

Exercises Social Software, Lecture 2, Solutions

Exercise 1 Find a simple linear profile where there is a Condorcet winner, but the Condorcet winner is not the same as the plurality winner. Can you think of real life examples where the same phenomenon occurs?

The following profile has a as plurality winner and b as Condorcet winner.

1	2	3	4	5	6	7
a	a	a	b	b	c	c
b	b	b	c	c	b	b
c	c	c	a	a	a	a

Exercise 2 Find a simple linear profile where the winner of the plurality vote is not the same as the Borda winner.

Answer: the same profile as above, for b is also the Borda winner.

Exercise 3 Find a linear profile with three voters and four alternatives for which there is a Condorcet winner, but the Condorcet winner is not the Borda winner.

Answer:

1	2	3
a	a	b
b	b	c
c	c	d
d	d	a

Here a is the Condorcet winner, for a beats b by 2 to 1, a beats c by 2 to 1, a beats d by 2 to 1. However, b is the Borda winner, for a has $3+3+0 = 6$ Borda points, b has $2+2+3 = 7$ Borda points, c has $1+1+2 = 4$ Borda points, d has $0+0+1 = 1$ Borda point.