

### **Calling All Cars Problem**

General Statement: A police department has decided to employ a special task force for responding to emergencies in its community. The community can be represented as a collection of 10,000 points on a 100x100 grid. The task force consists of a collection of police cars located at various points throughout the community grid. When an emergency is reported, the police dispatcher wants to be able to directly contact the police car that is closest to the emergency. Thus, it needs a program that can determine the car that is closest to a given location. Your task is to write this program.

Input: (**`cars.txt`**) The first line of the input contains two integers  $m$  and  $n$  separated by a single space. The first integer represents the number of police cars, and the second integer represents the number of emergencies. Each of the next  $m$  lines of the input represents a different police car. Each line contains three values  $s$ ,  $x$ ,  $y$  with a single space between each pair of values. The first value,  $s$ , is a single uppercase character representing the name of the police car. The second and third values,  $x$  and  $y$ , are integers respectively representing the x-coordinate and the y-coordinate of the car's initial location.

Each of the final  $n$  lines represents the location of a different emergency. Each line contains two integers  $a$  and  $b$  separated by a single space. These integers represent the x-coordinate and the y-coordinate of the emergency, respectively.

Name of Data File: **`cars.txt`**

Output: Your program should produce  $n$  lines of output (one for each data collection). The output for each data collection should contain the uppercase letter representing the name of the car that is closest to the corresponding emergency. Note that when a car responds to an emergency, it should change its location to the emergency's location.

Assumptions:

- The value of  $m$  will be between 1 and 26, inclusive.
- The value of  $n$  will be between 1 and 100, inclusive.
- The value of each input  $x$  and  $y$  coordinate will be between 0 and 99, inclusive.
- There will always be exactly one car which is closest to an emergency.

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Sample 1 Input:      4 3
                     P 11 10
                     Q 25 75
                     R 0 10
                     S 99 0
                     30 80
                     4 10
                     7 10
```

Sample 1 Output:

	Q
	R
	R

Sample 2 Input:

9	8
A	10 10
E	20 20
I	30 30
O	40 40
U	50 50
W	60 60
X	70 70
Y	80 80
Z	90 90
99	99
2	8
22	30
22	20
22	26
89	89
97	89
54	54

Sample 2 Output:

Z
A
I
E
I
Y
Y
U