

Some CSCI 201.002 Exam 1 Fall 2008 Answers

6 October, 2008

Problem 1 (40 points)

In the table below there are twenty expressions in the leftmost column. The value of each of these expressions is either an `int`, `double`, or `String`. In the rightmost column, write the value of each expression. You should write your value in a *simple form* that *clearly indicates its type*. For example, `6.0`, rather than `6` or `2.0*3.0`, is an appropriate value for the expression `2.0*3.0/1.0`, and `"ab"`, rather than `ab` (without the quotes), is an appropriate value for the expression `"a" + "b"`. If you are a bit unsure about your answer and seek partial credit, you may want to include an explanation of your reasoning along with your value.

If you think you need to use a calculator to solve this problem, you are doing something wrong.

<i>Expression</i>	<i>Value</i>
<code>4 / 3 * 1.0</code>	1.0
<code>3 + 4 + "CSCI"</code>	"7CSCI"
<code>12.0/6.0/2.0</code>	1.0
<code>0 - 0.0</code>	0.0
<code>1995/2008</code>	0
<code>(1 + 2) * 3</code>	9
<code>10 / 2 * 10</code>	50
<code>3 + "CSCI" + 4</code>	"3CSCI4"
<code>(2.0 - 2.0)*2</code>	0.0
<code>(double)3/2</code>	1.5
<code>(double)(3/2)</code>	1.0
<code>1e3 / 1000</code>	1.0
<code>3 + 0.0 / 5</code>	3.0
<code>(3 + 0.0) * 5</code>	15.0
<code>8 % 10</code>	8
<code>"abc" + "xyz"</code>	"abcxyz"
<code>3 + "a" + 4.5</code>	3a4.5
<code>-3 * -2</code>	6
<code>(int) 5.99999 + 0.1</code>	5.1
<code>"\$" + 4</code>	"\$4"

Problem 2 (6 points)

Write a Java declaration that would be appropriate for storing the day of the month as a number. Call this variable `dayOfMonth`. Initialize the variable to 6.

```
int dayOfMonth = 6 ;
```

Write a Java declaration that would be appropriate for storing the day of the week as a string. Call this variable `dayOfWeek`. Initialize the variable to "Monday".

```
String dayOfWeek = "Monday" ;
```

Problem 3 (15 points)

In the sequence of Java code shown below, `World`, `Turtle`, and `Picture` objects called `qzWorld`, `qzTurtle`, and `qzPicture` are created

```
World  qzWorld    = new World() ;
Turtle qzTurtle   = new Turtle(qzWorld) ;
Picture qzPicture = new Picture("Pisgah.jpg") ;
```

In the following table are some method descriptions taken from the documentation of the `World`, `Turtle`, and `Picture` classes.

From the `World` class

int	<code>getWidth()</code> Method to get the width in pixels
Turtle	<code>getLastTurtle()</code> Method to get the last turtle in this world

From the `Turtle` class

void	<code>moveTo(int x, int y)</code> Method to move to [sic] turtle to the given x and y locations
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From the `Picture` class

int	<code>getWidth()</code> Method to get the width of the picture in pixels
static void	<code>setMediaPath(String directory)</code> Method to set the media path by setting the directory to use

Write five different Java statements where each of the five methods described above is invoked (called) at least once.

```
qzWorld.getWidth() ;
qzWorld.getLastTurtle() ;
qzTurtle.moveTo(100, 100) ;
qzPicture.getWidth() ;
Picture.setMediaPath("/some/directory/name") ;
```

Problem 4 (12 points)

Write lines of Java to *create and initialize* a one-dimensional array corresponding to the following table. Be sure the array will hold the values shown in the table.

3.3	5.5	7.7
-----	-----	-----

```
double[] p4Array ;
p4Array = new double[3] ;
p4Array[0] = 3.3 ;
p4Array[1] = 5.5 ;
p4Array[2] = 7.7 ;
```

or

```
double[] p4Array = { 3.3, 5.5, 7.7 } ;
```

Problem 5 (12 points)

Write lines of Java needed to *create* a two-dimensional array *appropriate for holding* the following table. **Don't write the code to actually fill in the array.** That would be boring.

34586786	9734579	341234
1	42	-333234

```
int[][] p5Array ;
p5Array = new[2][] ;
p5Array[0] = new int[3] ;
p5Array[1] = new int[3] ;
```

or, if you viewed the table in the other direction,

```
int[][] p5Array ;
p5Array = new[3][] ;
p5Array[0] = new int[2] ;
p5Array[1] = new int[2] ;
p5Array[3] = new int[2] ;
```

Problem 6 (16 points)

Suppose `population` is an array of integers. What is the Java expression that gives you the number of elements in `population`?

```
population.length
```

Finally, write a little Java loop that doubles each element stored in `population`?

```
for (int i = 0; i < population.length ; ++i)
{
    population[i] = 2 * population[i] ;
}
```