

CS345 Theoretical Assignment 4

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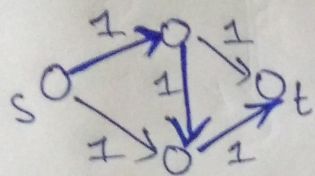
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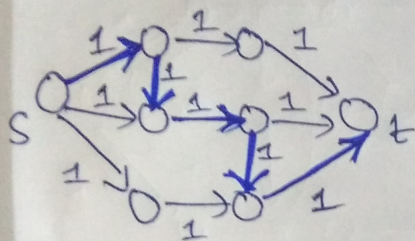
1 Any Guarantee of our First-Attempt Algorithm

1.1 Counter Example

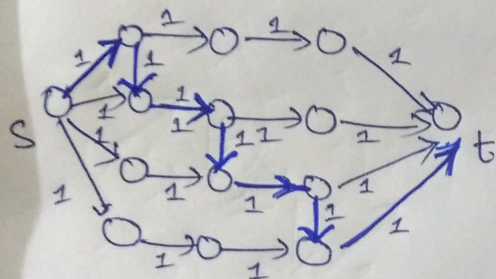
Counter Example



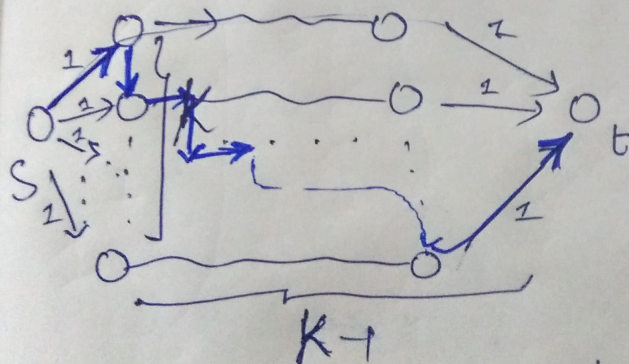
for the shown path chosen
first $\rightarrow \frac{\text{flow returned}}{\text{Actual max flow}} = \frac{1}{2}$



" = $\frac{1}{3}$



" = $\frac{1}{4}$



" = $\frac{1}{k}$

That is, we have to construct one path such that it blocks all other $k-1$ paths possible. This construction possible $\forall k > 1$
 \Rightarrow Approximation Not possible