Exercise 17.1: Externality Pricing

Recall

- externality pricing mechananism:
  1. pick the outcome that maximizes the total welfare.
  2. charge each buyer the difference between the optimal welfare without the buyer and the welfare of other buyers (from 1)

Exercise 17.1: Externality Pricing

Setup:

- two buyers 1 and 2, two houses A and B

- bids:

	House A	House B
Buyer 1	8	7
Buyer 2	6	3

Questions:

- Which house does Buyer 2 get in the externality pricing mechanism?
- What is Buyer 2's payment?

Lecture 17: Online Matching

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- Quiz 2 due tonight
- Quiz 3 assigned Monday night, due Wednesday night
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- externality pricing mechanism
  (a.k.a, Vickrey-Clarke-Groves, VCG)

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Today:

- maximum weight matching (cont)
- duality
- online matching
- greedy online matching

Exercise 17.2: Matching Dual

Recall

$$\mathrm{Dual}(\mathbf{u}, \mathbf{p}) = \min_{\mathbf{u}, \mathbf{p}} \sum_i u_i + \sum_j p_j$$

$$\text{s.t. } u_i + p_j \geq v_{ij} \qquad \forall i, j$$

Exercise 17.2: Matching Dual

Setup:

- two buyers 1 and 2, two houses A and B
- values:

	House A	House B
Buyer 1	8	7
Buyer 2	6	3

Questions: Identify the optimal dual utilities: u_1? u_2?