



Minimal Spanning Tree

Your task is to compute the the minimum spanning tree of a given weighted graph.

Your algorithm should work in time $O(m \log n)$, where n and m denote the sizes of the vertex set and of the edge set of the input graph.

Input

The first line contains integer z ($1 \leq z \leq 2 \cdot 10^9$) – the number of data sets. Each data set is as follows:

The first line contains the numbers n ($1 \leq n \leq 4000$) and m ($1 \leq m \leq 20000$) denoting the sizes of the vertex set and of the edge set of the input graph, respectively. Each of the next m lines contains a description $x \ y \ w$ of subsequent edges e of the input graph: $x \ y$ are the endpoints of e , w is the weight of e .

Output

The weight of the minimum spanning tree. If the input graph is not connected, your program should output -1 .

Example

For the input:

```
2
5 7
0 1 2
1 2 1
2 3 1
0 3 2
1 3 1
0 4 1
3 4 2
5 4
1 2 1
2 3 1
1 3 1
0 4 1
```

the output is:

```
5
-1
```