

## **Exercise 2: Literal Strings, Concatenation, Control Characters**

1. For the first part of this exercise, write the following segments of code in Java and answer the following questions.

### **Example 1:**

```
public static void main(String[] args)
{
    System.out.println("2");
}
```

### **Example 2:**

```
public static void main(String[] args)
{
    System.out.println("two");
}
```

**What do you think is the difference is between Example 1 and Example 2.**  
**The difference between Example 1 and Example 2 is that example 1 is written in number form whereas in example 2 the number is written in letter form.**

\*\*\*\*\*

2. Enter the following segments of code in Java to observe any differences, if any.

```
System.out.print ("12" + "34");
System.out.println (12+34);
```

### **What is the difference between the two lines of code?**

The difference in the two lines of code is that the first course is simply being output as 1234 as they are in quotations therefore the + sign simply joins the two numerical values together whereas the second line of code does not include a quotation and is adding the two values therefore they add up to 36.

3. Enter the following segments of code in Java to observe any differences, if any.

```
System.out.print ("abc" + "def");
System.out.println ();
System.out.print ("abc");
System.out.print ("def");
```

**Notice that the two sets of output are the same? The first method, using the "+" operator to join two string literals together is called concatenation. It is a very common way to join two or more strings**

together.

4. Write a program (using concatenation) that produces an output that looks like the following screenshot:

```
PETE'S CLOTHIER
*****

Date:      November 5
Name:      Jane Doe
Phone #:   555-9990

QTY        ITEM          $PRICE$

1          pants         $4.25
2          t-shirt       $4.00
          TOTAL          $12.25
```

```
System.out.println("PETE'S CLOTHIER");
System.out.println("*****\n");
System.out.println("Date:\tNovember 5");
System.out.println("Name:\tJane Doe");
System.out.println("Phone #: 555-9990\n");
System.out.println("QTY\tITEM\t\t$PRICE$\n");
System.out.println("1\tpants\t\t\t$4.25");
System.out.println("2\t\tt-shirts\t\t$4.00");
System.out.print("\tTOTAL\t\t\t$12.25");
```

It would be easy to print each line using a single `println()` statement, but for this assignment you must print each word or each series of spaces within its own set of quotes. For example, the first line would be produced with the following statement: `System.out.println(" " + "PETE'S" + " " + "CLOTHIER");`

- a. Math - Modify the subtotals and the grand total so they are performing the relevant math. That is, let the program do the calculations for you.

```
System.out.println("PETE'S CLOTHIER");
System.out.println("*****\n");
System.out.println("Date:\tNovember 5");
System.out.println("Name:\tJane Doe");
System.out.println("Phone #: 555-9990\n");
System.out.println("QTY\tITEM\t\t$PRICE$\n");
System.out.println("1\tpants\t\t\t$"+(4.25*1));
System.out.println("2\t\tt-shirts\t\t$"+(4.00*2));
System.out.print("\tTOTAL\t\t\t$"+(4.25*1+4.00*2));
```

5. Control characters (/n/t) - Write a program that produces an output similar to the following output. The output does not have to look exactly the same; just try to line up the columns using tabs. Do not use "System.out.println()" in your program, only "System.out.print()".

```

A           B
C           D
System.out.print("A\t"+"B\n");
System.out.print("C\t\t"+"D");

```

6. Write a program to create the following output to the console window without using the tab or newline character. Also use the "System.out.println" method rather than the "System.out.print" method.

```

Hello           World           Hello           Hello
           World           Hello           World
World
System.out.println("Hello           World           Hello           World");
System.out.println("           World           Hello           World");
System.out.println("World           Hello           World");

```

7. Write a program to output the above to the console window using the tab and newline character. In this case use the "System.out.print" method rather than the "System.out.println" method.

```

System.out.print("Hello\t\tWorld\t\tHello");
System.out.print("\tWorld\t\tHello");
System.out.print("World\t\tHello\t\tWorld");

```

8. Control characters – Write a program that uses [control characters](#) and the suitable [mathematical operators](#) to produce a neatly formatted times table from 2 x 1 to 2 x 6 similar to the following diagram. Minimize the use of characters in literal strings.

```

2      x      1      =      2
2      x      2      =      4
2      x      3      =      6
2      x      4      =      8
2      x      5      =     10
2      x      6      =     12
System.out.println ("2\tx\t1\t=\t2");
System.out.println("2\tx\t2\t=\t4");
System.out.println("2\tx\t3\t=\t6");
System.out.println("2\tx\t4\t=\t8");
System.out.println("2\tx\t5\t=\t10");
System.out.println("2\tx\t6\t=\t12");

```

```
System.out.println("2\tx\t6\t=\t12");
```