

Answers

CSCI 201.002 Exam 2 Fall 2008

16 November, 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`, `boolean`, 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>5 < 4 4 < 3</code>	false
<code>5 < 4 && 4 < 3</code>	false
<code>5 < 4 == 4 < 3</code>	true
<code>0 * (10.0/5.0)</code>	0.0
<code>201/255</code>	0
<code>"be " + (5<6)</code>	"be true"
<code>"CSCI" + 3 + 4</code>	"CSCI34"
<code>3 + "CSCI" + 4</code>	"3CSCI4"
<code>(int) 5.5 <= 5.5</code>	true
<code>(double) 3/2</code>	1.5
<code>(double) (3/2)</code>	1.0
<code>1e4 / 1000</code>	10.0
<code>3 + 0.0 < 5</code>	true
<code>5 < 6.0</code>	true
<code>8 % 10</code>	8
<code>"abc" + "xyz"</code>	"abcxyz"
<code>! 5.0 > 4</code>	false
<code>-3 * -2</code>	6
<code>(int) 5.9 + 0.2</code>	5.2
<code>"_" + 201</code>	"_201"

Problem 2 (15 points)

In the sequence of Java code shown below, Picture, Pixel, and Sound objects called qzPicture, qzPixel, and qzSound are created

```
Picture qzPicture = new Picture("Pisgah.jpg") ;  
Pixel   qzPixel   = new Pixel(qzPicture, 201, 201) ;  
Sound   qzSound   = new Sound("Braes.wav") ;
```

In the following table are some method descriptions taken from the documentation of the Picture, Pixel, and Sound classes.

From the Picture class

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

From the Pixel class

void	setGreen(inv value) Method to set the green to a new green value
------	---

From the Sound class

static void	convert(String mp3File, String wavFile) Method to convert an mp3 sound into a wav found
boolean	isStereo() Method to check is sound is stereo or not

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

```
int t = qzPicture.getWidth() ;  
Picture.setMediaPath("/opt/csci/Pictures") ;  
qzPixel.setGreen(201) ;  
Sound.convert("braes.mp3", "braes.wav") ;  
boolean b = qzSound.isStereo() ;
```

Problem 3 (7 points)

In the spirit of the **Using the Math class** lab, complete the method `plotQuiz` shown below so that it returns $x^2 + x + 1$.

```
static double plotQuiz(double x) {  
    return x*x + x + 1 ;  
}
```

Problem 4 (9 points)

In the spirit of the **Array operations** lab, complete the method `operQuiz` shown below so that it returns the result of adding all the **positive** elements of the array `v`.

```
static int operQuiz(int v[]) {  
    int sum = 0 ;  
    for (int x : v) {  
        if (x>0) {  
            sum = sum + x ;  
        }  
    }  
    return sum ;  
}
```

Problem 5 (9 points)

Continuing in the spirit of the **Array operations** lab, complete the method `modQuiz` shown below so that it adds 100 to each element of the integer array `v`.

```
static void modQuiz(int v[]) {  
    for (int i=0; i<v.length; ++i) {  
        v[i] = v[i] + 100 ;  
    }  
}
```

Problem 6 (9 points)

Suppose `v` is an array of Java doubles declared as below:

```
double[] v ;
```

Write a few lines of Java code that will set an integer variable `cmpResult` as follows:

- `cmpResult` is set to -1, if `v` has zero elements;
- `cmpResult` is set to 0, if the first element of `v` is less than the last element of `v`; and
- `cmpResult` is set to 1, otherwise.

```
int cmpResult ;           // declaration
if (v.length == 0) {
    cmpResult = -1 ;
} else if (v[0] < v[v.length-1]) {
    cmpResult = 0 ;
} else {
    cmpResult = 1 ;
}
```

Problem 7 (11 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[][] prob7Array ;
prob7Array = new int[2][] ;
for (int i=0; i<prob7Array.length; ++i) {
    prob7Array[i] = new int[3] ;
}
```