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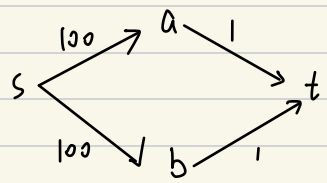
Algorithm analysis and design hw-7

7.4. The statement is wrong and here is a counterexample:



The maximum flow is 1+1=2, less than any of the edges from s.

7.5. The statement is true. The proof is as follows:

First it's easy to understand that (A,B) is still a s-t cut if each c_e is added by 1

So we just need to prove the property of minimum.

Suppose an edge can be added to (A,B) without connecting both parts

Then it's original capacity is $c_e > 0$.

We can also add it to (A,B) without connecting

the two parts, which is contradictory to (A,B)'s minimum property.