# Lab 2: Chapter 2, “Data and Expressions” SOLUTION

The solutions for all Lab 2 questions are listed below. The following exercises are intended to help you apply and practice the concepts introduced in this module. This work is **not** submitted for marks.

Answer the questions based on reading the code. Then insert the statements in a Java program to see the actual result. For items 4 to 6 you will also need to print the value with a System.out.println statement.

1. What output is produced by the following code fragment? Explain.

System.out.print ("Here we go!");  
System.out.println ("12345");  
System.out.print ("Test this if you are not sure.");  
System.out.print ("Another.");  
System.out.println ();  
System.out.println ("All done.");

**SOLUTION**

Actual output is:

Here we go!12345  
Test this if you are not sure.Another.  
All done.

Recall that a new line is only done after the text of a println is printed. The successive outputs on the same line are also jammed together. If you want spaces between, you have to manually insert them inside the quotes.

1. What is wrong with the following program statement? How can it be fixed?

System.out.println ("To be or not to be, that is the  
question.");

**SOLUTION**

The string literally spans two lines and is not allowed by most compilers.  
You could put it all on one line, like:

System.out.println (“To be or not to be, that is the question.”);

Or close the string and concatenate the next line, like:

System.out.println (“To be or not to be, that is the ” +  
“question.”);

1. What output is produced by the following program statement? Explain.

System.out.println (“50 plus 25 is ” + 50 + 25);

**SOLUTION**

The output is 50 plus 25 is 5025

The + is evaluated left to right, and so is taken as string concatenation.

If you wanted 50 plus 25 is 75 you would have to use parentheses to have the numeric addition done first:

System.out.println (“50 plus 25 is ” + (50 + 25));

1. What value is contained in the integer variable size after the following statements are executed?

size = 18;  
size = size + 12;  
size = size \* 2;  
size = size / 4;

**SOLUTION**

size = 18; // 18  
size = size + 12; // 30 i.e. 18 + 12   
size = size \* 2; // 60 i.e. 30 \* 2  
size = size / 4; // 15 i.e. 60 / 4

1. What value is contained in the floating point variable depth after the following statements are executed?

depth = 2.4;  
depth = 20 - depth \* 4;  
depth = depth / 5;

**SOLUTION**

depth = 2.4; // 2.4  
depth = 20 - depth \* 4; // 10.4 i.e. 20 – 9.6  
depth = depth / 5; // 2.08 i.e. 10.4 / 5

1. What value is contained in the integer variable length after the following statements are executed?

length = 5;  
length \*= 2;  
length \*= length;  
length /= 100;

**SOLUTION**

length = 5; // 5  
length \*= 2; // 10 i.e. 5 \* 2  
length \*= length; // 100 i.e. 10 \* 10  
length /= 100; // 1 i.e. 100 / 100

1. Write four different program statements that increment the value of an integer variable total.

**SOLUTION**

total = total + 1;  
total += 1;  
total++;  
++total;