

Name _____	ID _____	Final Score _____/15	
		Extra Credit _____/0.5	
Lecture Section (circle one):	TTh 8:00-9:20	TTh 9:30-10:50	TTh 11:00-12:20

**CSCI 201L Written Exam #1**  
**Spring 2018**  
**15% of course grade**

*The exam is one hour and 50 minutes and is closed book, closed note with one 8.5"x11" double-sided paper of **hand-written** notes allowed.*

1. **AJAX** – AJAX sometimes uses a callback function. Explain what a callback function is. When do you need to have a callback function? (**0.5% + 0.5%**)

2. **Front-End vs Back-End** – Explain the difference between front-end code and back-end code by defining each. What languages did we learn in the class that fit into each one? (**0.5% + 0.5%**)

Front-End

Back-End

3. **Garbage Collection** – Java doesn't have pointers available for the programmer, but the JVM obviously has to implement pointer functionality. When the garbage collector runs, what is actually happening? (**1.0%**)

4. **Multi-Threading** – Answer the questions below and on the next page based on the following program.

```
1 public class Question4 {
2     public static void main(String [] args) {
3         System.out.println("Starting main");
4         Thread t1 = null;
5         Thread t2 = null;
6         for (int i=0; i < 5; i++) {
7             if (i != 0) {
8                 t1 = new T4(i, t2);
9             }
10            else {
11                t1 = new T4(i, null);
12            }
13            t1.start();
14            t2 = t1;
15        }
16        System.out.println("Ending main");
17    }
18 }
19 class T4 extends Thread {
20     private int n;
21     private Thread t;
22     T4(int n, Thread t) {
23         this.n = n;
24         this.t = t;
25     }
26     public void run() {
27         System.out.println(n + "-start");
28         try {
29             if (t != null) {
30                 t.join();
31             }
32         } catch (InterruptedException ie) {
33             System.out.println(ie.getMessage());
34         }
35         System.out.println(n + "-end");
36     }
37 }
```

- a. Give two possible outputs. (0.5% + 0.5%)
- |                  |                  |
|------------------|------------------|
| <u>Output #1</u> | <u>Output #2</u> |
|------------------|------------------|



b. Looking at the following output, fill in the table showing the number of the thread with which each thread joined. (0.5%)

```
Starting main
Ending main
1-start
0-start
0-end
1-end
2-start
2-end
4-start
3-start
3-end
4-end
```

Thread	Joined Thread
0	
1	
2	
3	
4	

c. Comment out lines 28-34. Give two outputs that would not have been possible with lines 28-34 uncommented. (0.5% + 0.5%)

Output #1

Output #2

5. **Threads** – Threads do not always need to be concerned with an `InterruptedException`.

a. In what state(s) will a thread be if it needs to worry about handling an `InterruptedException`? (0.5%)

b. How does an `InterruptedException` get thrown? (0.5%)



6. **Polymorphism** – Does the following code compile? If so, what is the output? If not, correct the error(s) so that it does compile. (NOTE: You are not allowed to comment or remove any lines.) (0.5% + 1.0%)

```
1 class A {
2     void m1() {
3         System.out.println("A.m1");
4     }
5     void m2() {
6         System.out.println("A.m2");
7     }
8     void m3() {
9         System.out.println("A.m3");
10    }
11 }
12 abstract class B extends A {
13     void m2() {
14         System.out.println("B.m2");
15     }
16 }
17 class C extends B {
18     void m1() {
19         System.out.println("C.m1");
20     }
21     void m2() {
22         System.out.println("C.m2");
23     }
24     void m3() {
25         super.m3();
26     }
27 }
28 public class Question6 {
29     public static void main(String [] args) {
30         A a1 = new A();
31         A a2 = new C();
32         B b1 = new C();
33         a1.m1();
34         a2.m1();
35         b1.m1();
36         a1.m2();
37         a2.m2();
38         b1.m2();
39         a1.m3();
40         a2.m3();
41         b1.m3();
42     }
43 }
```



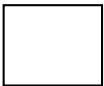
7. **JavaScript** – Write a code snippet to allow JavaScript to modify the content of an HTML tag. You do not need to include the entire HTML page. **(0.5% + 0.5%)**

JavaScript code

```
<html>
  <head>
    <script>
      function foo() {

        }
    </script>
  </head>
  <body>
    <button onclick="foo()" />

  </body>
</html>
```



8. **Software Engineering** – Give two reasons why a project manager would choose to use the waterfall methodology on a project. **(0.5% + 0.5%)**

Reason #1

Reason #2

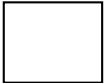


9. **HTML** – HTML forms can be submitted as a GET or a POST. Show an example of the URL after submitting the form for both based on the following form. Assume the user selects the “cardinal” option in the select field. **(0.5% + 0.5%)**

```
<form action="/Validate" method="<GET or POST>">
  <select name="color">
    <option value="cardinal" />
    <option value="gold" />
  </select>
  <input type="text" name="fname" value="donald" />
  <input type="text" name="lname" value="duck" />
  <input type="submit" name="submit" value="Validate" />
</form>
```

**GET URL**

**POST URL**



10. **Networking** – Why do we need both IP addresses and ports? **(0.5%)**



**11. CSS** – CSS can be included in an HTML page in three different locations. Explain the three locations and give a code snippet for each showing the following CSS tag used on an h1 tag. (**0.5% + 0.5% + 0.5%**)

```
font-size: 12pt;
```

Location #1

Code Snippet for Location #1

Location #2

Code Snippet for Location #2

Location #3

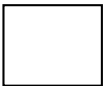
Code Snippet for Location #3



**12. Networking** – Given the following IP address and subnet mask (which are provided in dotted decimal and binary notations), answer the questions below. **(0.25% + 0.25% + 0.25% + 0.25%)**

167.58.201.94 =      1010 0111 . 0011 1010 . 1100 1001 . 0101 1110  
255.255.255.192 =    1111 1111 . 1111 1111 . 1111 1111 . 1100 0000

- a. What is the network address in dotted decimal notation? **(0.25%)**
  
  
  
  
  
  
  
  
  
  
- b. What is the network/subnet address combination in dotted decimal notation? **(0.25%)**
  
  
  
  
  
  
  
  
  
  
- c. How many assignable IP addresses are available on the network? (Do not provide the answer as a power of 2 but instead as a base 10 value.) **(0.25%)**
  
  
  
  
  
  
  
  
  
  
- d. How many assignable IP addresses are available on the subnet? (Do not provide the answer as a power of 2 but instead as a base 10 value.) **(0.25%)**



**13. Networking** – Provide two *temporary* solutions that were developed to deal with running out of IPv4 addresses. (NOTE: IPv6 is not a temporary solution.) Explain your answers. **(0.5% + 0.5%)**

**Solution #1**

**Solution #2**



**Extra Credit Question**

*Extra credit is applied after the curve so does not affect other students.*

**14.** This is the first semester I have required attendance as part of the grade in CSCI 201. Please answer the following questions as I would like some feedback on this new policy. **(0.5%)**

**a.** Because attendance is part of your grade, are you more likely to attend lecture?  
(Circle one)

**Yes**                      **No**

**b.** Do you feel you are learning more from the class because attendance is required or do you think you would learn just as much if it wasn't? (Circle one)

**Learning More**                      **Not Learning More**

Explain your answer.

**c.** Do you have any better solutions for how we can take attendance in class each day rather than using Arkaive (for those of you who come to the 9:30a.m. or 11:00a.m. sections)?