

# CSCI 161 – Homework 11

Due Friday, May 4<sup>th</sup> @ 11:59PM

- 1). What is recursion? How does a recursive method differ from a standard iterative method?
- 2). What are base cases and recursive cases? Why does a recursive method need to have both?
- 3). Provide a reasonable base case to find the minimum value of an array
- 4). Give a recursive strategy (e.g. in English, not in code) for finding a minimum value of an array.  
**HINT: you will need a start index, an end index, and an array as parameters.**
- 5). Consider the following method:

```
public static void mystery1(int n) {
    if (n <= 1) {
        System.out.print(n);
    } else {
        mystery1 (n / 2);
        System.out.print(", " + n);
    }
}
```

For each of the following calls, indicate the output that is produced by the method:  
mystery1(1);      mystery1(3);      mystery1(17);      mystery1(30);

- 6). What would be the effect if the code for the reverse method were changed to the following?

```
public static void reverse(Scanner input) {
    if (input.hasNextLine()) {
        // recursive case (nonempty file)
        String line = input.nextLine();
        System.out.println(line);      // swapped order
        reverse(input);              // swapped order
    }
}
```

- 7). Convert the following iterative method into a recursive method:

```
// Prints each character of the string reversed twice.
// doubleReverse("hello") prints oolllleehh
public static void doubleReverse(String s) {
    for (int i = s.length() - 1; i >= 0; i--) {
        System.out.print(s.charAt(i));
        System.out.print(s.charAt(i));
    }
}
```