

CS 2420: Introduction to Algorithms and Data Structures

Spring 2015 Proficiency Quiz

This quiz will not count toward your grade. It is designed to evaluate your preparedness for this course. You should be able to complete this quiz in about 30 minutes without the help of any materials (books, internet, etc). If this is not possible then you should be prepared to struggle in this class.

Assume that all questions are specifically in the context of the Java programming language.

What is the output of the following code snippet? If it doesn't compile, or results in an error on execution, say so.

```
double d = 3.14;
int i = (int)d;
System.out.println("d is " + d + " and i is " + i);
```

What is the output of the following code snippet?

```
boolean a = 2 > 3;
boolean b = true;

if(a || b)
    System.out.println("case 1");
else if (true)
    System.out.println("case 2");
else
    System.out.println("case 3");
```

Referring to the previous question, what values of a and b (if any) would cause “case 3” to be printed?

Write a loop that computes the sum of all integers from 1 to 1000 (including 1 and 1000). Store the sum in a variable called sum.

Of the two code snippets below, which prints "Hello world!" more times?

Code snippet A:

```
for(int i = 0; i < 10; i++)
    for(int j = 0; j < 10; j++)
        for(int k = 0; k < 10; k++)
            System.out.println("Hello world!");
```

Code snippet B:

```
for(int i = 0; i < 100; i++)
    System.out.println("Hello world!");
for(int j = 0; j < 100; j++)
    System.out.println("Hello world!");
for(int k = 0; k < 100; k++)
    System.out.println("Hello world!");
```

Suppose you have defined a class called Point, with public int members x and y, refer to the following code:

```
Point p1 = new Point();
p1.x = 3;
p1.y = 5;
Point p2 = p1;

p2.x = -2;
```

After the above code is executed, what is the value of p1.x?

Now assume that the point class from the previous problem defines a method equals which overrides Object's equals method. Explain the difference between the following two expressions:

```
p1.equals(p2)
```

```
p1 == p2
```

Referring to the previous question, if Point did not define an equals method, would the expressions in the previous question cause a compiler error? Briefly explain why or why not.