

# Bill of Fare

**Given a large polygon dining table (not always a simple polygon) with the following properties :**

- there is no intersecting area (ex : area A)
- there is no space inside the polygon (ex : area B)
- there is no 3 edges that are concurrent (ex : point C)
- every nodes are not lying on any edge except 2 edges that connect that node with 2 other nodes (ex : point D)
- every nodes forming a convex corner because a table with concave corner is an uncomfortable table (ex : point E)

**Example of invalid table :**

[https://drive.google.com/file/d/1\\_vtLBvmbej72PT1lfppdAaOlaZWR-6lg/view](https://drive.google.com/file/d/1_vtLBvmbej72PT1lfppdAaOlaZWR-6lg/view)

**Given also M dishes with the following rules :**

- placed on the table
- not on the edge of the table
- there is no pair of different food that have the same place

**You have to answer Q queries :**

- each query identified by L and R
- the query is "what is the minimum moves in order to make some dishes (from L-th dish to R-th dish inclusive) placed in same region ?"
- queries are independent

**Notes :**

- two dishes are considered in same region if and only if from one dish can be slided to another one without crossing any edge
- one move is to slide a dish to another region through an edge
- every dishes should be still on the table, but they may lie on the edge

**Explanation :**

<https://drive.google.com/file/d/1slaODaxRhnO5biDS5jqrWAgpVI-2Q7V4/view>

- dish A is valid because it placed on the table
- dish C is invalid because it placed on the edge
- dish E is invalid because it placed outside the table

- sliding from dish A to dish B is considered as one move
- dish B and dish D is considered as one region
- dish F is invalid because it placed exactly on dish D

### Input and output format :

- An integer T represent the number of test case, each test case :
- First line contains 3 separated integer N, M, and Q
- Next N lines contain  $X_i$  and  $Y_i$  represent the coordinat of i-th node
- Next M lines contain  $P_i$  and  $Q_i$  represent the coordinat of i-th dish
- Next Q lines contain  $L_i$  and  $R_i$  represent the parameter of i-th query
- You should output Q lines contain the answers of those queries

### Constrain :

- $1 \leq T \leq 10$
- $3 \leq N \leq 1000$
- $2 \leq M \leq 1000$
- $1 \leq Q \leq 1000$
- $0 \leq X_i, Y_i \leq 10^9$
- $0 < P_i, Q_i < 10^9$
- $1 \leq L_i < R_i \leq M$

### Sample input :

```

1
7 5 3
1 1
1 5
5 1
7 2
7 8
9 5
5 5
6 2
2 3
5 4
8 6
5 3
1 5
2 4
3 5

```

### Sample output :

```

2
2
1

```

## **Explanation of sample :**

<https://drive.google.com/file/d/1OWfXYmZPo9YTrV47eh26gNhl4NMBsTY0/view>

- query 1 : we can slide 2-nd dish and 4-th dish to the middle region
- query 2 : using the same way as query 1
- query 3 : prefer sliding 4-th dish (1 move) rather than sliding 3-rd and 5-th dishes (2 moves)