Stable Matching

Preferences

Boys
1: CBEAD
2: ABECDE
3: DCBAE
4: ACDBE
5: ABDEC

Girls
A: 35214
B: 51243
C: 43512
D: 12345
E: 23415

Stable Marriage

A Marriage Problem

Try "greedy" strategy for boys
Stable Marriage

Preferences

1: CBEAD
2: ABED
3: DBAE
4: ADBE
5: ABDE

Marry Boy 1 with Girl C (his 1st choice)

Preferences

2: ABECD
3: DBAEC
4: ACDBE
5: ABDEC

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Stable Marriage

Preferences

2: ABE D
3: D BAE
4: A DBE
5: ABDE

Next:

Marry Boy 2 with Girl A (his remaining 1st choice)

Preferences

2: ABED
3: DBAE
4: ADBE
5: ABDE

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Stable Marriage

Final "boy greedy" marriages

1 C
2 A
3 D
4 B
5 E

Trouble!

Boy 4 likes Girl C better than his wife.

and vice-versa

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Stable Marriage

Problem:
Marry everyone without any rogue couples!

Let's try it!

all girls get 1st choice
Stable Marriage II

5 A
2 B
4 C
3 D
1 E

"boy optimal"

Stable Marriage

More than a puzzle:
• College Admissions
  (original Gale & Shapley paper, 1962)
• Matching Hospitals & Residents.
• Matching Dance Partners.

Photograph of dancing students removed due to copyright restrictions.