DCS/CSCI 2350:
Social & Economic Networks

Auctions
Reading: Ch. 9 of EK

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1

Examples

- eBay (one seller, many buyer)
- Government's procurement auction (many sellers, one buyer)
- Christie's and Sotheby's art auction
- Chicago wine company's auction on wine

2

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When are auctions appropriate?

1. Seller doesn't know buyers' true values

   Otherwise:
   - $y = max value held by buyers
   - Seller imposes fixed price of $y – 1c and gets the biggest possible profit margin

2. Buyers don't know each other's value

   Independent, private values

3

Assumption:
Only 1 item being auctioned

4

2

Types of auctions

Real-time
- Descending bid/Dutch auction
http://www.youtube.com/watch?v=V2CK2TatM_U
- Ascending bid/English auction
http://www.youtube.com/watch?v=q73-EaQydWU

5

Types of auctions

Simultaneous
- First-price sealed bid auction

> Equivalent to descending price

  - Highest bidder wins and pays own bid
- Second-price sealed bid auction (Vickrey auction)
  - Highest bidder wins, but pays the 2nd highest bid

> Equivalent to ascending price

6

Next

- Second-price auction
  - Bidder's dominant strategy is to bid truthfully. Why?
- First-price auction
  - Will bidders be truthful?

7

Second-price auction

Bidders' <u>dominant strategy</u> is to bid truthfully

8

First-price auction

- Will bidders be truthful?
- No
  - Bid v_i ➔ Payoff is 0, win or lose
  - Bid < v_i ➔ Could potentially get positive payoff

9

Winner's curse

- "Common value auction":
  The "intrinsic" value of the item is common to all bidders, but bidders are uncertain about the value
- Example: offshore oil-field
- Highest bidder may end up losing money, even in second-prize auction
  - Why?

10

Which auction is more profitable for a seller?

- First-price
  - Seller gets the highest bid, but the buyers lied (i.e., they underbid)
- Second-price
  - Seller gets the 2nd highest bid, but that is true value
- Which one is better? Unknown.

11

Auctions with multiple items?

12

Multiple items

- Not well understood
- Second-prize auction may not be collusion-proof
  - Example: Germany's spectrum auction (1999)
- "Generalized" second-prize (GSP) auction
  - Coming up

13