CS 61B Discussion 1 Fall 2016

1 Our First Java Program

Below is our first Java program of the semester. Next to each line, write out what you think the code will do when run.

```
1      String disagree = "no";
2      int x = 7;
3      Singer queen = new Singer("Queen");
4
5      while (x > 0) {
6        x -= 1;
7        queen.sing(disagree);
8      }
9
10     String[] phrases = {"Oh", "mamma mia", "let me go"};
11     System.out.print(phrases[0]);
12     for (int i = 0; i < 3; i += 1) {
13       System.out.print(" " + phrases[1]);
14     }
15     System.out.print(" " + phrases[2]);
```

2 Writing Your First Program

```
       /** fib(N) returns the N^th Fibonacci number, for N ≥ 0.
         * The Fibonacci sequence is 0, 1, 1, 2, 3, 5, 8, 13, 21, ... */
       public static int fib(int N) {     // (use other side for more space)
```

Extra for experts: Complete `fib2` in 5 lines or fewer. Your answer must avoid redundant computation.

```
       public static int fib2(int n, int k, int f0, int f1)
```

3 Mystery

```
1     /** This is a function (a.k.a. method). It takes an array
2      * of integers as an argument, and returns an integer. */
3     public static int mystery(int[] inputArray, int k) {
4         int x = inputArray[k];
5         int answer = k;
6         int index = k + 1;
7         while (index < inputArray.length) {
8             if (inputArray[index] < x) {
9                 x = inputArray[index];
10                answer = index;
11            }
12            index = index + 1;
13        }
14        return answer;
15    }
16
17    /** Extra for experts. This is another function. It takes an
18     * array of integers and returns nothing at all. */
19    public static void mystery2(int[] inputArray) {
20        int index = 0;
21        while (index < inputArray.length) {
22            int targetIndex = mystery(inputArray, index);
23            int temp = inputArray[targetIndex];
24            inputArray[targetIndex] = inputArray[index];
25            inputArray[index] = temp;
26            index = index + 1;
27        }
28    }
```

- What does `mystery` return if `inputArray` is the array 3, 0, 4, 6, 3, and `k` is 2?

- Describe, in English, what `mystery` returns.

- Extra for experts: What does `mystery2` do if `inputArray` is the array 3, 0, 4, 6, 3? Describe, in English, what `mystery2` does to the array.