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Test Name: Mock Test

Taken On: 24 Jul 2023 20:14:04 IST

Time Taken: 5 min 1 sec/ 24 min

Invited by: Ankush

Invited on: 24 Jul 2023 20:13:55 IST

Skills Score:

Tags Score:

- Algorithms 90/90
- Constructive Algorithms 90/90
- Core CS 90/90
- Greedy Algorithms 90/90
- Medium 90/90
- Problem Solving 90/90
- problem-solving 90/90

100%

90/90

scored in **Mock Test** in 5 min 1 sec on 24 Jul 2023 20:14:04 IST

Recruiter/Team Comments:

No Comments.

	Question Description	Time Taken	Score	Status
Q1	Flipping the Matrix > Coding	4 min 48 sec	90/ 90	✓

QUESTION 1

✓  
Correct Answer

Score 90

Flipping the Matrix > Coding

AlgorithmsMediumGreedy AlgorithmsConstructive Algorithms

problem-solvingCore CSProblem Solving

QUESTION DESCRIPTION

Sean invented a game involving a  $2n \times 2n$  matrix where each cell of the matrix contains an integer. He can reverse any of its rows or columns any number of times. The goal of the game is to maximize the sum of the elements in the  $n \times n$  submatrix located in the upper-left quadrant of the matrix.

Given the initial configurations for  $q$  matrices, help Sean reverse the rows and columns of each matrix in the best possible way so that the sum of the elements in the matrix's upper-left quadrant is maximal.

**Example**  
 $matrix = [[1, 2], [3, 4]]$

```
1 2
3 4
```

It is  $2 \times 2$  and we want to maximize the top left quadrant, a  $1 \times 1$  matrix. Reverse row 1:

```
1 2
4 3
```

And now reverse column 0:

```
4 2
1 3
```

The maximal sum is **4**.

### Function Description

Complete the *flippingMatrix* function in the editor below.

*flippingMatrix* has the following parameters:

- *int matrix[2n][2n]*: a 2-dimensional array of integers

### Returns

- *int*: the maximum sum possible.

### Input Format

The first line contains an integer *q*, the number of queries.

The next *q* sets of lines are in the following format:

- The first line of each query contains an integer, *n*.
- Each of the next  $2n$  lines contains  $2n$  space-separated integers *matrix[i][j]* in row *i* of the matrix.

### Constraints

- $1 \leq q \leq 16$
- $1 \leq n \leq 128$
- $0 \leq \text{matrix}[i][j] \leq 4096$ , where  $0 \leq i, j < 2n$ .

### Sample Input

STDIN	Function
-----	-----
1	q = 1
2	n = 2
112 42 83 119	matrix = [[112, 42, 83, 119], [56, 125, 56, 49], \
56 125 56 49	[15, 78, 101, 43], [62, 98, 114, 108]]
15 78 101 43	
62 98 114 108	

### Sample Output

```
414
```

### Explanation

Start out with the following  $2n \times 2n$  matrix:

$$matrix = \begin{bmatrix} 112 & 42 & 83 & 119 \\ 56 & 125 & 56 & 49 \\ 15 & 78 & 101 & 43 \\ 62 & 98 & 114 & 108 \end{bmatrix}$$

Perform the following operations to maximize the sum of the  $n \times n$  submatrix in the upper-left quadrant:

2. Reverse column 2 ( $[83, 56, 101, 114] \rightarrow [114, 101, 56, 83]$ ), resulting in the matrix:

$$matrix = \begin{bmatrix} 112 & 42 & 114 & 119 \\ 56 & 125 & 101 & 49 \\ 15 & 78 & 56 & 43 \\ 62 & 98 & 83 & 108 \end{bmatrix}$$

3. Reverse row 0 ( $[112, 42, 114, 119] \rightarrow [119, 114, 42, 112]$ ), resulting in the matrix:

$$matrix = \begin{bmatrix} 119 & 114 & 42 & 112 \\ 56 & 125 & 101 & 49 \\ 15 & 78 & 56 & 43 \\ 62 & 98 & 83 & 108 \end{bmatrix}$$

The sum of values in the  $n \times n$  submatrix in the upper-left quadrant is  $119 + 114 + 56 + 125 = 414$ .

### CANDIDATE ANSWER

Language used: **Python 3**

```

1 #
2 # Complete the 'flippingMatrix' function below.
3 #
4 # The function is expected to return an INTEGER.
5 # The function accepts 2D_INTEGER_ARRAY matrix as parameter.
6 #
7
8 def flippingMatrix(matrix):
9     sum = 0
10
11     for i in range(n):
12         for j in range(n):
13             sum += max(matrix[i][j], matrix[i][~j], matrix[~i][j], matrix[~i][~j])
14
15     return sum

```

TESTCASE	DIFFICULTY	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 1	Easy	Sample case	✔ Success	0	0.0547 sec	10.5 KB
Testcase 2	Easy	Hidden case	✔ Success	15	0.125 sec	13.3 KB
Testcase 3	Easy	Hidden case	✔ Success	15	0.183 sec	12.9 KB
Testcase 4	Easy	Hidden case	✔ Success	15	0.1208 sec	12.7 KB
Testcase 5	Easy	Hidden case	✔ Success	15	0.1777 sec	13 KB
Testcase 6	Easy	Hidden case	✔ Success	15	0.1807 sec	12.9 KB
Testcase 7	Easy	Hidden case	✔ Success	15	0.1496 sec	13 KB
Testcase 8	Easy	Sample case	✔ Success	0	0.0436 sec	10.8 KB

No Comments

