COS 126	General Computer Science	Spring 2016

Written Exam 1 Solutions

1. **Java basics.**

   (a)

Java expression	*value*
`x`	`111`
`x - 2.0 * y + z`	`0.0`
`x / (z - x - y)`	`ERROR`
`Math.sqrt(x / (x + z))`	`0.0`
`x + "222" + (y + z)`	`"111222555"`
`(x <= y <= z)`	`ERROR`
`!((x <= 2*y) && (y <= 2*x))`	`false`

   (b) `316 452`

2. **Properties of arrays and functions.**

   (a) T F T F T

   (b) F T F F T

3. **Loops and conditionals.**

   (a) `1-0 98-2`

   (b) `A B E F`

4. **Arrays.**

`b[]` `4 0 5 3 6 2 1`

`c[]` `0 1 2 3 4 5 6`

5. **Standard input, standard output, and redirection.**

   (a) 4

   (b) 4443331

   The program reads integers from standard input and identifies maximal sequences of equal values. For each such sequence (except the last), it prints the number of integers in that sequence.

6. **Functions.**

   (a) C N D N E N R

   The statements `C`*,* `D`*, and* `E` *can be permuted in any order.*

```
public static boolean majority(boolean x, boolean y, boolean z) {
    int count = 0;
    if (x) count++;
    if (y) count++;
    if (z) count++;
    return count >= 2;
}
```

   (b) F B G B H B A

   The statements `F`*,* `G`*, and* `H` *can be permuted in any order.*

```
public static boolean majority(boolean x, boolean y, boolean z) {
    if (x && y) return true;
    if (x && z) return true;
    if (y && z) return true;
    return false;
}
```

7. **Recursive graphics.**

   T F F T F

   The ordering of statements that produces the intermediate result is unique: 1 6 2 3 4 5.