## Step-1

We want that there should be maximum possible flow of the fluid towards the sink. The final flow can be understood by imagining an edge from node 6 to 1. The edge has tremendous capacity. Let $c_{61} = 100$. This edge fictitiously sends all the fluid, received in the sink, to the source. We want $x_{61}$ to be as large as possible.

Thus, we can write the maximal flow problem as a linear programming problem as follows:

Maximize: $x_{61}$

Subject to:

$x_{12} \le 4$
$x_{13} \le 5$
$x_{24} \le 2$
$x_{35} \le 4$

$x_{46} \le 6$
$x_{56} \le 1$
$x_{25} \le 5$
$x_{34} \le 3$

$x_{ij} \ge 0$ for each $i, j$.

## Step-2

Suppose we introduce the slack variables $w_{ij}$, such that $w_{ij} = c_{ij} - x_{ij}$, then the same problem can be written as follows:

Maximize: $x_{61}$

Subject to:

$x_{12} + w_{12} = 4$
$x_{13} + w_{13} = 5$
$x_{24} + w_{24} = 2$
$x_{35} + w_{35} = 4$

$x_{46} + w_{46} = 6$
$x_{56} + w_{56} = 1$
$x_{25} + w_{25} = 5$
$x_{34} + w_{34} = 3$

$x_{ij} \ge 0$ and $w_{ij} \ge 0$ for each $i, j$.