

**CS111 Introduction to Computer Science**  
**Recitation 12**

**Exercise 1: Selection Sort**

- Trace selection sort over the following array: [15, 2, 8, 1, 17, 5]
- What is the best case, worst case, and big O?

**Exercise 2: Insertion Sort**

- What is the algorithm for insertion sort?
- Trace insertion sort over the following array: [15, 2, 8, 1, 17, 5]
- What is the best case, worst case, and big O?

**Exercise 3: Binary Search**

- Complete the following method which would return the index of x in a sorted\* array using binary search; if number is not found, return -1:  
    public int binarySearch(int[] arr, int x)
- Trace the method above for finding the number 2 in [1, 2, 5, 8, 15, 17]
- What is the best case, worst case, and big O?

**Exercise 4: Recursion**

- Write a recursive method for finding the factorial of a given number.
  - o What is the base case?
  - o What is the recursive step?method signature: public int factorial(int n)