

CSCI 201L Written Exam #1
Spring 2017
10% 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. Inheritance – What is the output of the following code? (0.25% + 0.25% + 0.25% + 0.25%)

```

1  public class Question1 extends Parent {
2      public void foo(int num) {
3          System.out.println("q1 int");
4      }
5      public static void foo(double num) {
6          System.out.println("q1 double");
7      }
8      public static void main(String [] args) {
9          Question1 q1 = new Question1();
10         q1.foo(4);
11         q1.foo(4.4);
12         Parent p = new Question1();
13         p.foo(3);
14         p.foo(3.3);
15     }
16 }
17 class Parent {
18     public void foo(int num) {
19         System.out.println("parent int");
20     }
21     public static void foo(double num) {
22         System.out.println("parent double");
23     }
24 }
  
```



2. **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% + 0.5%)

```
1 public class Question2 extends A implements B, C {
2     public void bar() {
3         System.out.println("Q1");
4         super.bar();
5     }
6     public void foo() {
7         System.out.println("Q2");
8     }
9     public static void main(String [] args) {
10        A a = new Question2();
11        a.bar();
12        a.foo();
13        Question2 q2 = new Question2();
14        q2.bar();
15        q2.foo();
16    }
17 }
18 class A implements B {
19     public void bar() {
20         System.out.println("A1");
21     }
22 }
23 interface B extends C {
24     public void bar();
25 }
26 interface C {
27     public void foo();
28 }
```



3. **Java Basics** – What is the output of the following code? (0.5% + 0.5%)

```
1 public class Question3 {
2     private String str = "";
3     public void foo(String str) {
4         this.str += str + "CS";
5     }
6     public void bar(String str) {
7         this.str += str + "01";
8     }
9     public static void main(String [] args) {
10        Question3 q3 = new Question3();
11        String s = "CS";
12        q3.foo(s);
13        System.out.println(s);
14        s += "2";
15        q3.foo(s);
16        System.out.println(s);
17    }
18 }
19 }
```



4. **Garbage Collection** – When does a memory location become a candidate for garbage collection? (0.5%)

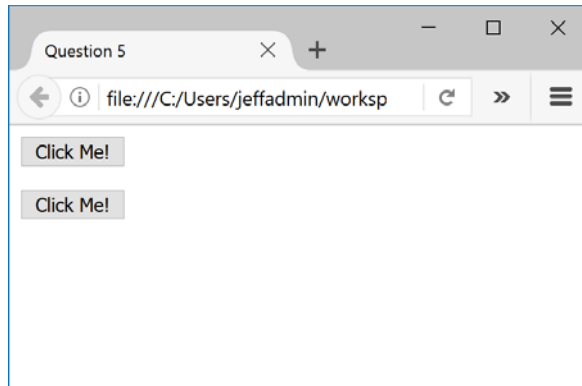


5. **HTML** – What is the difference between the following two lines of code? **(0.5%)**

```
<input type="button" name="mybutton" value="Click Me!" />
```

```
<button type="button" name="mybutton">Click Me!</button>
```

Hint: The visual output is exactly the same, as shown below.

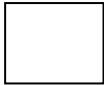




- 6. JavaScript and AJAX** – The third parameter to the open function on the XMLHttpRequest object is a boolean value representing whether the request will be made synchronously (false) or asynchronously (true). Explain what synchronous and asynchronous calls are. **(0.5% + 0.5%)**

Synchronous Call

Asynchronous Call



- 7. Software Engineering** – Give two reasons why managers typically would prefer plan-based methodologies to agile-based methodologies. **(0.5% + 0.5%)**

Reason #1

Reason #2

8. **Multi-Threading** – Look at the code below and then answer the questions that follow.

```
1 public class Question8 {
2     public static void main(String [] args) {
3         int arr[] = new int[5];
4         for (int i=0; i < 5; i++) {
5             arr[i] = i;
6             Q8Thread q8 = new Q8Thread(i, arr);
7         }
8     }
9 }
10 class Q8Thread extends Thread {
11     private int[] arr;
12     private int num;
13     public Q8Thread(int num, int [] arr) {
14         this.arr = arr;
15         this.num = num;
16         start();
17     }
18     public void run() {
19         System.out.print("Thread " + num + ":");
20         for (int i=0; i < num+1; i++) {
21             System.out.print(arr[i]);
22             if (i != num) {
23                 System.out.print(",");
24             }
25         }
26         System.out.println();
27     }
28 }
```

- a. Give two possible outputs to the following code. (NOTE: You cannot provide the output I have provided below as one of the possibilities.) (0.5% + 0.5%)

Possible Output #1

Possible Output #2

- b. Modify the code above (without removing any lines) to make the program always print the following output. (0.5%)

```
Thread 0:0
Thread 1:0,1
Thread 2:0,1,2
Thread 3:0,1,2,3
Thread 4:0,1,2,3,4
```

9. Exception Handling – Why should programmers try to avoid unchecked exceptions instead of just dealing with an exception when it occurs? **(0.5%)**

10. CSS – There are three ways CSS can be added into an HTML document. Using the CSS attribute `background-color:blue`, provide the code to show two of the three ways. **(0.5% + 0.5%)**

First Way

Second Way

11. Servlets and JSPs – Give two reasons why a programmer would choose to use both JSPs and Servlets instead of just using Servlets in a web application. **(0.5% + 0.5%)**

Reason #1

Reason #2

Extra Credit Question

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

12. Before coming into USC, did you have any experience with programming? (0.5% total for answering all of the applicable questions)

_____ Yes
_____ No

If yes, what experience did you have?

_____ Class at another college/university because I am a transfer student
_____ Class at another college/university but I'm not a transfer student
_____ I took the AP Computer Science class in high school
_____ I participated in a camp/crash course
_____ Other (please explain below)

If yes, did you feel as if you were at an advantage in the introductory sequence of programming classes? Please explain.

If no, did you feel as if you were at a disadvantage in the introductory sequence of programming classes? Please explain.