If the algorithm returns false, then there is at least one vertex U $\in$ L such that deg(U) = 0 (not saturated) and hence U is not assigned to any projects. To show that the perfect assignment corresponds to max-flow: Let S be the perfect assignment in G. In G, for every edge e between L and R, assign f(e) = 1 if e $\in$ S and f(e) = 0 otherwise For U $\in$ L, if U is involved in S, f(s,U) = 1 and f(U,t) = 0 For V $\in$ R, if V is involved in S, f(V,t) = 1 and f(s,V) = 0 otherwise. | f(A) | = 10 = f(t) and f is a valid flow.