

## Chapter 10: Exercise 11

Lecturer: Vijay Garg

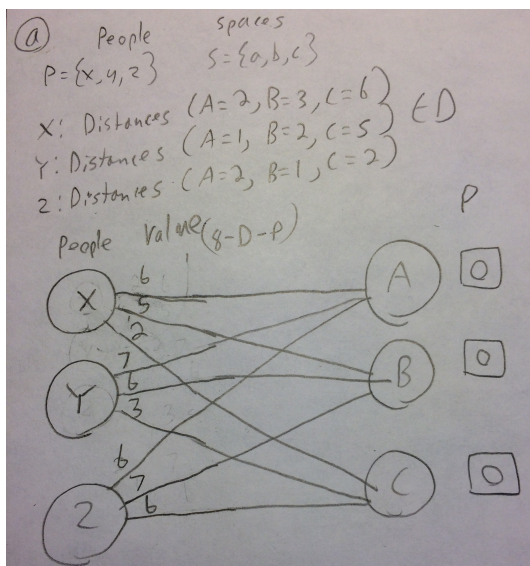
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## 10.1 Problem Overview

The problem description indicates a set of People  $\{x, y, z\}$  and a set of parking spaces  $\{a, b, c\}$  that are up for auction around where people live. The value of a spot is calculated as a function of the inverse of the distance away from those spots (i.e. the shorter the spot to person  $x$ , the higher the valuation)

## 10.1.1 Part A

Provide a bipartite graph that represents this problem with buyers/sellers, valuations, and prices.



## 10.1.2 Part B

Find the market clearing price using the bipartite auction algorithm.

	A	B	C	A	B	C	A	B	C
1	6	5	2	7	6	3	6	7	6
2	5	5	2	6	6	3	5	7	6
3	5	4	2	6	5	3	5	6	6
4	4	4	2	5	3	4	6	6	6
5	4	3	2	5	4	3	4	5	6
6	3	3	2	4	4	3	3	5	6
7	3	3	2	3	4	3	2	5	6

A=4, B=2, C=0

### 10.1.3 Part C

How do the prices in Part B denote the inherent attractiveness of the parking spaces to the subset of People  $\{x, y, z\}$ ?

Answer: The Market clearing prices were  $\{4, 2, 0\}$ , and the higher price correlates with a spot's average distance away from each person in the people subset, it's general attractiveness. As the averaged distance decreases that in turn creates even more competition for those spots, such that the price needs to be raised in order to make buyers consider other alternatives instead of just those spots. As seen by the outlier parking spot C, there is no competition whatsoever for that spot due to its location only being close to one person, therefore keeping its price low.