



Searching



Sean Halpin, Drew Hill, Nick Kamper
CSSE221 – Fall 2010

Searching

- ▶ We have data sets that we must find specific objects in.
- ▶ There are multiple search algorithms with various levels of complexity. We'll be focusing on two of them – linear searching and binary searching



Linear Search

- ▶ Linear Search is the easiest to implement of all searching algorithms.
- ▶ Linear Search Algorithms will iterate over the data set searching for a particular object.
- ▶ Worst run time of $O(n)$, but “average” will be $O(n/2)$.



Binary Search

- ▶ Binary Search requires a presorted collection.
- ▶ Binary Search algorithms are a “divide and conquer” algorithm.
- ▶ Binary search splits the data set up in half and then checks which half the desired value falls in.
- ▶ Average runtime of $O(\log(n))$.



Volunteer Time

- ▶ We need 7 volunteers 😊



Deciding on an algorithm

- ▶ Binary search requires a presorted collection. If the collection isn't sorted, one must take care to sort it before running the binary search.
- ▶ Linear search does not care about the ordering.



Demo Time

- ▶ Checkout “Search (Section I)”
- ▶ Implement a Binary Search algorithm for “search(int v)”
- ▶ A working Binary Search algorithm is given if you don’t know where to start.
- ▶ The solution will be committed before the end of class.

