Feb 9

Stable Matching

$n = 2$;
$M = \{BP, BBT\}$
$W = \{JA, AJ\}$

L_{JA}: BP > BBT
L_{AJ}: BP > BBT

L_{BP}: AJ > JA
L_{BBT}: AJ > JA

* Preference list

Def. (Pref. list)

L_w : ~~$\forall w \in W, A$~~ $\forall w \in W$,

L_w (variable): A total ranking of all n men

$\forall m \in M$, L_m: A total ranking of all n women

Example: $W = \{AJ, JA\}$

$\rightarrow L_{JA}$: BP > BBT

(Q1): How many pref. lists if n men and n women?

Ans: $2n$

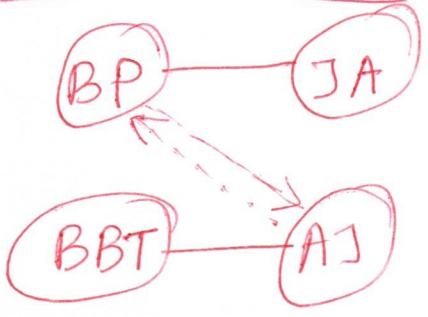
(Q2): (Space complexity): How many memory slots ~~of~~ do you need to store all pref. lists?

$\Rightarrow$ How many elements in total across all pref. lists?

Ans: # pref. lists $\times$ |pref. list|

$= 2n \times n = 2n^2$

Stable Matching



~~Def~~ Stable Matching: A stable matching is a perfect matching ~~is~~ with no instability.

Def: Instability : Given $2n$ preference lists and a perfect matching $S \subseteq M \times W$, a pair (m', w') is an instability IF

(i) $w' > w$ in $L_{m'}$

AND

(ii) $m' > m$ in $L_{w'}$