EX12

Ido Kahana

DEC 2021

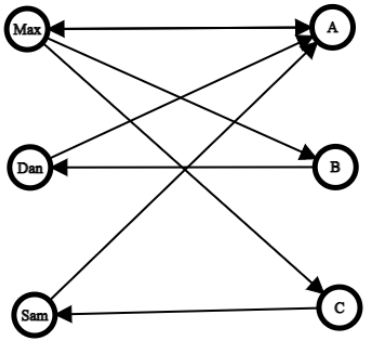
1 Q3

Definition 1.1 — A Weak appellant coalition - is a group of participants who can retire and make a substitution that is better for at least one of the group members and not worse for the others

Definition 1.2 — A strong core allocation - Is an allocation in which there is no weak appellant coalition

Theorem 1.3 — *Any Algorithm with week preference(not strong preferences) is not always return a strong core allocation*

Proof. 3 people, Max Dan And Sam.
3 Houses A,B and C.
Max House is A.
Dan House is B.
Sam House is C.
Sam and Dan prefers House A.
Max is indifferent to House A,B,C.



There are only 6 possible results

$$(Max, Dan, Sam) = (A, B, C), (A, C, B), (B, A, C), (B, C, A), (C, A, B), (C, B, A)$$

let check them all.

- (A, B, C) Max And Sam can retire then swap there houses $(Max, Sam) = (C, A)$ and it is definitely better for Sam and the same for Max
- (A, C, B) Max And Dan can retire then swap there houses $(Max, Dan) = (B, A)$ and it is definitely better for Dan and the same for Max
- (B, A, C) Max And Sam can retire then swap there houses $(Max, Sam) = (C, A)$ and it is definitely better for Sam and the same for Max
- (B, C, A) Max And Dan can retire then swap there houses $(Max, Dan) = (B, A)$ and it is definitely better for Dan and the same for Max
- (C, A, B) Max And Sam can retire then swap there houses $(Max, Sam) = (C, A)$ and it is definitely better for Sam and the same for Max
- (C, B, A) Max And Dan can retire then swap there houses $(Max, Dan) = (B, A)$ and it is definitely better for Dan and the same for Max

□

Theorem 1.4 — *Saban-Storman is not always return A strong core allocation*

Proof. Saban-Storman Is Algorithm therefore the theorem is correct. □