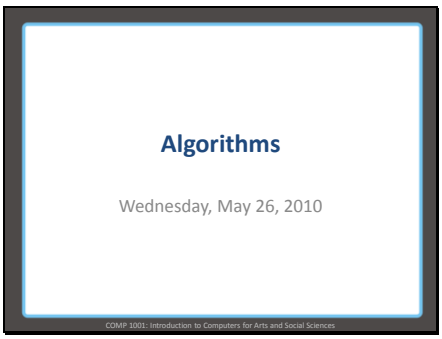
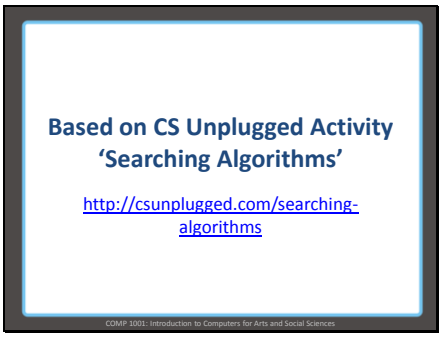
Slide 1



Slide 2

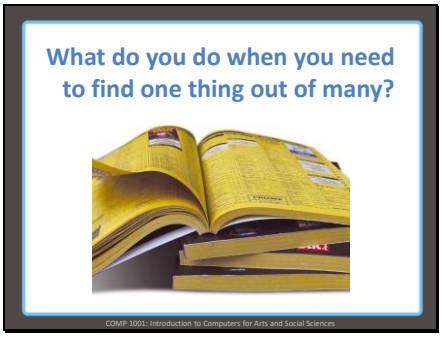


- Go read through activity to get more info

Slide 3

-Image:
    -http://www.friendly-farms.com/images/organic-produce_4cab.jpg
-Let's say you are a cashier at a grocery store and the power goes out.
-You need to figure out the prices of all the individual items so customers can be rung through manually.
-There's a master list somewhere that matches items with prices.
-Assuming you know the names of all the items, what's the best way to find the corresponding prices?

Slide 4



-Image:

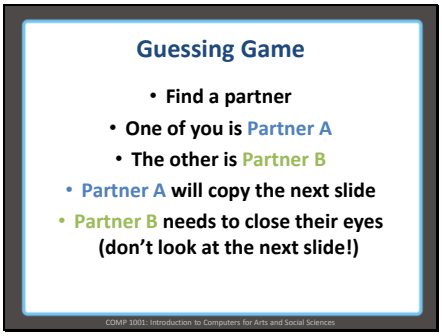
-http://www.calgary-city-maps.com/images/Calgary_phone_book.jpg

-Similarly, think about using a phone book.

-Imagine you have a phone number that you need to do a reverse look-up on (that is, figure out whose number it is).

-Compare this with how easy it is to find a phone number when you know someone's name.

Slide 5



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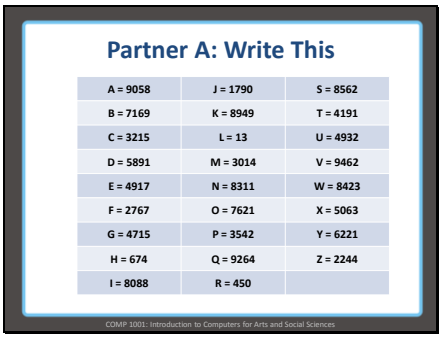

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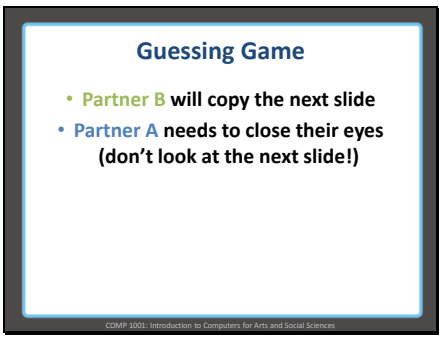

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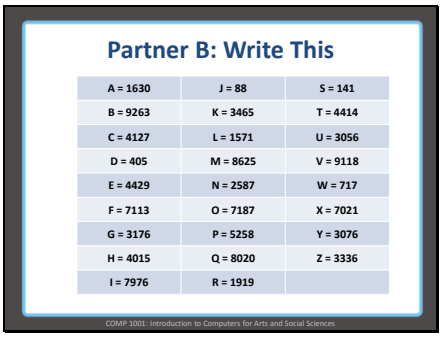

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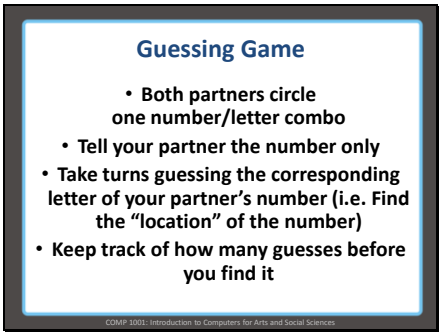

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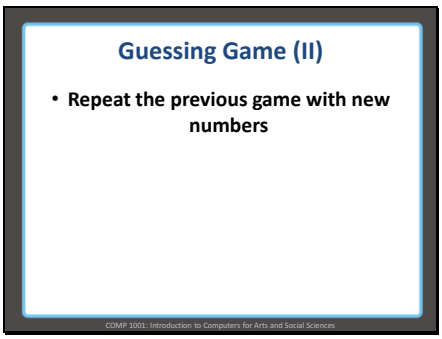

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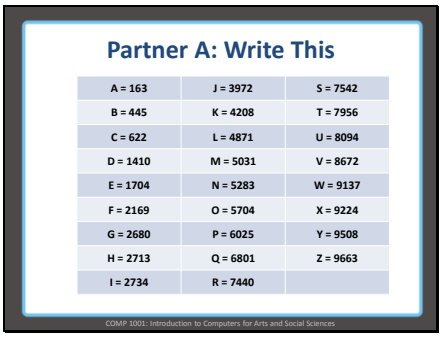

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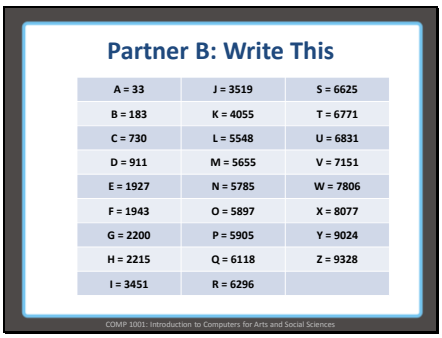

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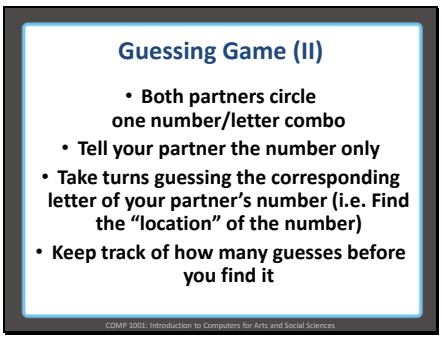

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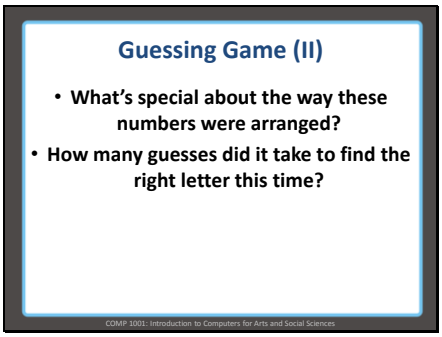

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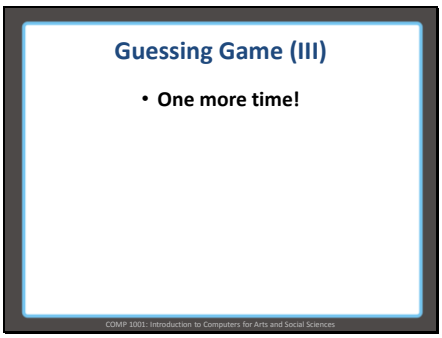
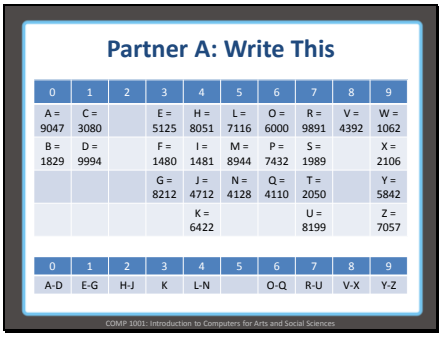
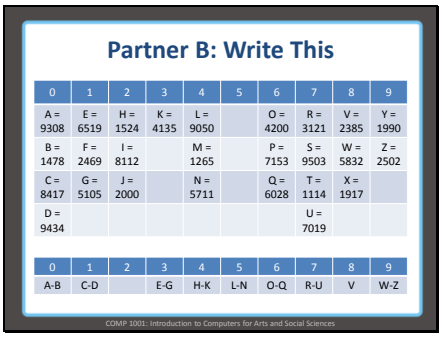


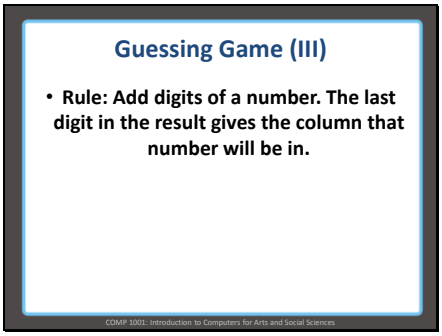
Slide 16



Slide 17



Slide 18



Slide 19

Guessing Game (III)

- Both partners circle one number/letter combo
- Tell your partner the number only
- Take turns guessing the corresponding letter of your partner's number (i.e. Find the "location" of the number)
- Keep track of how many guesses before you find it

Slide 20

Guessing Game (III)

- How many guesses this time?
- What would be min/max guesses?
- What are the advantages/disadvantages of this searching method compared to the first two?

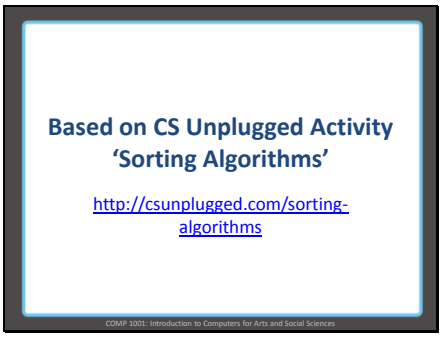
Slide 21

Linear Searching Demonstration

http://www.cosc.canterbury.ac.nz/mukundan/dsal/LSearch.html

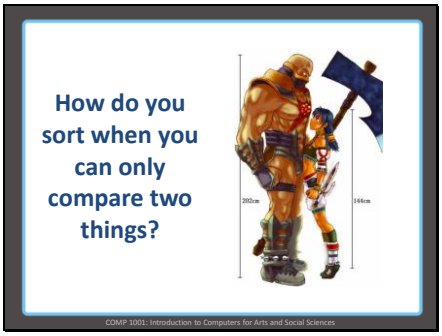
Slide 22

Slide 23



-Go read through activity to get more info
-We needed sorted lists to find numbers quickly in previous activity – how do we sort things efficiently?

Slide 24



-Image:
-http://images3.wikia.nocookie.net/soulcalibur/images/9/93/Height_Comparison.jpg
-Computers only compare two things at a time, show how do they sort efficiently?

Slide 25

Sorting

- 8 volunteers plus one to be a scale
- I will give a 'weight' to each volunteer
- Scale can ask two volunteers to:
  - compare their weights
  - tell the scale which of them is heavier
  - stand somewhere in particular
- The weights are not revealed until the end!

Slide 26

Sort

- Part One:
  - Find the lightest weight
  - What is the easiest way to do this?

Slide 27

Sort

- Part Two:
  - Choose three people at random
  - Sort them using the same rules of comparison
  - What is the fewest number of comparisons you can do?

Slide 28

Sort

- Part Three:
  - Sort everyone from lightest to heaviest using the same comparison rules

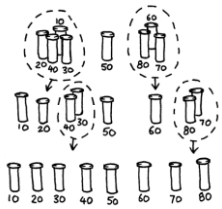
Slide 29

Selection Sort

- Find lightest and put aside
- Find next lightest and put aside next to the first lightest
- Find the next lightest and put aside next to the second lightest, etc...
- Repeat until everyone has been put aside
- How many comparisons did it take?

Slide 30

Quicksort

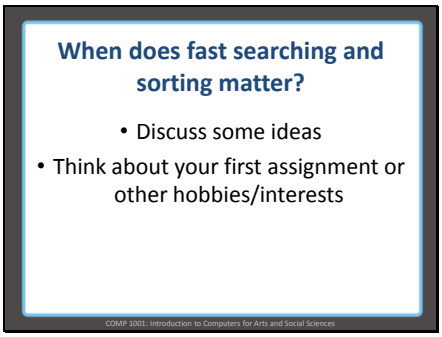


-Pick a person at random and have them stand in front of the others
    -This is your pivot
-Go through the rest of the group, and compare them with your pivot
    -Put lighter people on one side, heavier people on the other
-Leave your pivot alone, and pick one of the groups on the left or the right
    -Repeat the whole thing with that group – that is, find a pivot, move lighter people to the left, heavier people to the right
    -Be sure to keep this entire group on the same side as the original pivot as you are sorting

it

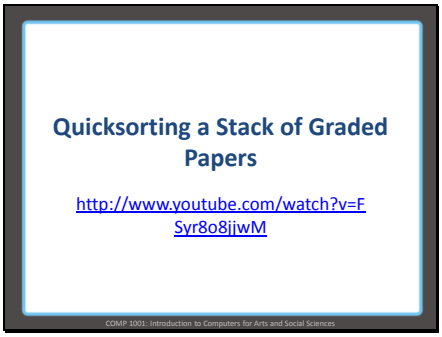
-Keep doing this for every group that has more than one item.

Slide 31



Slide 32

Slide 33



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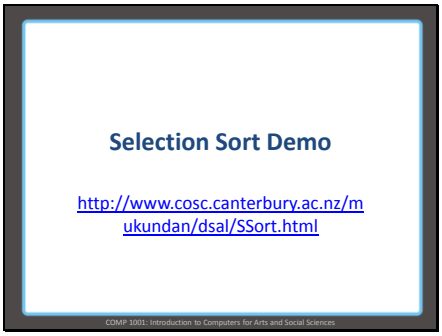

Slide 35

Slide 36


Sorting Networks
http://www.youtube.com/watch?v=LOxfdsBBjKI
COMP 1001: Introduction to Computers for Arts and Social Sciences