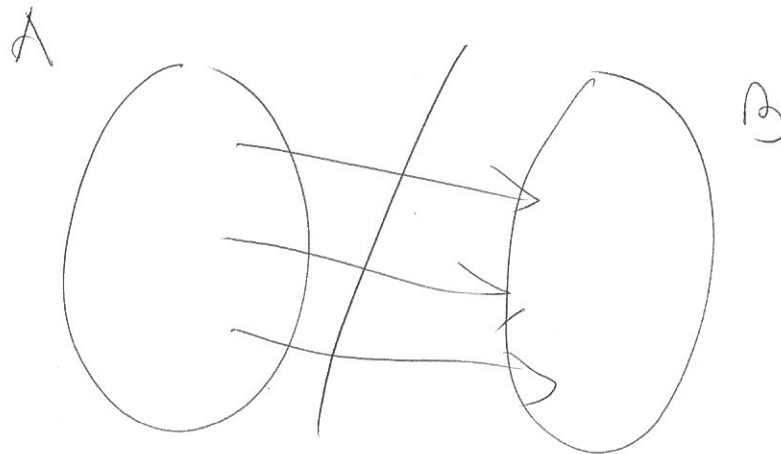
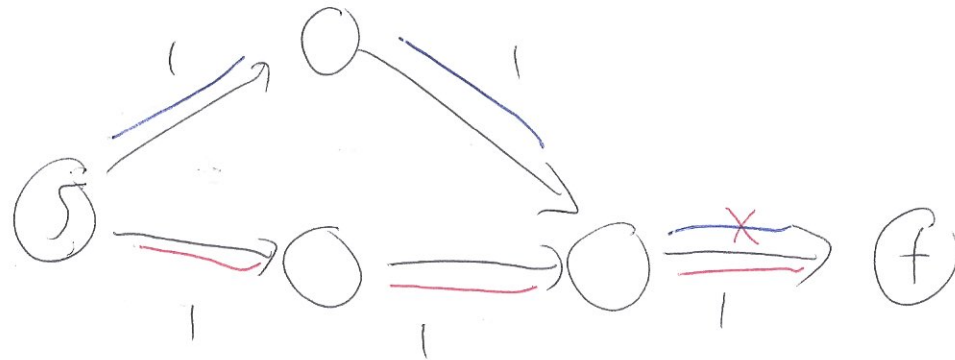
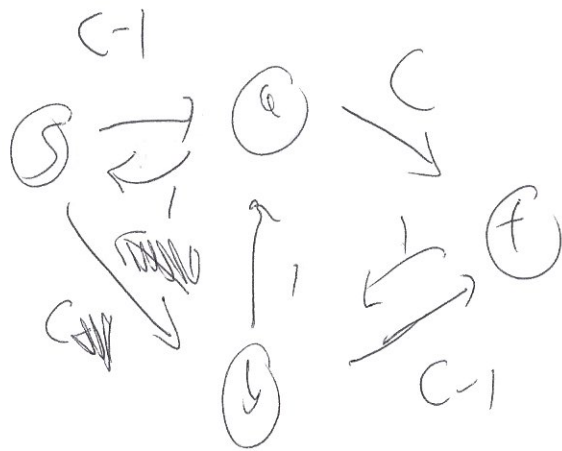
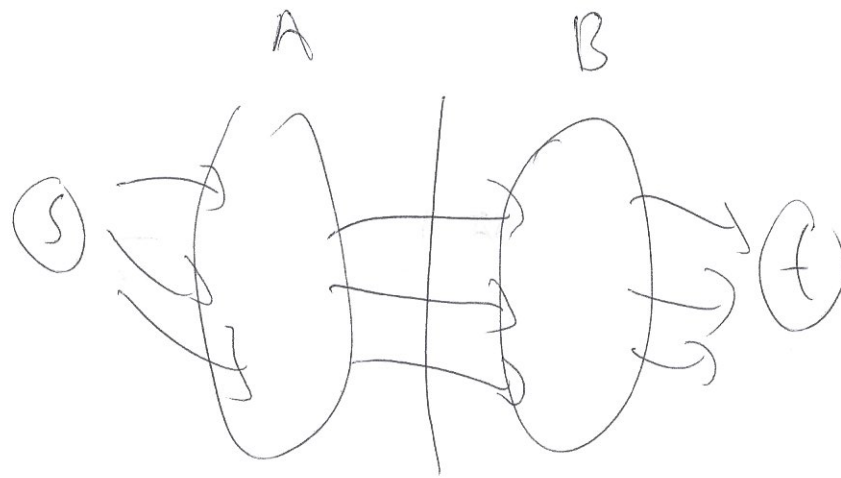
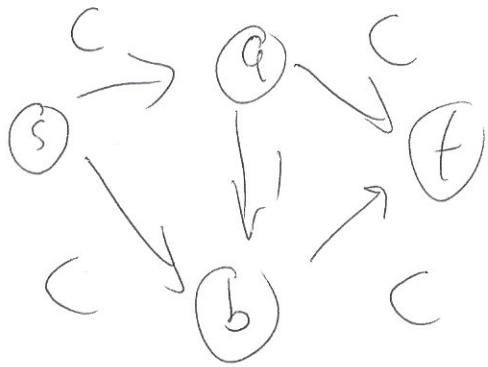
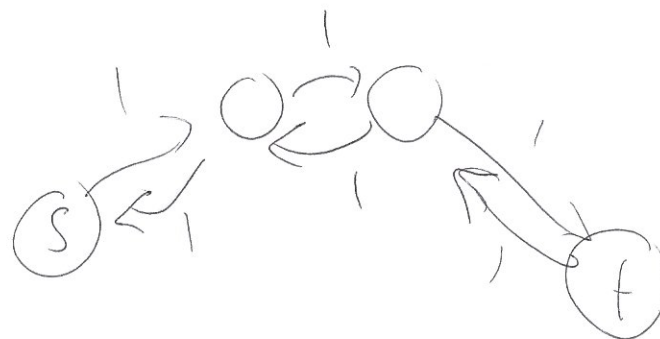
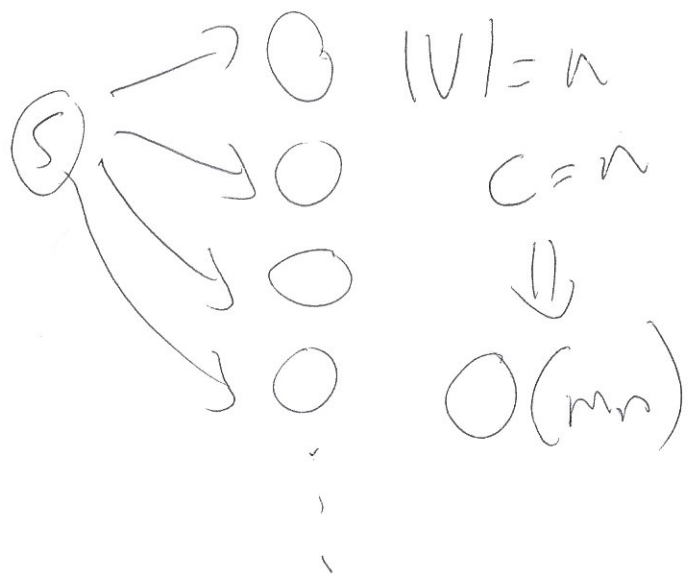


# ① Max Flow Applications



2

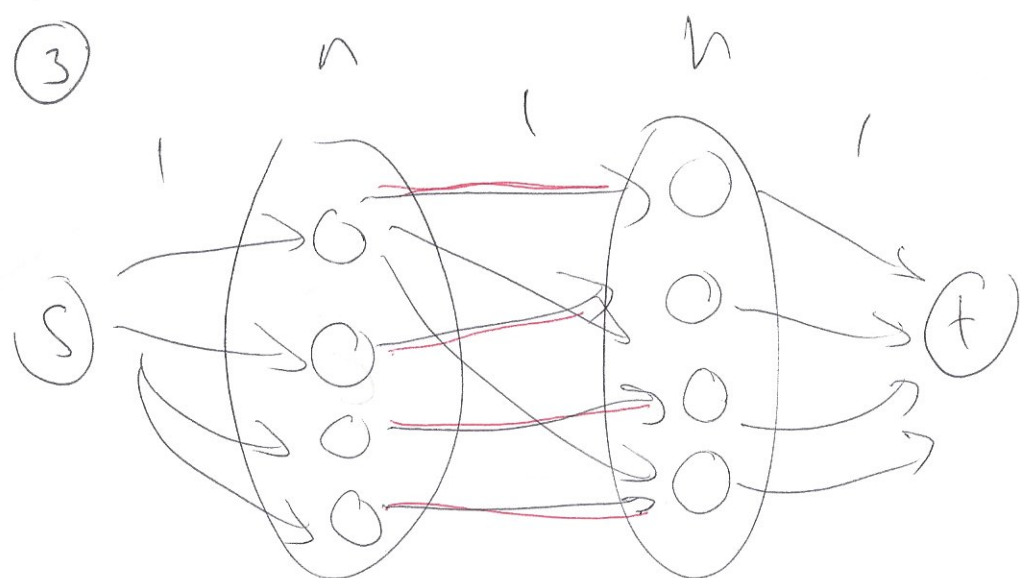


$$\delta = \min(f(e), f(e'))$$

$$f(e) = f(e) - \delta$$

$$f(e') = f(e') - \delta$$

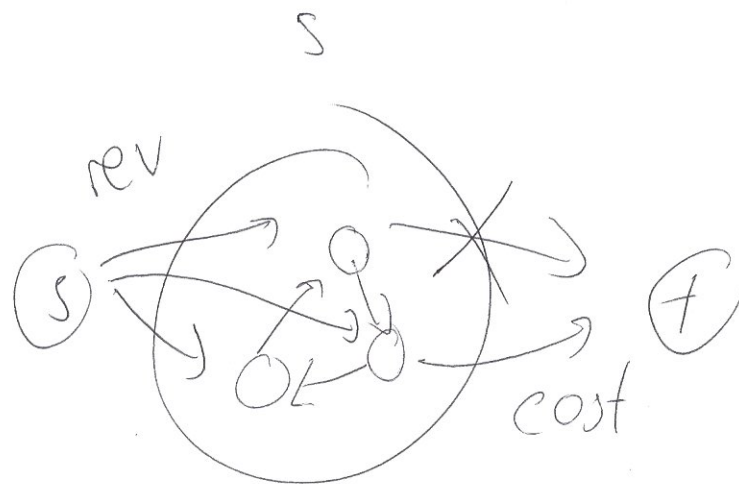
③



$$m = n^2$$

$$C = n$$

$$O(mC) = O(n^3)$$



$$profit(S) = rev(S) - cost(S)$$

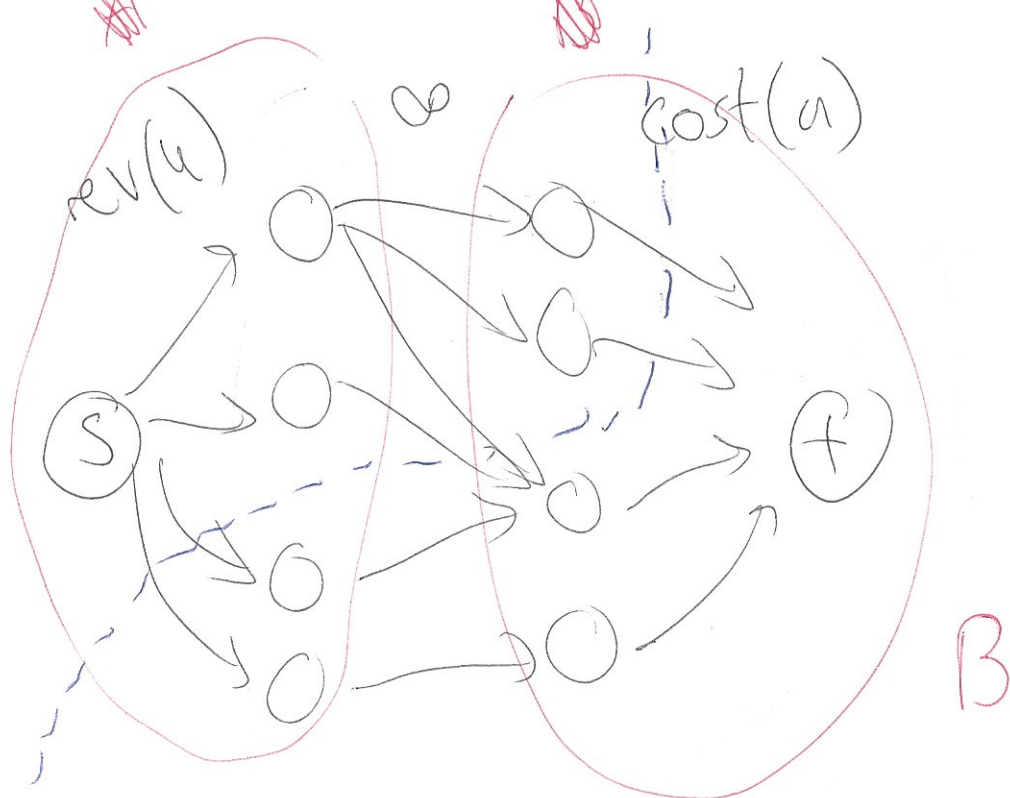
$$= \sum_{u \in S} rev(u) - \sum_{u \in S} cost(u)$$



$u$  must  
be extracted  
before  $v$

④

A



$$S = A - s$$

$$\text{profit}(s) + \text{cut}(A, B) = \text{rev}(V)$$

$$O(m \text{ Rev}(V))$$

$$C(A, B) = \text{rev}(V \setminus S) + \text{cost}(S)$$

$$= \text{rev}(V \setminus S) + \text{cost}(S) + \text{rev}(S) - \text{rev}(S)$$

$$= \text{rev}(V) - (\text{rev}(S) - \text{cost}(S)) = \text{rev}(V) - \text{profit}(s)$$