

Sorting – Day One

- Students will be able to relate a real-world task such as sorting cards to sorting/organizing information in a computer.
- Students will understand the problem of sorting and why it is nontrivial for large data sets.
- Students will be able to describe in pseudocode simple sorting algorithms (such as bubblesort).
- Students will be able to reason about the correctness and efficiency of different sorting algorithms, and will understand that the time required to sort a data set increases as the size of the data set grows.

Journal

If you had 1 million books, and you had to be able to find any book by its title as fast as possible, how would you organize them?

How many books would you need to look at in the worst case scenario to find the title *before* you have organized the books?

How many books would you need to look at in the worst case scenario to find the title *after* you have organized the books

Finish Searches...

while (low ≤ high)

low = 0

mid = (low + high) / 2

high = len()

if lower half

high = mid



low
50

high
100

$$\frac{100 - 50}{2} = \frac{50}{2} = 25$$

$$\frac{50 + 100}{2}$$

Card Sort Activity

- The Rules:
 - If a card is on the table, it must be face down.
 - You can only see the value of a card by picking it up and looking at its face.
 - You can only be holding and looking at two cards at a time (1 in each hand).
 - You can compare the values of any of the cards you are holding in your hands and determine if one is greater, less than, or equal to the other card.
 - When you put a card down, try to be clear about *where* it should be put back down. Cards should be put face down.
 - You cannot use your memory of face-down cards to make decisions about them. You should behave as though you have no recollection of cards that you aren't currently holding.
 - You will have eight cards to practice, but the procedure you follow should be general enough to work for *any number* of cards.
- Questions?
- *It might be helpful to break the task down into parts*

Card Sort Activity

- Write your algorithm...



Homework

Make sure you come tomorrow with your algorithm written clearly to turn in

