

# Computer Science 145/148

Midterm 2—Fall 2019

1. Fill in the blanks such that the sequence 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0 is printed.

```
for (___a___; ___b___; ___c___) {  
    System.out.println(i);  
}
```

2. Complete the following truth table. Feel free to write intermediate steps in the blank space.

a	b		!(a && b)
F	F		(a) _____
F	T		(b) _____
T	F		(c) _____
T	T		(d) _____

3. Rewrite the following code to be simpler.

```
if (x < 0) {  
    return true;  
} else if (x <= 100) {  
    return false;  
} else {  
    return true;  
}
```

4. Rewrite the following code to be simpler.

```
if (s.length() % 2 == 0) {  
    return false;  
} else {  
    return true;  
}
```

5. What is the output of the following code?

```
String s = "pul";  
for (int i = 0; i < s.length(); ++i) {  
    System.out.print(s.charAt(i));  
}  
for (int i = 0; i < s.length(); ++i) {  
    System.out.print(s.charAt(s.length() - 1 - i));  
}
```

6. Rewrite the following expression to be simpler.

```
a || (!a && b)
```

7. Enumerate the contents of the array `numbers` after the following code is executed.

```
int[] numbers = new int[5];
numbers[0] = 3;
for (int i = 1; i < numbers.length; ++i) {
    numbers[i] = numbers[i - 1] * 2 + 1;
}
```

8. Rewrite this while loop as a for loop.

```
char c = 'a';
while (c <= 'z') {
    System.out.println(c);
    c++;
}
```

9. Rewrite the following code to be simpler.

```
if (a.length == 0) {
} else {
    System.out.println(a[0]);
}
```

10. Fill in the blank in the following code so it doesn't throw an index out-of-bounds exception.

```
public static boolean firstIsLast(int[] counts) {
    return _____ counts[0] == counts[counts.length - 1];
}
```

11. Declare and initialize a new `ArrayList` named `friends` that holds `Strings`.
12. Write a single statement that initializes an array named `choices` to hold the words *rock*, *paper*, and *scissors*.
13. Write method `addN` to accept three parameters: an `ArrayList` of `String`, an item of type `String`, and a quantity of type `int`. It appends the item to the list the specified number of times.
14. Write method `zeroify` to accept an array of `int`. It alters the array such that any negative element is set to 0.
15. Write method `grid` to accept two parameters: a width and a height, both of type `int`. It prints an alternating pattern of forward and backward slashes of the specified resolution. For example, `grid(7, 4)` produces this output:

```
/\//\
/\//\
/\//\
/\//\
```