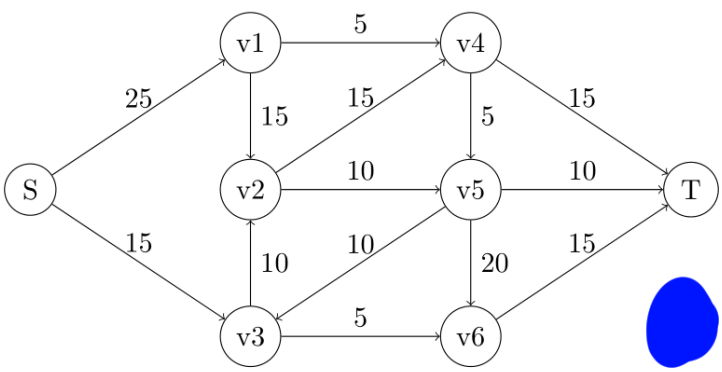
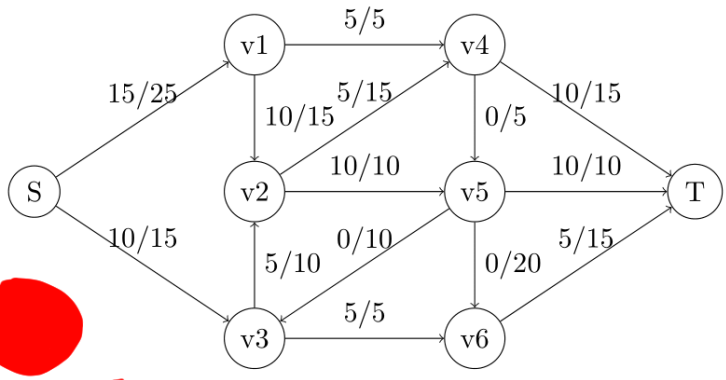
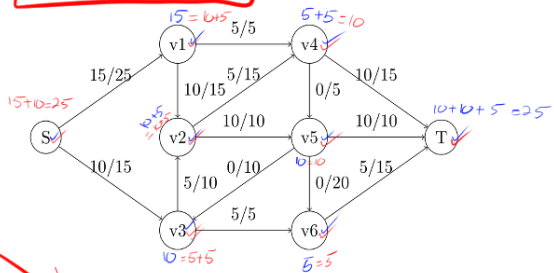
# CSC 404 - Activity/Project 13 - Name: Chris Glanzer

**Problem 1.** Consider the following flow network, Give it a fun backstory :-), with current flow $f$:

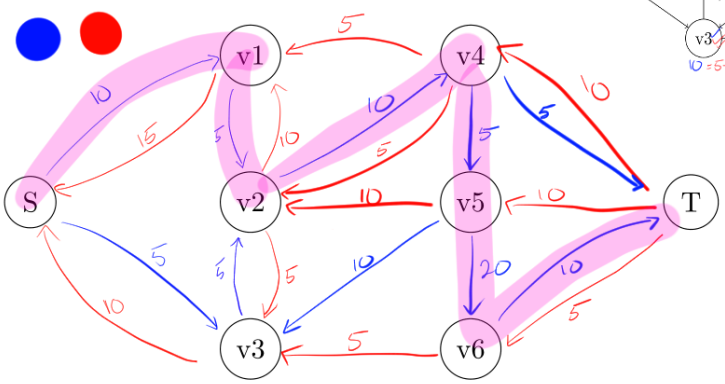



a. Show this is a valid flow. That is, confirm the in-flow = out-flow at all non source/sink locations.




b. Sketch out the resulting residual network




c. Within the residual network there (should) be a path $s \to v_1 \to v_2 \to v_4 \to v_5 \to v_6 \to t$. What is the value of additional resources (i.e., $|f'|$) we can carry along this flow, $f'$?

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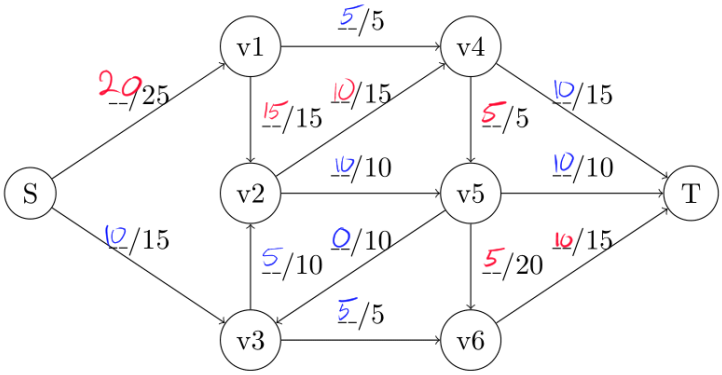
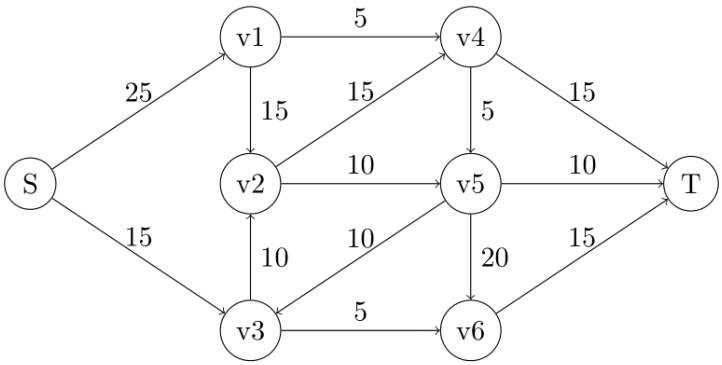
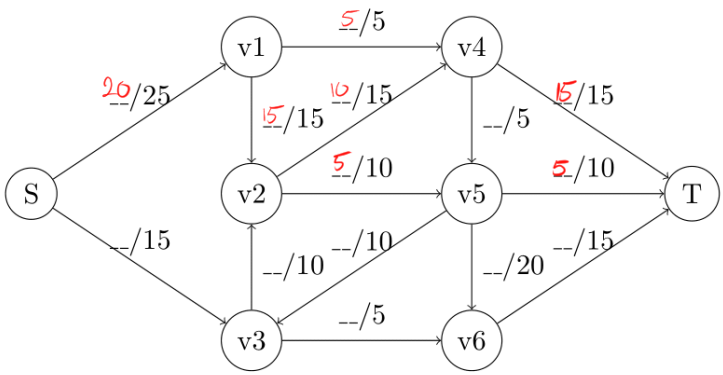
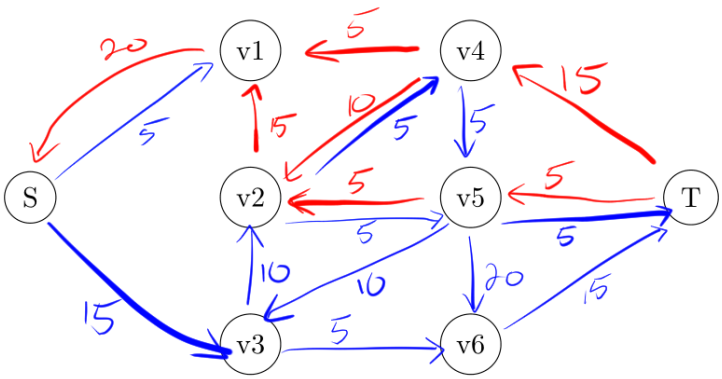
d. Sketch out the resulting augmentation of flow $f$ by $f'$.

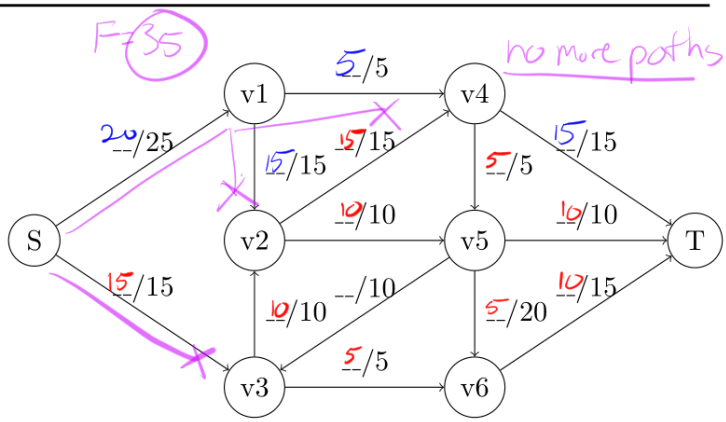


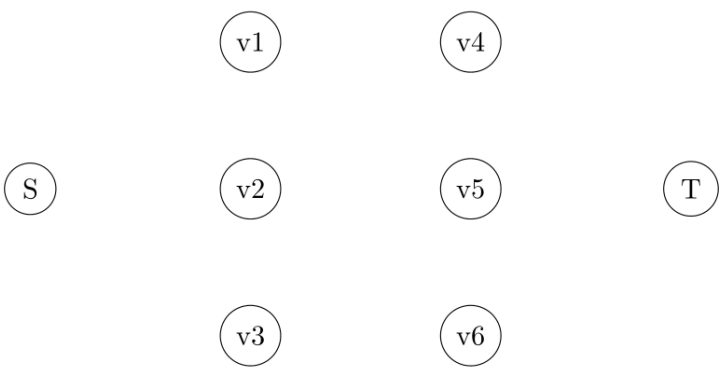
**Problem 2.** Our goal in this problem is to run the full Ford-Fulkerson Algorithm. We start with a flow of zero and begin with the following residual network (top left network). At each step identify a path within the residual network, construct the augmentation of flow (use blank flow graphs on the right column), and construct the resulting residual network (use blank network in the left column). Keep this process going until you do not have path within the residual network.

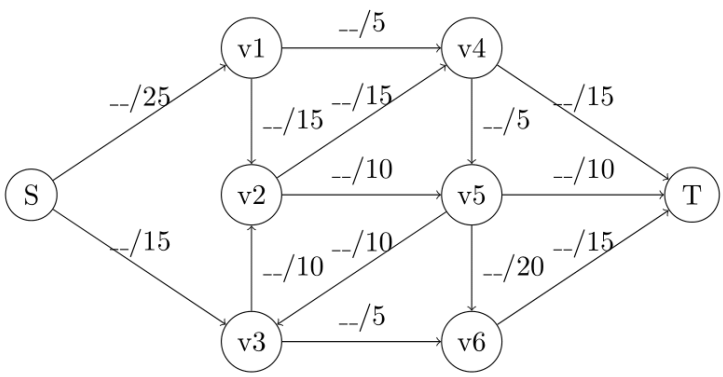


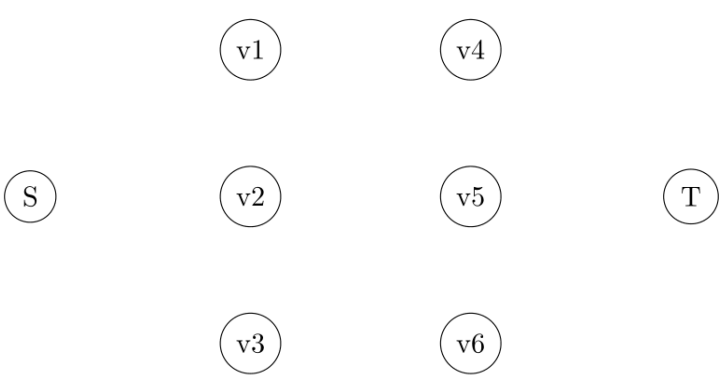



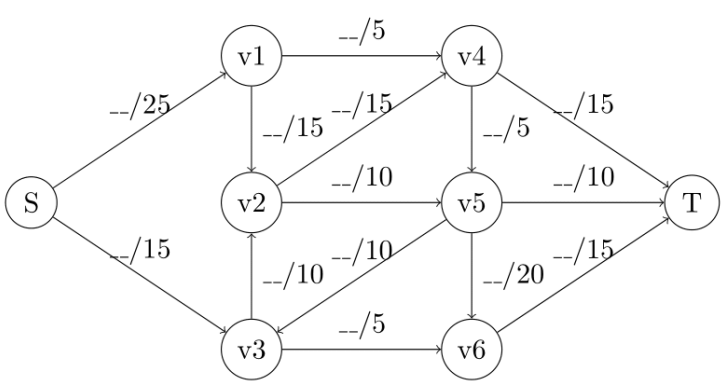



**Problem 3.** Extra space if you need a few more blank graphs. Or...You can try running it again (consider different scenarios of how you went about selecting your path. Did you use a greedy approach, optimal approach, random approach,...)

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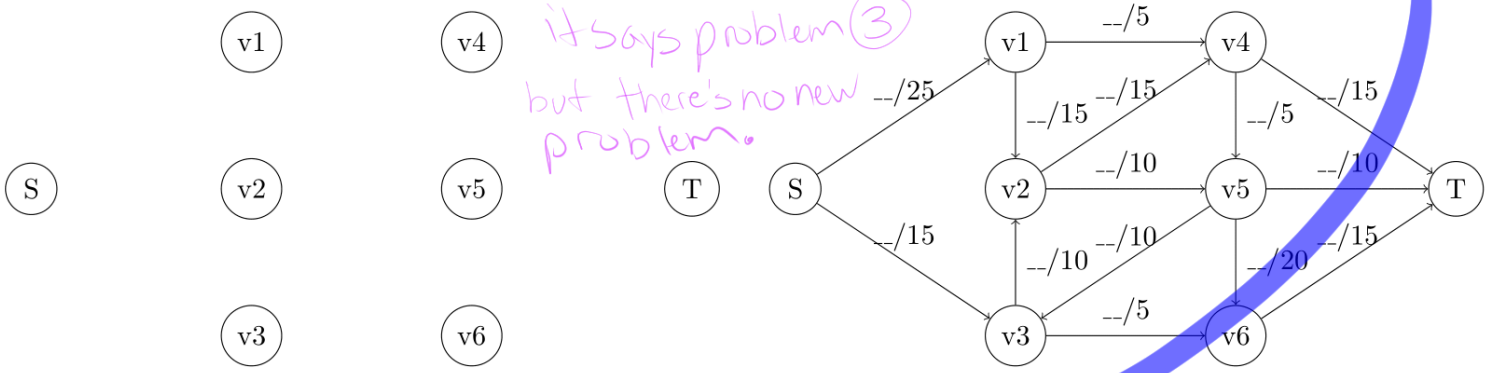
it says problem (3) but there's no new problem.

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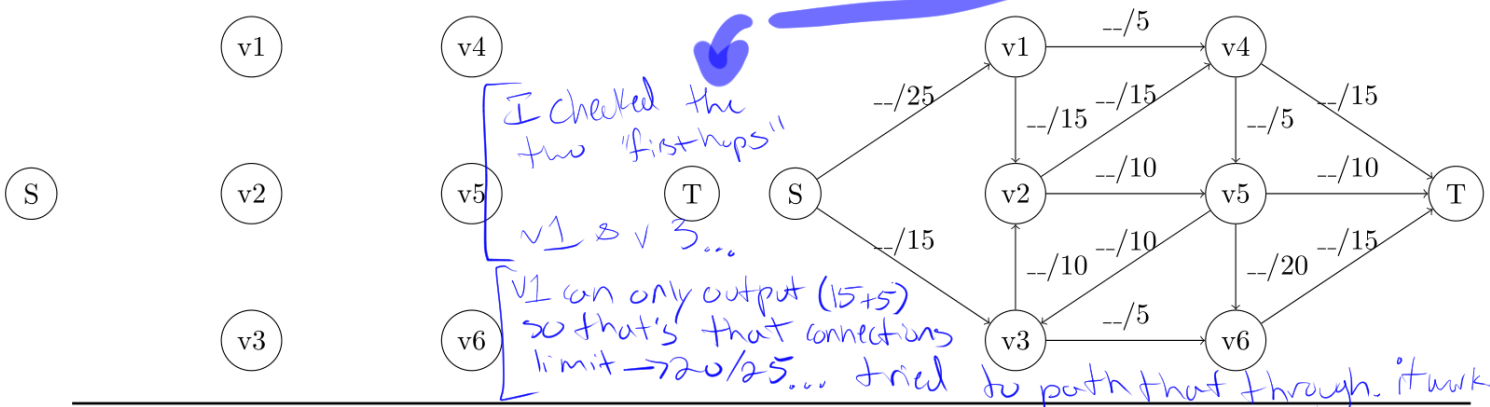


I checked the two "first hops" v1 & v3...

V1 can only output (15+5) so that's that connections limit → 20/25... tried to path that through. it worked

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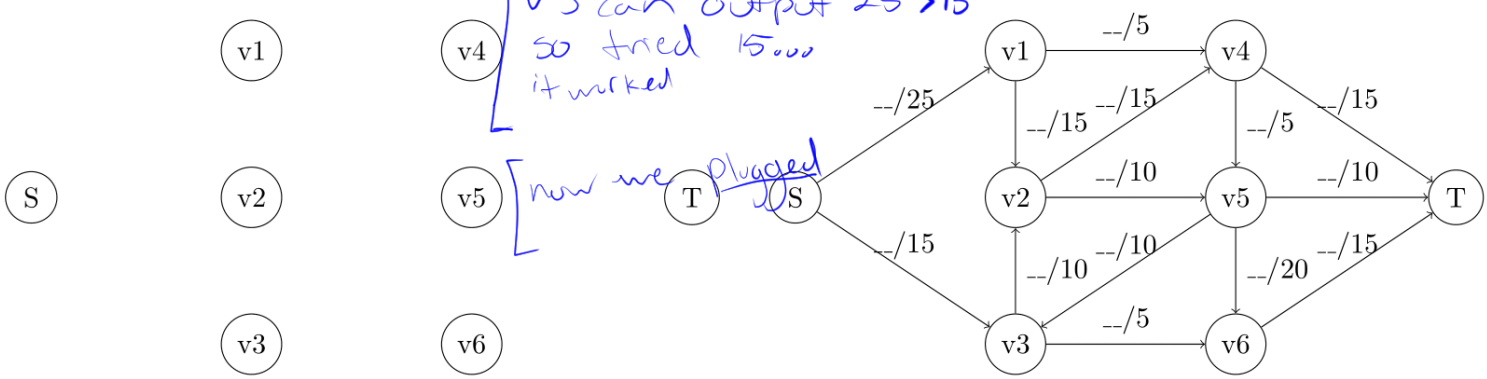


V3 can output 25 > 15 so tried 15... it worked

now we plugged

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