Chapter 2

1. What is the difference between print / println
2. What are String Literals
3. What are the Escape Characters for backslash, double quotataions, new line

Identifier

- Words used when writing a program (Identifiers)
    - Class Name
    - Variables
    - Reserved words that java uses: these start with a lower case (page 28 for list)

    - **Identifier Rules:**
        - Start with either an _ or a letter. Java prefers letter
        - Can only contain letters, numbers, _ or $
        - Must be one word
        - Class Names start with a capital letter, variables for primitive data types and objects lower case.

What is the difference between print and println

print

- System.out.print will print the following statement on the same line.

```
System.out.print(“Three…. “);
System.out.println(“Four…. “);
System.out.println(“Go……”);
```

```
 print:      Three…. Four….
              Go…….
```

println

System.out.println will move to a new line to print the next statement.

```
System.out.println(“Three… “);
System.out.println(“Four…. “);
```

```
Print:    Three…
           Four….
           Go……
```

String

- A **String** is a group of characters (words)
  - **String Literal is a group of characters (words) strung together**:
  - string of characters inside quotation marks.
    - System.out.println(“This is a String Literal”);

Concatenation

- Join together
- String concatenation is joining one String to another.

(“This is a String “ + “ joined to this one.”);

This is a String joined to this one.

(You must leave a space so the words will have a space between them.

Open Concatenation program

Seven Rules for String concatenation

1. The Strings being added are called operands.
2. Strings are read from left to right by the compiler.

String concatenation

3. If both operands are Strings, the result is a String.

Example: (“This is a String “ + “ joined to this one.”);

4. If the first operand is a String and the second or third is a number, all will be considered a string. The numbers will be treated as a String not a number.

Example: (“This is a String “ + 2 + 5);
Print: This is a String 25

String concatenation

5. If the first operand is a number and the second is a String the first operand will be a number and the second is a String.

Numbers only become Strings if they come after a String.

Example: (2 + 5 + “ is 2 + 5”);

print: 7 is 2 + 5.

Reverse it: (“Is 2 + 5 “ + 2 + 5);

print: Is 2 + 5 25

String Concatenation

6. If both are numerals it will use the + sign as addition and add

Example: System.out.print(2 + 2);

print 4

7. If there are parentheses around the numbers, it will perform it first even if it is last.

Example: (“Does 2 + 2 = “ + (2 + 2));

print: Does 2 + 2 = 4

Escape Sequences

- Page 60
- Java has several escape sequences to represent special characters so they can be printed.

\n newline   (“First line \n second line”)

\” double quote \”Hello\”   “Hello”

\\ will print backslash   \\   \

\t   tab   (“First column \t Second column”)

\’   single quotation   \’Hello\’   ‘Hello’

Programs

- Open the following programs to observe

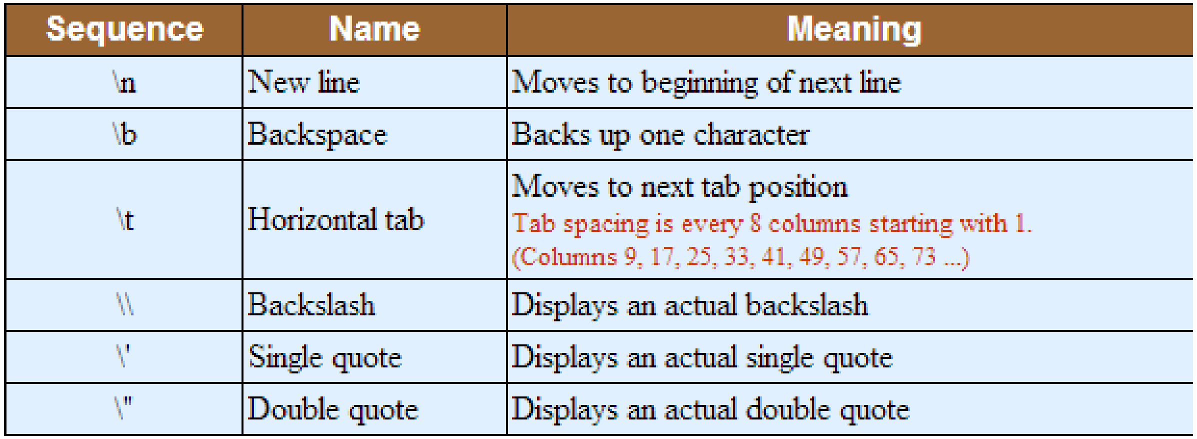
- CountDown.java
- Escape.java
- Concatenation.java

```
//  Demonstrates the difference between print and println.
//********************************************************************

public class Countdown
{
   //-----------------------------------------------------------------
   //  Prints two lines of output representing a rocket countdown.
   //-----------------------------------------------------------------
   public static void main (String[] args)
   {
      System.out.print ("Three... ");
      System.out.print ("Two... ");
      System.out.print ("One... ");
      System.out.print ("Zero... ");

      System.out.println ("Liftoff!"); // appears on first output line
      System.out.println ("Houston, we have a problem.");
   }
}
```

escape characters



Sequence	Name	Meaning
\n	New line	Moves to beginning of next line
\b	Backspace	Backs up one character
\t	Horizontal tab	Moves to next tab position Tab spacing is every 8 columns starting with 1. (Columns 9, 17, 25, 33, 41, 49, 57, 65, 73 ...)
\\	Backslash	Displays an actual backslash
\'	Single quote	Displays an actual single quote
\"	Double quote	Displays an actual double quote

```
public class Escape
{

  public static void main(String[]args)
  {

    System.out.println("A slash n \n is used to go to a new line\n");
    System.out.println("A slash quotation mark \"will\" print a double quote");
    System.out.println("double slash \\ will print one backslash.");
    System.out.println("A slash t \t will tab.");
    System.out.println("A slash one quotation \'will\' produce single quote.");
  }
}
```