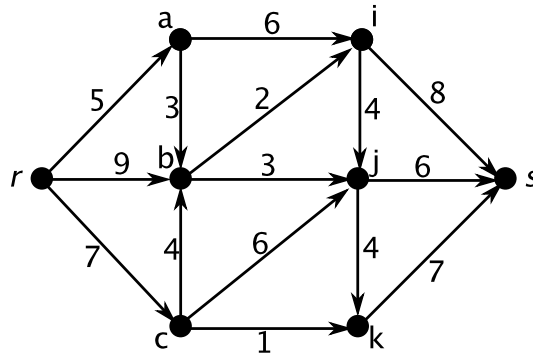


Fall 2013 Math 566 Implementation Assignment 2
 Max Flows and Min Cuts

Problem: Maximum Flows and Minimum Cuts
 I1.

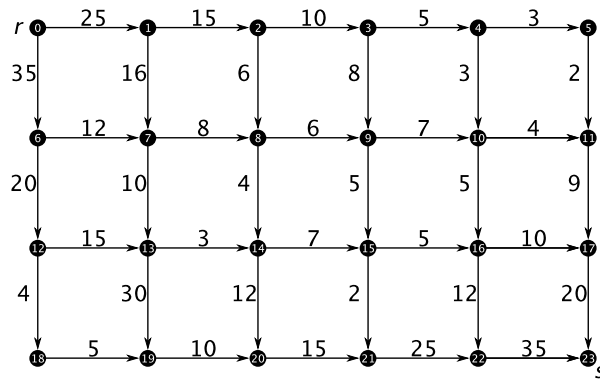


After 5 path augmentations, we find that the maximum flow value is 17. The non-zero flow values are

$$ra : 5, \quad rb : 3, \quad rc : 7, \quad ai : 5, \quad bj : 3, \\
 cj : 6, \quad ck : 1, \quad is : 5, \quad jk : 3, \quad js : 6, \quad ks : 4.$$

The vertices in R for the minimum cut $\delta(R)$ are $R = \{r, b\}$.

I2.



After 12 path augmentations, we find the maximum flow value is 33. We omit the flow values, but the vertices in R for the minimum cut $\delta(R)$ are

$$R = \{0, 1, 2, 6, 7, 8, 12, 13, 18, 19\}.$$

I3. This instance finished after 62 path augmentations to find a maximum flow of value 29.1635.

The vertices in R for the minimum cut $\delta(R)$ are

$$R = \{0, 2, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 26, \\ 28, 29, 30, 31, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 52, 53, 54, \\ 60, 62, 63, 64, 66, 68, 69, 70, 72, 73, 74, 75, 77, 78, 79, 81, 84, 85, \\ 88, 90, 93, 95, 96, 97, 99\}.$$

I4. After 486 path augmentations, we find a maximum flow of value 507.2727. The minimum cut is simply $\delta(\{r\})$.