

# Minimum Spanning Tree

Time Limit: 1 Second  
Memory Limit: 2048 MB

Let  $G = (V, E)$  be an undirected graph. Find the minimum spanning tree of  $G$ .

## Input

The first line of input contains two integers  $n, m$  ( $2 \leq n, m \leq 10^6$ ) - the number of vertices and edges in the graph.

The following  $m$  lines describe the edges in the graph. The  $i$ -th line contains three integers  $u_i, v_i, w_i$  ( $1 \leq u_i, v_i \leq n, 1 \leq w_i \leq 10^5$ ), denoting there is an undirected edge  $(u_i, v_i)$  with weight  $w_i$ . It is guaranteed that the graph is connected and doesn't contain self-loops.

## Output

In the first line, output a single integer denoting the sum of weights on the minimum spanning tree.

In the next  $n - 1$  lines, describe an MST for the given graph. Each line should contain two integers  $u$  and  $v$ , denoting that  $(u, v)$  is in the MST. If there are multiple MSTs, you can output any of them.

## Sample Inputs

---

```
4 5
1 2 2
1 3 3
2 3 5
2 4 1
3 4 4
```

---

## Sample Outputs

---

```
6
1 2
1 3
2 4
```

---