CS 180 Homework 1
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#1 Solution:
An algorithm can be viewed as a systemic/accurate approach to accomplish a specific task or solve a specific problem. It is written in a form of design. A program is a sequence of lines (codes, for example) to run/execute in a machine through syntax and compiler. It is written in a form of implementation.
To speak in a general scheme, algorithm lies between mathematics and computing. Though, a program doesn't solve anything, it can serve as an implementation of algorithms.

#2 Solution:
False. Counter example:

(next page)

False

Counterexample

Men's Preference Profile:

m	w' w
	y' y

m'	w' w
	y' y

Women's Preference Profile:

w	m m'
	y y'

w'	m m'
	y y'

Yupi's Preference Profile

y	m m'
	w' w

y'	m m'
	w' w

All possible instances:

m w' y'
m' w' y
(unstable)

m w y
m' w' y'
(unstable)

m w' y
m' w y'
(unstable)

m w y'
m' w' y
(unstable)

Pair (w', y)
unstable
↑
w' prefers y & y prefers w'

(m, w')
unstable
↑
m prefers w' &
w' prefers m

(m, y')
unstable
↑
m prefers y' &
y' prefers m

(m, w')
unstable
↑
m prefers w' &
w' prefers m

∴ All instances are unstable.