

I have bought some greeting cards for my friends but in order to send them I must also buy some envelopes. Each card must be put inside a separate envelope without bending or tearing. The envelopes are made of so thin papers that one can put inside an envelope a card having even the same dimensions as that envelope.

Please help me choose envelopes so that the total amount I need to spend in buying them is minimized.

## Input

The input may contain multiple test cases.

The first line of each test case contains two integers  $M$  ( $1 \leq M \leq 5$ ) and  $N$  ( $M \leq N \leq 10$ ) where  $M$  is the number of greeting cards and  $N$  is the number of envelopes to choose from. The  $i$ th ( $1 \leq i \leq M$ ) of the next  $M$  lines consists of two integers  $l_i$  and  $w_i$  ( $1 \leq l_i, w_i \leq 50000$ ) giving the dimensions of the  $i$ th greeting card. The  $i$ th ( $1 \leq i \leq N$ ) of the next  $N$  lines contains three integers  $L_i$ ,  $W_i$  and  $C_i$  ( $1 \leq L_i, W_i, C_i \leq 50000$ ) where  $L_i$  and  $W_i$  give the dimensions of the  $i$ th envelope and  $C_i$  is its price in Taka.

The input terminates with two zeros for  $M$  and  $N$ .

## Output

For each test case in the input first print the test case number on a separate line as shown in the sample output. If an envelope can be chosen for each of the greeting cards in the input, print one line for each where the  $i$ th line contains the number of the envelope (in the order given in the input) inside which the  $i$ th greeting card should be put. Otherwise, print “cannot buy” on a line by itself. Note that if there are multiple solutions with minimum cost, any one of them is acceptable.

Print a blank line between two successive test cases.

## Sample Input

```
2 4
105 9
99 149
110 10 10
100 50 5
150 100 7
90 140 15
1 2
100 150
99 149 10
142 100 5
0 0
```

## Sample Output

```
Case #1
2
3

Case #2
cannot buy
```