CSE 12 – Basic Data Structures and Object-Oriented Design
Lecture 13

Greg Miranda, Fall 2020

This lecture is being recorded

Announcements

- Quiz 13 due Wednesday @ 9am
- Survey 5 due Friday @ 11:59pm
- PA4 due Wednesday @ 11:59pm

Topics

- Partition/Sort
- Questions on Lecture 13?

QuickSort – Draw the picture of sort()

```
public class Sort {
  public static void swap(String[] array, int i1, int i2) {
    String temp = array[i1];
    array[i1] = array[i2];
    array[i2] = temp;
  }
  public static int partition(String[] array, int low, int high) {
    int pivotStartIndex = high - 1;
    String pivot = array[pivotStartIndex];
    int smallerBefore = low, largerAfter = high - 2;

    while (smallerBefore <= largerAfter) {
      if (array[smallerBefore].compareTo(pivot) < 0) {
        smallerBefore += 1;
      }
      else {
        swap(array, smallerBefore, largerAfter);
        largerAfter -= 1;
      }
    }

    swap(array, smallerBefore, pivotStartIndex);
    return smallerBefore;
  }
```

```
  public static void qsort(String[] array, int low, int high) {
    if (high - low <= 1) { return; }
    int splitAt = partition(array, low, high);
    qsort(array, low, splitAt);
    qsort(array, splitAt + 1, high);
  }

  public static void sort(String[] array) {
    qsort(array, 0, array.length);
  }

main() {
  String[] str = {"f", "b", "a", "e", "d", "c" };
  int[] result = Sort.sort(str);
  System.out.println(Arrays.deepToString(result));
}
```

Questions on Lecture 13?