

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

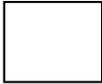
**CSCI 201L Written Exam #1**  
**Fall 2017**  
**15% of course grade**

*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. Exception Handling** – Java, unlike C++, has both checked and unchecked exceptions. Explain why unchecked exceptions in Java do not need to be handled by a corresponding `try` block. **(1.0%)**

- 2. Server-Side vs Client-Side** – Form validation can be done in JavaScript, but it is good coding practice to validate in a back-end language instead (or in addition to). Give one reason why. **(1.0%)**

- 3. Garbage Collection** – Why are we not able to invoke the garbage collector but merely make a request that the garbage collector run sooner? **(1.0%)**



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

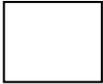
```
1 import java.util.concurrent.*; // to save space
2 public class Question4 extends Thread {
3     private int num;
4     public Question4(int num) {
5         this.num = num;
6         if (num == 1) {
7             this.setPriority(Thread.MAX_PRIORITY);
8         }
9     }
10    public void run() {
11        for (char letter='a'; letter < 'f'; letter++) {
12            System.out.print("" + letter + num + " ");
13            if (letter == 'd') {
14                Thread.yield();
15            }
16            if (letter == 'e') {
17                System.out.println();
18            }
19        }
20    }
21    public static void main(String [] args) {
22        ExecutorService executors = Executors.newCachedThreadPool();
23        for (int i=0; i < 3; i++) {
24            executors.execute(new Question4(i));
25        }
26    }
27 }
```

- a. Give two possible outputs. (0.5% + 0.5%)

Output #1

Output #2

- b. What impact on the output would removing line 7 have? (1.0%)



5. **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%)

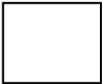
```
1 public class Question4 extends A implements B {
2     public void bar() {
3         System.out.println("bar 2");
4     }
5     public void foo() {
6         System.out.println("foo 2");
7     }
8     public static void main(String [] args) {
9         A a = new Question4();
10        a.bar();
11        a.foo();
12        a = new A();
13        a.bar();
14        a.foo();
15        B b = new Question4();
16        b.bar();
17        b.foo();
18        C c = new A();
19        c.foo();
20    }
21 }
22 class A implements B {
23     public void bar() {
24         System.out.println("bar 1");
25     }
26     public void foo() {
27         System.out.println("foo 1");
28     }
29 }
30 interface B extends C {
31     public void bar();
32 }
33 interface C {
34     public void foo();
35 }
```



**6. Serialization** – We talked about using serialization with file I/O. Give two advantages that serializing an object to a file has over writing code to save all of the member variables of a class to a file. **(0.5% + 0.5%)**

**Reason #1**

**Reason #2**



**7. Software Engineering** – Agile methodologies were developed long after plan-based methodologies. Give two principles that make agile-based methodologies more accepted by programmers. **(0.5% + 0.5%)**

**Reason #1**

**Reason #2**



8. **HTML** – HTML forms can be submitted as a GET or a POST. Explain the difference and show an example of the URL after submitting the form for both based on the following form. (0.5% + 0.5% + 0.5% + 0.5%)

```
<form action="submit.jsp" method="<GET or POST>">
  <input type="text" name="user" value="dtrump" />
  <input type="password" name="pw" value="america" />
  <input type="submit" name="submit" value="Validate" />
</form>
```

### GET Explanation

### GET URL

---

### POST Explanation

### POST URL



9. **JavaScript and AJAX** – The third parameter to the open function on the XMLHttpRequest object is a boolean value representing whether the request will be made synchronously (false) or asynchronously (true). Explain what synchronous and asynchronous calls are. (0.5% + 0.5%)

### Synchronous Call

### Asynchronous Call

**10. AJAX** – Since we are able to submit a form to another page to dynamically load content, why did AJAX come into existence? What additional feature does AJAX provide that we didn't have before? **(1.0%)**

**11. CSS** – Using the `font-family: verdana` CSS attribute, write the CSS code for the following: **(0.5% + 0.5% + 0.5%)**

**The font of the entire page will be Verdana**

**The font of any h1 tag with an id of “verdana” will be Verdana.**

**The font of any h6 tag nested inside of a paragraph tag will be Verdana.**

**12. Servlets and JSPs** – Since every JSP is compiled to a servlet, why do servlets still exist? Give two reasons to use servlets instead of (or in addition to) JSPs. **(0.5% + 0.5%)**

**Reason #1**

**Reason #2**

**Extra Credit Question**

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



**13.** How much experience did you have with each of the following topics **before** starting CSCI 201? Place one “X” in each row. **(0.5%)**

<b>Topics</b>	<b>No Experience</b>	<b>Some Experience</b>	<b>Substantial Experience</b>
<b>Java</b>			
<b>HTML</b>			
<b>CSS</b>			
<b>JavaScript</b>			
<b>AJAX</b>			
<b>JSP</b>			
<b>Servlet</b>			
<b>Multi-Threading</b>			
<b>Network Programming</b>			

For any topic where you didn't have substantial experience, did you feel as if you were at a disadvantage over other students in the class? Explain.