M03S02 [Pointers and Functions]: Exercise 01

CS110: Computing Lab
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M03S02E01: Courier Package Collection

Write a program to help the courier deliveryperson of Guwahati area in estimating the number of packages to be delivered in surroundings of a particular house. For simplicity, assume the Guwahati area is divided into rectangular grid and each house within the area is identified using two indices. The first index (called *street index*) is used to identify the street and the second index (called *house index*) is used to identify the house within the street. There are total of **S** streets and **H** houses within each street. Deliveryperson will ask **Q** questions to estimate the number of packages to be delivered around a house given by (**s**, **h**).

The format of each question as follows:
1 s h: sum of all the packages of the houses which are just one-house (or one-hop) away from the house denoted by(**s**, **h**).
2 s h: sum of all the packages of the houses which are just two-houses (or two-hop) away from the house denoted by (**s**, **h**)

Input Format:
In the first line, number of streets **S** and number of houses **H** are given. In the second line, number of packages corresponding to each of the houses are given. In third line, number of questions **Q** will be given. From fourth line onwards, each of the question will be entered in the format mentioned above.

Output Format:
In each line, display the sum of packages corresponding to each question.

Constraints:

$$1 \leq \mathbf{S} \leq 20$$
$$1 \leq \mathbf{H} \leq 30$$
$$1 \leq \mathbf{Q} \leq 60$$
$$0 \leq \mathbf{s} < \mathbf{S}$$
$$0 \leq \mathbf{h} < \mathbf{H}$$

NOTE: Student must use pointer(s) and function(s) to solve this exercise

Example 1:

Input:
3 4
7 1 6 1
8 2 1 4
6 3 9 3
3
1 0 0
1 0 2
2 0 2

Output:
11
9
36

Explanation:
Output for 1 0 0: the houses that are at 1-house distance from (0,0) are (1,0), (1,1), (0,1). Their corresponding packages are 8, 2 and 1 respectively. Thus, the sum of packages is 8+2+1=11.
Output for 1 0 2: the houses that are at 1-house distance from (0,2) are (0,1), (1,1), (1,2), (1,3), (0,3). Their corresponding packages are 1, 2, 1, 4 and 1 respectively. Thus, the sum of packages is 1+2+1+4+1=9.
Output for 2 0 2: the houses that are at 2-house distance from (0,2) are (0,0), (1,0), (2,0), (2,1), (2,2), (2,3). Their corresponding packages are 7, 8, 6, 3, 9 and 3 respectively. Thus, the sum of packages is 7+8+6+3+9+3=36.