Allocation Games

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Game Theory

The Deferred Acceptance Algorithm for Stabilized Dating

Boys' Preferences			
Adam	**Bob**	**Charlie**	**Don**
Mary	Jane	Mary	Mary
Jane	Mary	Kate	Kate
Kate	Kate	Jane	Jane

Girls' Preferences		
Mary	**Jane**	**Kate**
Adam	Adam	Don
Bob	Charlie	Charlie
Charlie	Don	Bob
Don	Bob	Adam

	Day 1	Day 2	Day 3	Day 4	Day 5
Mary	**Adam** (Charlie & Don rejected)	**Adam** (no new proposal)	**Adam** (no new proposal)	**Adam** (Bob rejected)	**Adam** (no new proposal)
Kate	No proposal	**Don** (Charlie rejected)	**Don** (no new proposal)	**Don** (no new proposal)	**Don** (Bob rejected)
Jane	**Bob**	Bob (no new proposal)	**Charlie** (Bob rejected)	**Charlie** (no new proposal)	**Charlie** (no new proposal)

The process ends when all unattached boys have been rejected by all the girls.

The Deferred Acceptance Algorithm for Stabilized Dating

There are mathematical proofs of these theorems:

- The algorithm ends in a finite number of steps, resulting in a stable solution.

- The solution is the best possible outcome for the group proposing (that is, the boys). If the girls proposed, the result would be the best for the girls, but probably not the same result.

- This works for any different number of boys and girls.