FLIPPING GAME

CSX 3009 Algorithm Design Term Project

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CONTENT

PROBLEM

Flipping Game

Writes n integers a1, a2, ..., an. Each of those integers can be either 0 or 1. He's allowed to do exactly one move: he chooses two indices i and j ($1 \le i \le j \le n$) and flips all values.

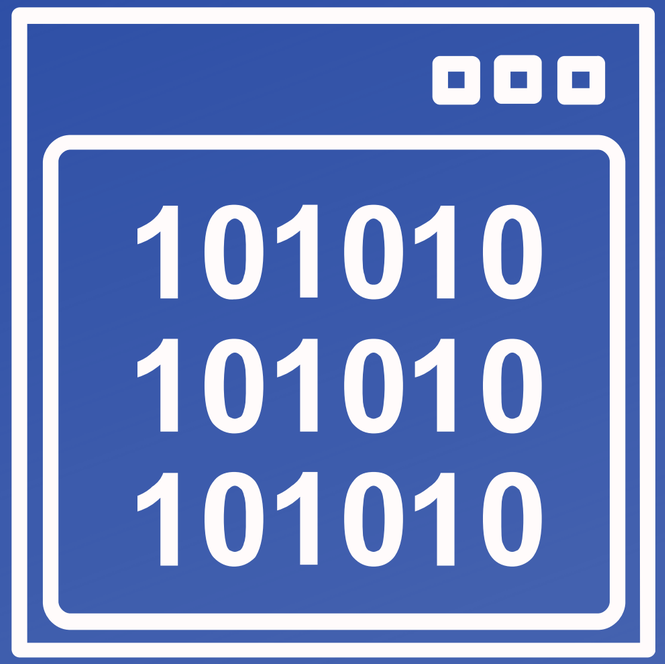
The goal of the game is that after exactly one move to obtain the maximum number of ones.

Input

The first line of the input contains an integer n ($1 \le n \le 100$). In the second line of the input, there are n integers: a1, a2, ..., an. It is guaranteed that each of those n values is either 0 or 1.

Output

Print an integer — the maximal number of 1s that can be obtained after exactly one move.



```python
n = int(input())
nums = list(map(int, input().split()))

one = 0
cumSum = 0
flip = 0

for i in range(n):
    if nums[i] == 1:
        one += 1
for i in range(n):

    if nums[i] == 0:
        cumSum += 1
    else:
        cumSum -= 1

    flip = max(flip, cumSum)

    if cumSum < 0:
        cumSum = 0
if one == n:
    print(n - 1)
else:
    print(one + flip)
```

ANALYSIS

- Initialize a variable 'one' to count the number of 1s in the sequence.
- Initialize a variable 'cumSum' to keep track of the cumulative sum.
- Initialize a variable 'flip' to store the maximum number of ones after one move.
- Increment the cumulative sum for 0s.
- Decrement the cumulative sum for 1s.
- Update 'flip' with the maximum cumulative sum.
- Check if the entire sequence consists of 1s.
- If yes, print(n – 1), otherwise, print the count of 1s plus the maximum cumulative sum.

TEST CASE EXPLAINED

Input:

5

1 0 0 1 0

Output:

4

Explanation:

- The initial 'one' count is 2 (two 1s in the sequence).
- Initially, 'cumSum' is 0.
- Loop 1: i = 0, nums[0] == 1, 'cumSum' remains 0.
- Loop 2: i = 1, nums[1] == 0, 'cumSum' becomes 1.
- Loop 3: i = 2, nums[2] == 0, 'cumSum' becomes 2.
- Loop 4: i = 3, nums[3] == 1, 'cumSum' becomes 1.
- Loop 5: i = 4, nums[4] == 0, 'cumSum' becomes 2.

'flip' is updated to 2, 1, 2, 2, 2.

Final 'flip' is 2.

Since there are not all 1s in the sequence, we print = 2 + 2 = 4.

So, the maximum number of ones after one move is 4.

SUBMISSION

General

#	Author	Problem	Lang	Verdict	Time	Memory	Sent	Judged		
225538006	Practice: Tanat04	327A - 16	PyPy 3-64	Accepted	124 ms	16 KB	2023-09-27 18:34:32	2023-09-27 18:34:32		Compare

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    flip = max(flip, cumSum)

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if one == n:
    print(n - 1)
else:
    print(one + flip)
```

Click to see test details

REFERENCES

- HTTPS://CODEFORCES.COM/PROBLEMSET/PROBLEM/327/A
- HTTPS://GITHUB.COM/MA2B/CODEFORCES_SOLUTIONS_IN_PYTHON/BLOB/MAIN/A.%20FLIPPING%20GAME.PY

THANK'S FOR LISTENING