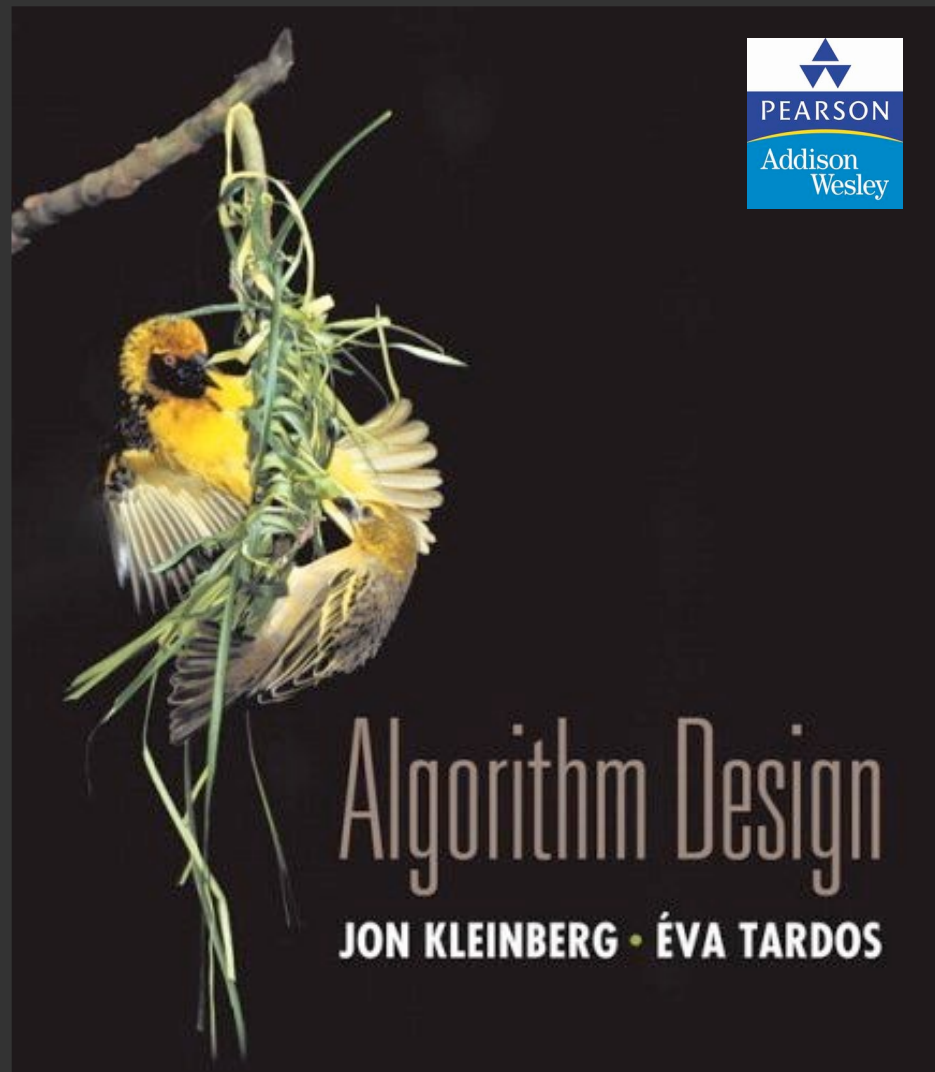


1. REPRESENTATIVE PROBLEMS

▶ *Gale–Shapley demo*



Lecture slides by Kevin Wayne

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<http://www.cs.princeton.edu/~wayne/kleinberg-tardos>

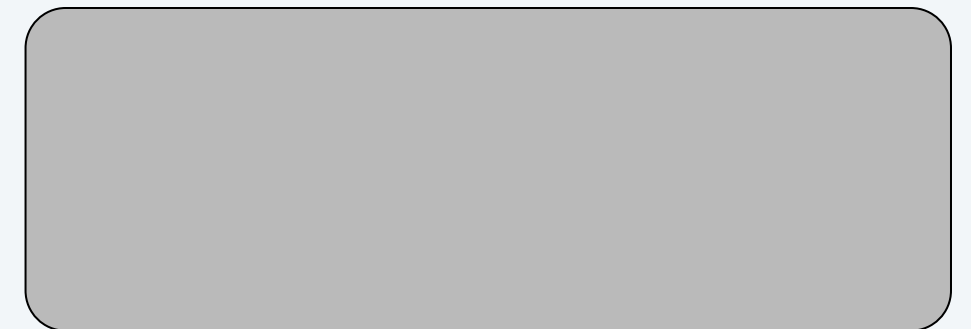
Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta



Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Atlanta proposes to Wayne

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Atlanta proposes to Wayne

**Wayne accepts
(since previously unmatched)**

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Boston proposes to Yolanda

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Boston proposes to Yolanda
Yolanda accepts
(since previously unmatched)

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Chicago proposes to Wayne

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Chicago proposes to Wayne

**Wayne accepts
(and renounces Atlanta)**

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Atlanta proposes to Val

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Atlanta proposes to Val
Val accepts
(since previously unmatched)

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Dallas proposes to Val

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Dallas proposes to Val
Val rejects
(since she prefers Atlanta)

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Dallas proposes to Yolanda

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Dallas proposes to Yolanda

**Dianne accepts
(and renounces Boston)**

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Boston proposes to Wayne

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Boston proposes to Wayne

**Wayne rejects
(since he prefers Chicago)**

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Boston proposes to Val

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Boston proposes to Val
Val rejects
(since she prefers Atlanta)

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Boston proposes to Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Boston proposes to Xavier

**Xavier accepts
(since previously unmatched)**

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Eugene proposes to Wayne

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Eugene proposes to Wayne

Wayne rejects
(since he prefers Chicago)

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Eugene proposes to Yolanda

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Eugene proposes to Yolanda
Yolanda accepts
(and renounces Dallas)

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Dallas proposes to Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Dallas proposes to Xavier
Xavier rejects
(since he prefers Boston)

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Dallas proposes to Wayne

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Dallas proposes to Wayne

**Wayne rejects
(since he prefers Chicago)**

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

Dallas proposes to Zeus

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

Dallas proposes to Zeus
Zeus accepts
(since previously unmatched)

Gale-Shapley demo

hospitals' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Atlanta	Wayne	Val	Yolanda	Zeus	Xavier
Boston	Yolanda	Wayne	Val	Xavier	Zeus
Chicago	Wayne	Zeus	Xavier	Yolanda	Val
Dallas	Val	Yolanda	Xavier	Wayne	Zeus
Eugene	Wayne	Yolanda	Val	Zeus	Xavier

students' preference lists

	1 st	2 nd	3 rd	4 th	5 th
Val	Eugene	Atlanta	Boston	Dallas	Chicago
Wayne	Chicago	Boston	Dallas	Atlanta	Eugene
Xavier	Boston	Chicago	Dallas	Eugene	Atlanta
Yolanda	Atlanta	Eugene	Dallas	Chicago	Boston
Zeus	Dallas	Boston	Eugene	Chicago	Atlanta

STOP
(stable matching)