Optimize Water Distribution In A Village
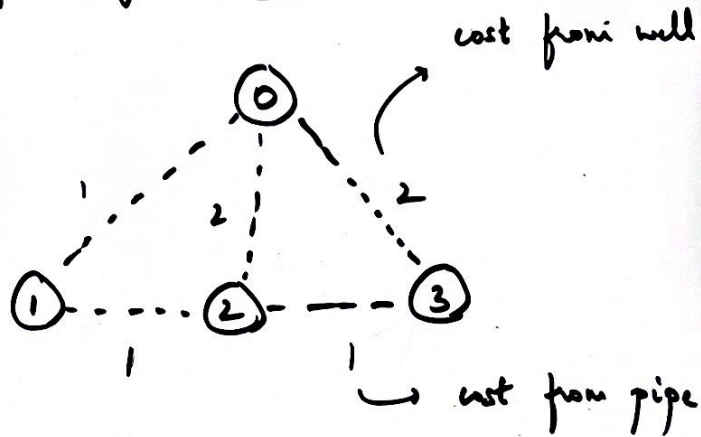
n = 3

pipes : $[[1,2,1], [2,3,1]] \Rightarrow [edge1, edge2, cost]$

wells : $\begin{bmatrix} 1 & 2 & 2 \\ \downarrow & \downarrow & \downarrow \end{bmatrix}$

house : 0   1   2

- Add imaginary house 0
- Assign cost of building well as cost of pipe from 0 to house i.

$\therefore$ All edges : $\underbrace{[[0,1,1], [0,2,2], [0,3,2]}_{\text{from well.}}, \underbrace{[1,2,1], [2,3,1]]}_{\text{from pipes}}$

- Run union-find on edges. If parent(edge1) = parent(edge 2), they are already in the same group so this is an extra edge that should not be added to the result.

- Min cost : 3 = $[0,1,\underline{1}] + [1,2,\underline{1}] + [2,3,\underline{1}] \Rightarrow 1,2,3$ are connected.

- Edges $[0,2,2]$ & $[0,3,2]$ are extra & should not be part of the result.