CSc 127A: Introduction to Computer Science (Spring 16)

Exam 1 Review

1. For each of the parts below, give a short answer (a few words, perhaps a sentence or two).

   (a) What would happen if you access args[1] in your main() method, and the user provided exactly 1 command line argument?

(b) What is case sensitivity?

   (c) Suppose that you want to increment the variable a by 1. One way to do this is as follows; give two more:

       a++;

(d) Write a single line of Java code which declares an integer variable, and sets it equal to the second argument given on the command line.

(e) Suppose that you have a variable named foo (we won’t tell you its type). Write a single line of Java code which prints out the words “foo is ”, followed by the value of the variable.
(f) The following Java code has a while() loop which is missing its condition. Write a condition (with all of the necessary syntax) so that this code will continue to loop so long as \(0 \leq x \leq 100\).

```java
while
{
    ... // some code here changes the value of x
}
```

2. Explain the difference between =, ==, and the String method .equals(String).

3. Each of the following assignment statements is invalid Java code for some reason. Explain what is wrong with each one.
   (a) int x = 1.5;
   (b) x*x = y;
   (c) String num = 1;
4. The following pseudocode is not valid. Explain what is wrong with it.

```c
if x < y
    print "y is larger"
else
    print "x is larger"
```

5. List all of the possible values of `a` at the end of this snippet of code. Then give one example of values of `x, y, z` such that `a` would be 0 at the end of this snippet of code.

(Remember that ... means “some unknown value.”)

```c
int x = ... ;
int y = ... ;
int z = ... ;

int a = 1;
if (a < x) {
    a++;
}
if (x < y) {
    a *= 3;
} else {
    a += 10;
    if (z == 0) {
        a = 0;
    }
}
```
6. What is printed by the pseudocode below?

   x = 100;
   repeat 5
     print x
     x = x+1

7. Write a snippet of pseudocode which uses nested loops to print out all possible combinations of x and y - where each variable ranges from 0 to 100 (inclusive).

   Print out each line as the x value and y value, separated by a comma, like below:

   0,1
   0,2
   0,3

   The order in which you print the lines **does not matter**. Just make sure that you print out all possible combinations!
8. Write a snippet of Java code which allocates an array of \texttt{int} of size 25 - and then uses a loop to fill this array with the first 25 odd numbers, starting at 1.

Make sure to use legal Java syntax, and declare all of your variables.

\textbf{Hint:} Can you write an algebraic expression for the $i$-th odd number?

9. Write Java code which takes an array of integers as input (see the declaration below). Write a loop over the array; for each element, check to see if its value is even or not. Sum up the even elements, and then print out both the sum of those elements, and also their total value.

Make sure to use legal Java syntax, and declare all of your variables.

\textbf{Example Input:}
1,3,4,4,10

\textbf{Example Output:}
Count of Evens: 3
Sum of Evens: 18

\begin{verbatim}
int[] data = ... ;
\end{verbatim}
10. Suppose that you have a `Scanner` variable, as declared below. Write a loop which will do the following:

- Read each word of the input
- Print out the length of each word (but **not** the word itself)
- Print out the total number of words after the loop ends

Make sure to use legal Java syntax, and declare all of your variables (except for the `Scanner`, which already exists).

```java
Scanner in = ... ;
```

11. Write a complete program which reads a single integer from the command line and prints out the first 100 multiples of that integer, starting at zero.

Make sure to use legal Java syntax, and declare all of your variables.