

CSCI 201.002 Exam 1 SOLUTION Fall 2007

21 September, 2007

Name: The Perfect Student

This is a closed book exam!

Problem 1 (10 points)

Which of the following **ten** are **legal** Java statements or expressions?

<code>if(1>2)&&(4<5) {int x=3;} N.L.</code>	<code>int i != (x < 1); N.L.</code>
<code>'abc' N.L.</code>	<code>int i = (int)'c'; L.</code>
<code>System.out.printf("%d=%d", 5); N.L.</code>	<code>else(1<2) {int x=3;} N.L.</code>
<code>String number = "5"; L.</code>	<code>5.0 % 2 L.</code>
<code>int = 8.0; N.L.</code>	<code>System.out.printf("x=%d", 5); L.</code>

Problem 2 (40 points)

Each of the **twenty** arithmetic expressions written below evaluates to a value whose data type in Java is either `int`, `double`, or `boolean`. State both the value and data type for each.

<i>Expression</i>	<i>Value</i>	<i>Type</i>
<code>3 / 2 + 1 % 2 - 1 * 2</code>	0	int
<code>1 + 4 / 6 == 2</code>	FALSE	boolean
<code>1.0 / 2.0 / 3.0</code>	0.166	double
<code>'a' < 'b'</code>	TRUE	boolean
<code>true && !false</code>	TRUE	boolean
<code>true false</code>	TRUE	boolean
<code>8 != 9 && 5 + 6 < 7 true</code>	TRUE	boolean
<code>2 + 1 / 2</code>	2	int
<code>2 + 1 / 2.0</code>	2.5	double
<code>(double)(1 / 2 + 4 / 5)</code>	0.0	double
<code>(!true false) && true</code>	FALSE	boolean
<code>4 + 0.0 / 8</code>	4.0	double
<code>(4 + 0.0) * 5</code>	20.0	double
<code>0 % 5</code>	0	int
<code>1 % 2 % 3</code>	1	int

Problem 3 (20 points)

Indicate the output produce by each segment of code below:

<pre>int day = 3; if (day <=1) System.out.println("Monday"); else if (day <=2) System.out.println("Tuesday"); else if (day <=3) System.out.println("Wednesday"); else if (day <=4) System.out.println("Thursday"); else if (day <=5) System.out.println("Friday"); else System.out.println("THE WEEKEND!");</pre> <p>Wednesday</p>	<pre>int day = 3; if (day <=1) System.out.println("Monday"); if (day <=2) System.out.println("Tuesday"); if (day <=3) System.out.println("Wednesday"); if (day <=4) System.out.println("Thursday"); if (day <=5) System.out.println("Friday"); else System.out.println("THE WEEKEND!");</pre> <p>Wednesday Thursday Friday</p>
<pre>int x = 7; int y = 8; int z = 9; if (x > 9) { if (y > 8) System.out.println("x>9 and y>8"); else if (z >= 7) System.out.println("x<=9 and z>=7"); else System.out.println("x<=9 and z<7"); }</pre> <p>NOTHING IS OUTPUT</p>	<pre>int x = 7; int y = 8; int z = 9; if (x > 9) { if (y > 8) System.out.println("x>9 and y>8"); } else if (z >= 7) System.out.println("x<=9 and z>=7"); else System.out.println("x<=9 and z<7");</pre> <p>x<=9 and z>=7</p>

Problem 4 (30 points)

Write a segment of code that prints the **absolute value of a number** to the monitor. Assume that the user has already entered the number and that it is stored in a variable named *number*. Sample output from your code segment should look as shown below (values entered by the user are shown in *italic*).

```
enter an integer number: 4
the absolute value of 4 is: 4

enter an integer number: -4
the absolute value of -4 is: 4
```

AN EXAMPLE SOLUTION (THERE ARE MANY POSSIBLE CORRECT SOLUTIONS):

```
if(number <= 0) {  
    System.out.println("the absolute value of "  
        + number + " is " + (-1 * number));  
}  
else {  
    System.out.println("the absolute value of "  
        + number + " is " + number);  
}
```