Name:		ID:		Section:

Question 1 [15 Points]

Suppose, you are the manager of the central bank of your country. You have access to the database containing information about the transactions between different banks of the country. The information is represented as a matrix M. The value at M[i][j] contains the amount of currency **transferred from Bank i to Bank j** over the last year.

Since this is a new year, you want to know about the financial activities of the banks during the last year. More specifically, for each bank, you want to find out the **net income.** The definition of net spend for Bank A is as follows:

net income(A) = funds transferred to Bank A from other banks - funds transferred from Bank A to other banks

Write a function *calculate_net_income(M, n)* that takes a 2D numpy array M, and an integer n as a parameter. M is the matrix containing the information of transactions, as described above, and n is the total number of banks. The function should return a **1D numpy array**, containing the net income for each of the banks.

- **Hint**: Think of the banks as the nodes of a graph, and the transactions between them as edges.
- You can use additional numpy arrays. You cannot use any other data structures.
- You cannot use negative indexing or any builtin functions except **len()**.

Sample Input:	Sample Output:	Explanation:

<table><tr><td>0</td><td>2</td><td>8</td><td>3</td></tr><tr><td>5</td><td>0</td><td>4</td><td>6</td></tr><tr><td>10</td><td>14</td><td>0</td><td>1</td></tr><tr><td>7</td><td>13</td><td>9</td><td>0</td></tr></table>	`np.array([9,14,-4,-19])`	`For Bank 0:`
		`Funds transferred in = 5 + 10 + 7 = 22`
		
		`Funds transferred out = 2 + 8 + 3 = 13`
		
		`Net income = funds transferred in - funds transferred out`
		`        = 22 - 13 = 9`