CS5820 HW-6 Additional

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4. A fast variant of the Ford-Fulkerson Algorithm

(a) Show that it is possible for the Ford-Fulkerson algorithm to really take C iterations

Update new flow in the following sequence:

This will increase the total flow by 1 each time. Because the maximum flow is 4000, there will be 4000 iterations.

(b) Prove that the shortest path in cannot have edges.

Observation: in order to make node get into higher level in after one iteration, there must be a new edge added during this iteration, . (This is obvious according to BFS Algorithm)