**Reminders:**

- Must be coded individually in your choice of either Python, Java, C, C++, or C#
- There are hidden testcases
- Submitted through Gradescope
- There is a class-wide runtime leaderboard on Gradescope
- We encourage the use of Piazza for debugging help
- Please do not cheat

Problem:

You've been invited to a game show called "The Money Room"! You will be allowed to enter the money room and stay for as long as you want, but once you leave the room you can never go back in. Each minute you spend in the money room, some amount of money will either be given to you or taken away. You need to decide when to enter the room and when to leave. Being a poor college student, you don't care how long you spend in the room, you just want to maximize the amount of money you walk away with at the end of the show. Luckily, one of your friends is an intern for the show and knows the show's plans. They give you a list of the money that would be given to you (or taken away) at every minute. What's the maximum profit you can make?

Formally, you are given an integer array A of length n corresponding to the amounts given to you or taken away. You must return 0 if it is not possible to make any profit or the maximum value of v where $v(a, b) = \sum_{i=a}^{b-1} A[i]$ for $a, b \in \mathbb{N}$ and $0 \leq a \leq b \leq n$.

Input should be read in from stdin. The first line will contain the number of elements in the array (n) and all subsequent lines will contain values of A . For example, input array $[0, 1]$ will be represented as "2 \n 0 \n 1" (spaces added here for reading clarity).

Constraints:

- $1 \leq n \leq 10^5$
- $-30,000 \leq A[i] \leq 30,000$, where $0 \leq i < n$

Sample Test Cases:

0. $\text{OPT}([-1, -2, -3]) = 0$
1. $\text{OPT}([-1, -2, 3]) = 3$
2. $\text{OPT}([-2, -3, 4, -1, -2, 1, 5, -3]) = 7$