

## 1) [10 Marks] Water delivery system for agriculture.

According to the province's strategy to stimulate agriculture, a large farming area is reclaimed and will be reorganized. There have been a lot of water pipes already laid down, which is un-structured and redundant. More importantly, cycles of pipes disrupt consistent water flow. The province already designated a single source of water from the river. Then, it wants to close all the unnecessary pipes while also making sure that every water tap can still release the water into its designated farming area.

Given the map of pipe structure and tap locations, each tap being a pipe junction, find the minimum total length of pipes that will remain in-use.

**INPUT:**

1st line : the number of taps  $n$ ,  $2 \leq n \leq 100$ , and the total number of pipes  $m$ ,  $n \leq m \leq 2,500$

Each of the following  $m$  lines consists of tap ID  $i$ , tap ID  $j$ , and length  $l_{ij}$  of the pipe that connects tap junctions  $i$  and  $j$ ,  $0 \leq i, j \leq n-1$ . Tap 0 is the water source from river.

**OUTPUT:** The minimum possible total length of water pipes to be kept in-use.

**EXAMPLE**

INPUT	OUTPUT
4 4 0 3 15 1 2 20 1 3 24 2 3 17	52