

Gayle-Shapely

Invitations $\leftarrow \{\}$

Tentative $\leftarrow \{\}$

FreeM $\leftarrow M$

FreeW $\leftarrow W$

while there is an m in FreeM s.t. there is a w s.t. (m,w) not in Invitations

 choose such an m

 let w be m 's highest ranked s.t. (m,w) not in Invitations

 add (m,w) to Invitations

 if w in FreeW then

 remove w from FreeW

 remove m from FreeM

 add (m,w) to Tentative

 else

 find m' s.t. (m', w) in Tentative

 if w prefers m to m'

 remove (m', w) from Tentative

 add (m, w) to Tentative

 remove m from FreeM

 add m' to FreeM

return Tentative

Gayle-Shapley

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Tentative $\leftarrow \{\}$

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while there is an m in FreeM s.t. there is a w s.t. (m,w) not in Invitations

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 if w in FreeW then

 remove w from FreeW

 remove m from FreeM

 add (m,w) to Tentative

 else

 find m' s.t. (m', w) in Tentative

 if w prefers m to m'

 remove (m', w) from Tentative

 add (m, w) to Tentative

 remove m from FreeM

 add m' to FreeM

return Tentative

while not at a stable matching
send a new invitation
if accepted
update current matching

Gayle-Shapely

FreeM \leftarrow M
 FreeW \leftarrow W
 Invitations \leftarrow {}
 Tentative \leftarrow {}

Preferences

Machwists	[A	X, Y, Z
		B	X, Z, Y
		C	Z, X, Y
Welders	[X	A, B, C
		Y	A, C, B
		Z	A, B, C

while there is an m in FreeM s.t. there is a w s.t. (m,w) not in Invitations
 choose such an m
 let w be m's highest ranked s.t. (m,w) not in Invitations

add (m,w) to Invitations

Invitations

FreeM
~~A, B, C~~

FreeW
~~X, Y, Z~~

Tentative

if w in FreeW then
 remove w from FreeW
 remove m from FreeM
 add (m,w) to Tentative

(A, X)
 (C, Z)

(A, X)
 (C, Z)

else
 find m' s.t. (m', w) in Tentative
 if w prefers m to m'
 remove m from FreeM
 add m' to FreeM
 remove (m', w) from Tentative
 add(m, w) to Tentative

return Tentative

Gayle-Shapely

FreeM \leftarrow M
 FreeW \leftarrow W
 Invitations \leftarrow {}
 Tentative \leftarrow {}

	Preferences
Males	A X, Y, Z
	B X, Z, Y
	C Z, X, Y
Females	X A, B, C
	Y A, C, B
	Z A, B, C

while there is an m in FreeM s.t. there is a w s.t. (m,w) not in Invitations

choose such an m

let w be m's highest ranked s.t. (m,w) not in Invitations

add (m,w) to Invitations

if w in FreeW then

remove w from FreeW

remove m from FreeM

add (m,w) to Tentative

else

find m' s.t. (m', w) in Tentative

if w prefers m to m'

remove m from FreeM

add m' to FreeM

remove (m', w) from Tentative

add(m, w) to Tentative

return Tentative

Invitations

FreeM

FreeW

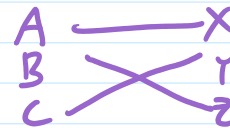
Tentative

(A, X)
 (C, Z)
 (B, X)
 (B, Z)
 (C, X)
 (C, Y)

~~A, B, C~~

~~X, Y, Z~~

(A, X)
~~(C, Z)~~
 (B, Z)
 (C, Y)



Gayle-Shapely

```
FreeM <- M
FreeW <- W
Invitations <- {}
Tentative <- {}
```

Running time ?

Correct? (always returns stable matching?)

	Preferences
Machivists	A: X, Y, Z
	B: X, Z, Y
	C: Z, X, Y
Workers	X: A, B, C
	Y: A, C, B
	Z: A, B, C

while there is an m in FreeM s.t. there is a w s.t. (m,w) not in Invitations

choose such an m

let w be m's highest ranked s.t. (m,w) not in Invitations

add (m,w) to Invitations

if w in FreeW then

remove w from FreeW

remove m from FreeM

add (m,w) to Tentative

else

find m' s.t. (m', w) in Tentative

if w prefers m to m'

remove m from FreeM

add m' to FreeM

remove (m', w) from Tentative

add(m, w) to Tentative

return Tentative

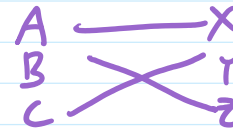
Invitations

FreeM
~~A, B, C~~

FreeW
~~X, Y, Z~~

Tentative

(A, X)
(C, Z)
(B, X)
(B, Z)
(C, X)
(C, Y)



(A, X)
~~(C, Z)~~
(B, Z)
(C, Y)