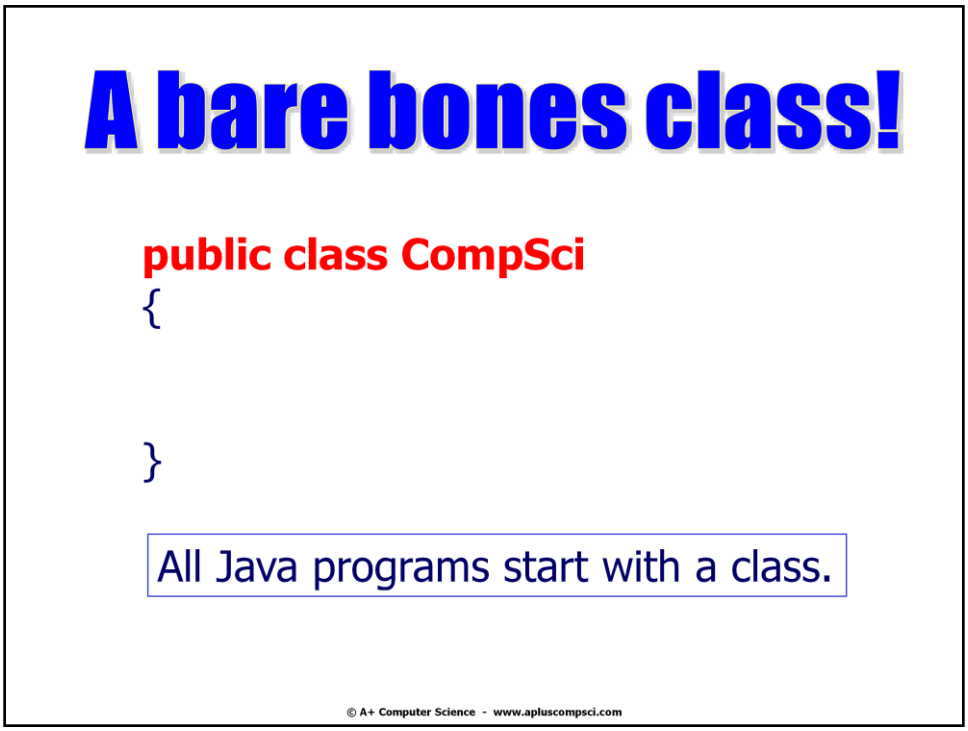
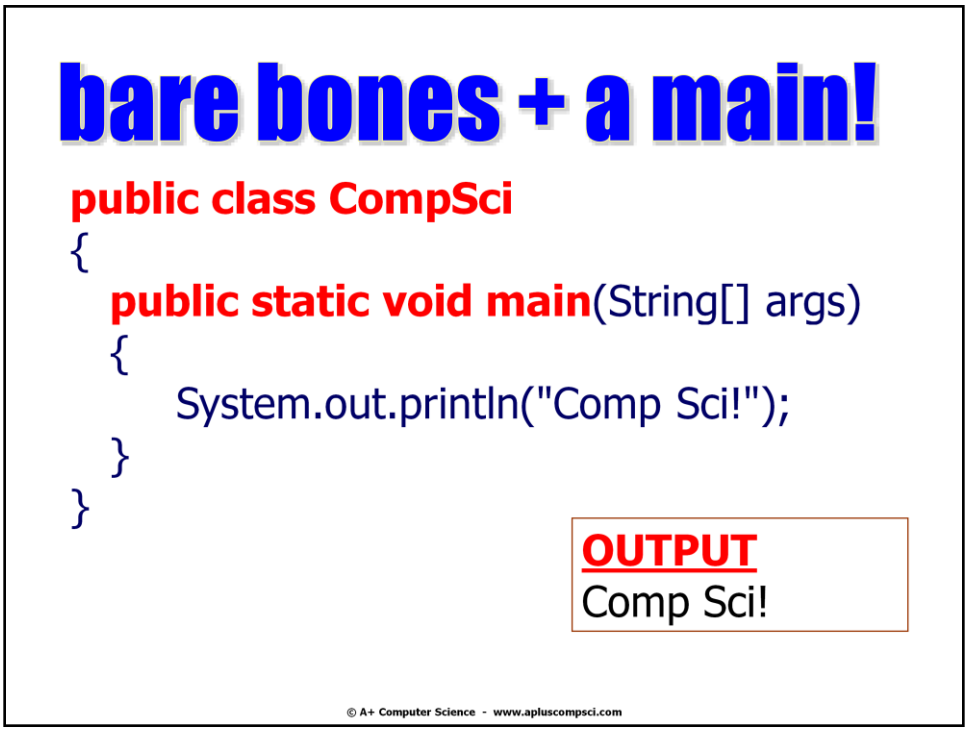
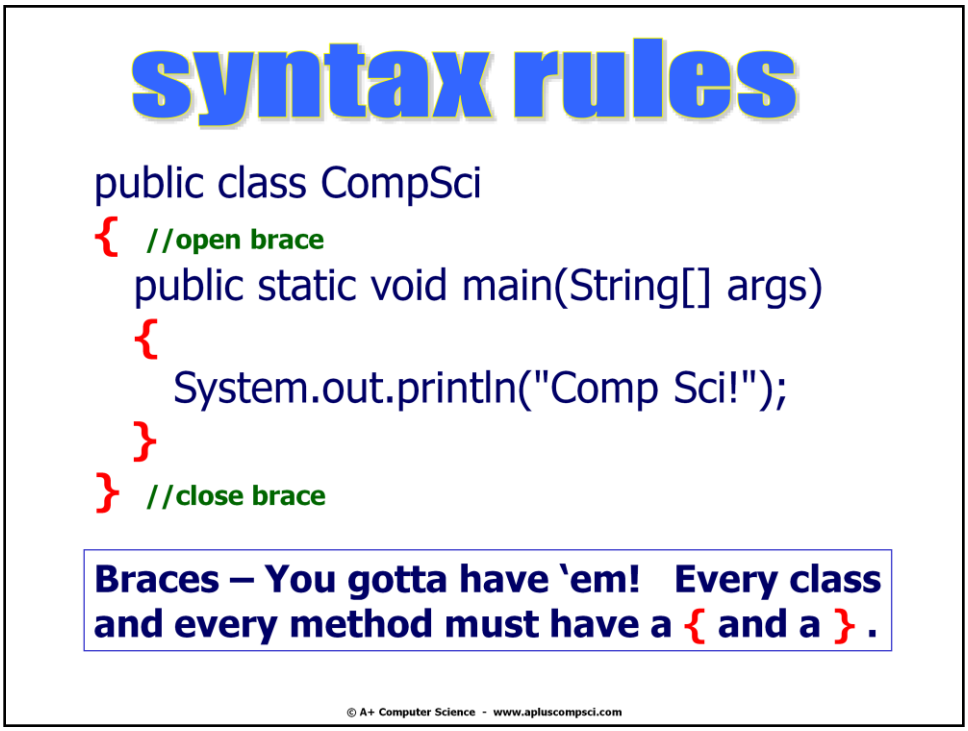
Java Syntax and Output



This is a very simple Java class. The name of the class is `CompSci`. All Java programs start with a class. Pieces are added to the class to make a complete program.

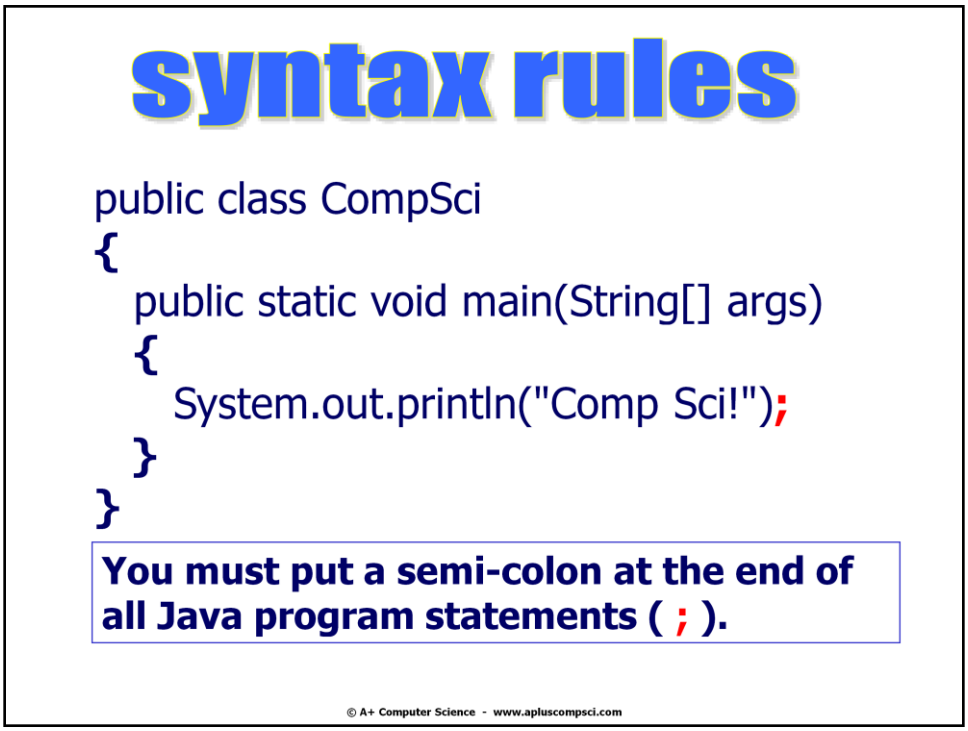


This `CompSci` class is a bit more sophisticated than the previous one. This `CompSci` class has a single method named main. The main method is typically used to test the class in which it is contained. For this particular example, the main method contains a statement that prints out `Comp Sci!`



Java requires that all classes and methods have an open brace { and a close brace }. Braces come in pairs; thus, every open { brace must have a matching close } brace. Braces are used to indicate the beginning of a code block and the ending of a code block.

Program statements are placed inside of the code blocks starting after the open brace and ending before the close brace.



In Java, all program statements are terminated with a semi-colon ; .

`System.out.println()` is a program statement and must be terminated with a ; .

`public class CompSci` is a class declaration not a program statement; as a result, there is no terminating ; .

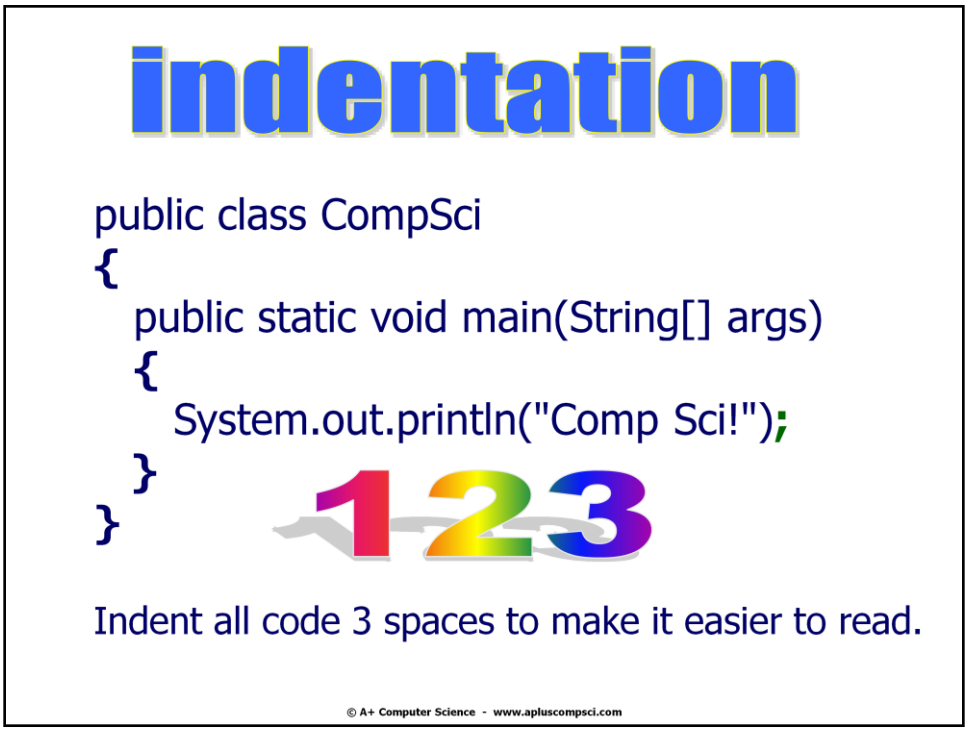
{ and ; rule

Never put a ;
before an open { brace

;{ //illegal
}; //legal

The rule above simply states that you should never place a semi-colon before an open brace { .

Following this rule will cut down on syntax errors.



Indentation and spacing is not required. Java will allow entire programs to be written on a single line, but this style is strongly discouraged.

Indenting code statements 3 spaces is a good style to indicate that the statements are inside of a particular block of code.

`System.out.println()` is inside of method main; thus, it is indented 3 spaces to make this visibly clear. The `main` method is inside of class `CompSci` which is why it is indented 3 spaces.

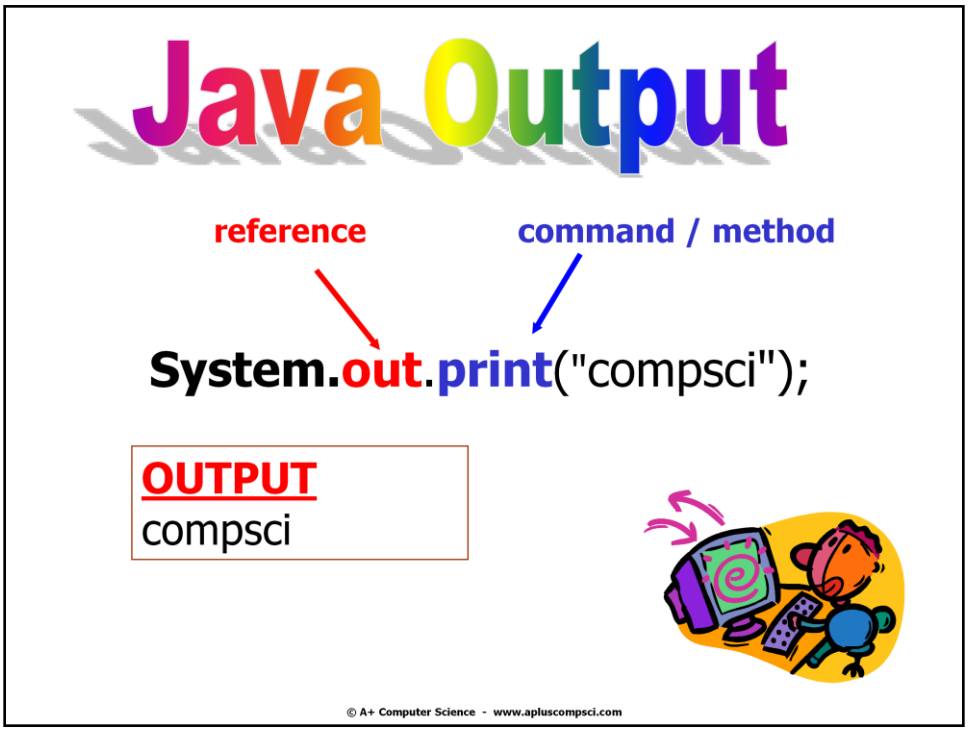
Open compsci.java

Java Output

System.out
frequently used methods

Name	Use
print(x)	print x and stay on the current line
println(x)	print x and move to next line down
printf(s,x)	print x according to s specifications

The chart above lists the most commonly used `System.out` methods. This chart is a great reference when preparing for quizzes and tests and when working on lab assignments.



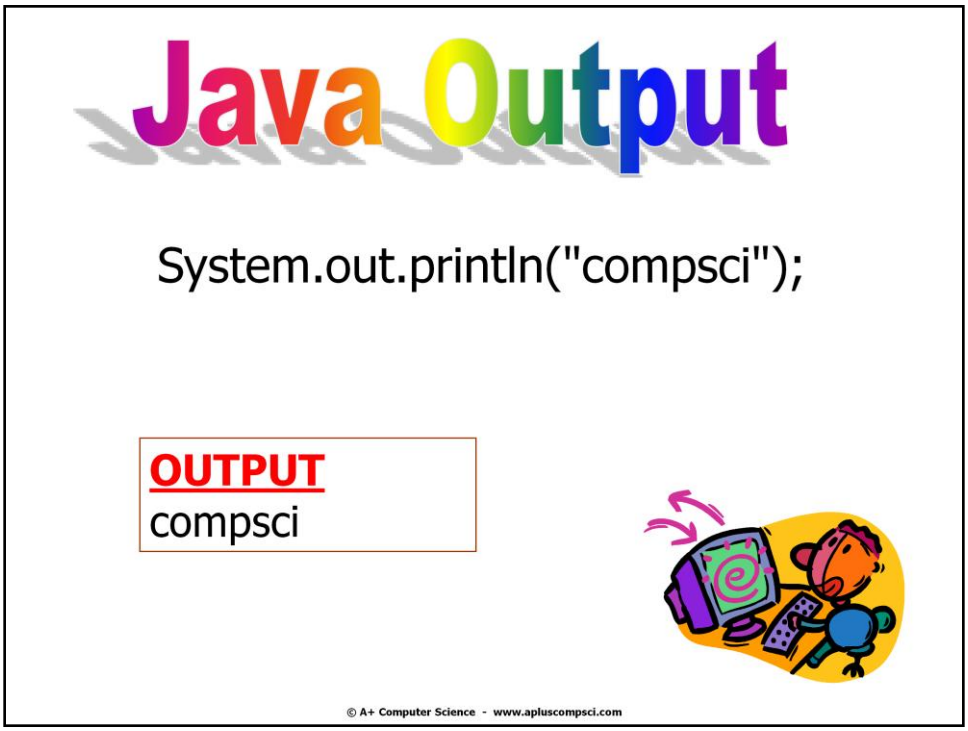
`System` is a class that contains a reference named out. `out` is a static reference to a `PrintStream`. `out` can be used via methods `print`, `println`, and `printf` to display values on the console window.

Java Output

```
System.out.print("compsci");
System.out.print("compsci");
```

OUTPUT
compscicompsci

`print` is a method used to print values on the console window. `print` will print a value and remain on the same line as the value printed.



`println` is a method used to print values on the console window. `println` will print a value on the current output line and then move down to the next line.

Java Output

```
System.out.println("compsci");
System.out.println("compsci");
```

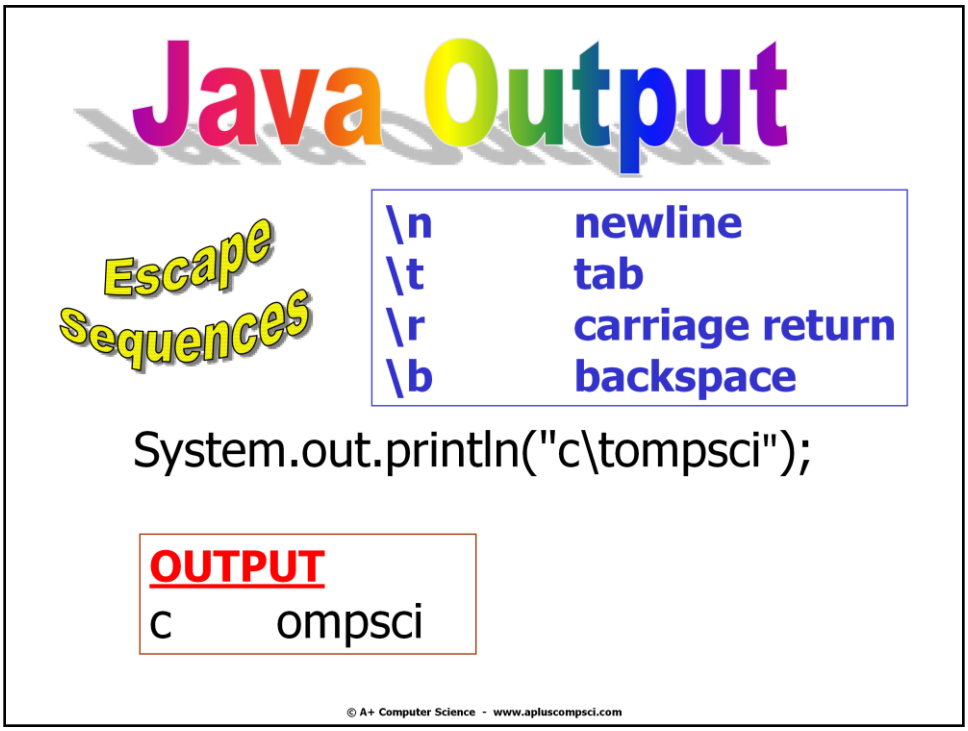
OUTPUT

```
compsci
compsci
```

`println` is a method used to print values on the console window. `println` will print a value on the current output line and then move down to the next line.

This examples shows that `compsci` is printed on the first line and then `compsci` is printed on the second line. This output occurs because both output commands use `println`.

Open one.java



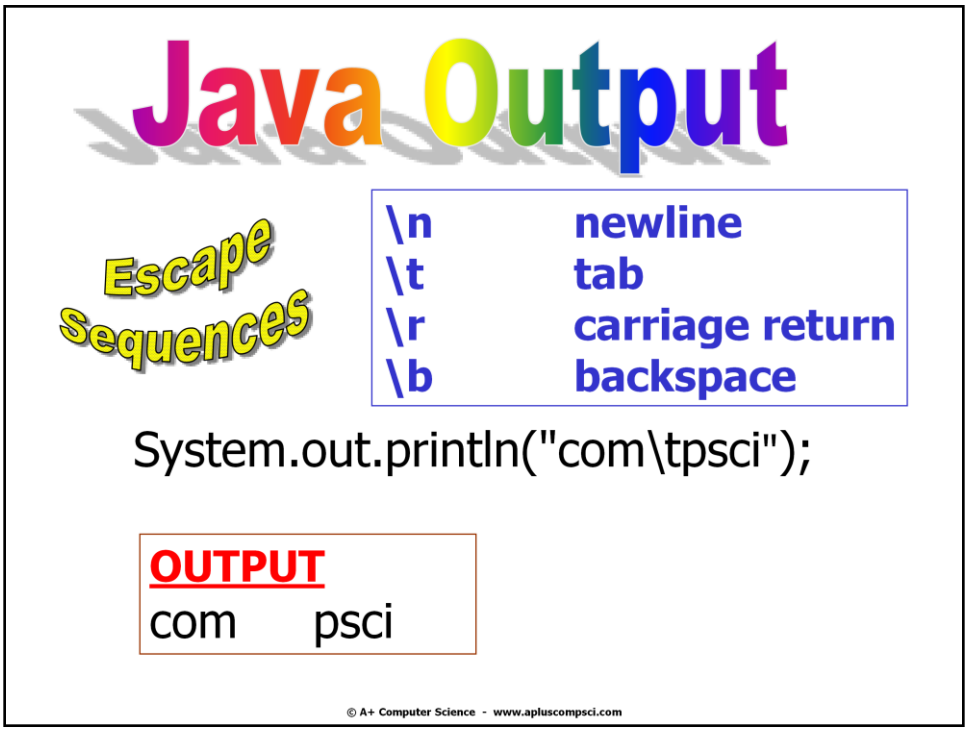
`\n, \t, \r, and \b` are common escape sequences used with `print, println,` and `printf.`

`\t` is used to tab over five spaces.

`\n` is used to move the cursor down to the next line.

`\r` is used to move the cursor to the beginning of the current output line.

`\b` is used to backspace one place on the current line.



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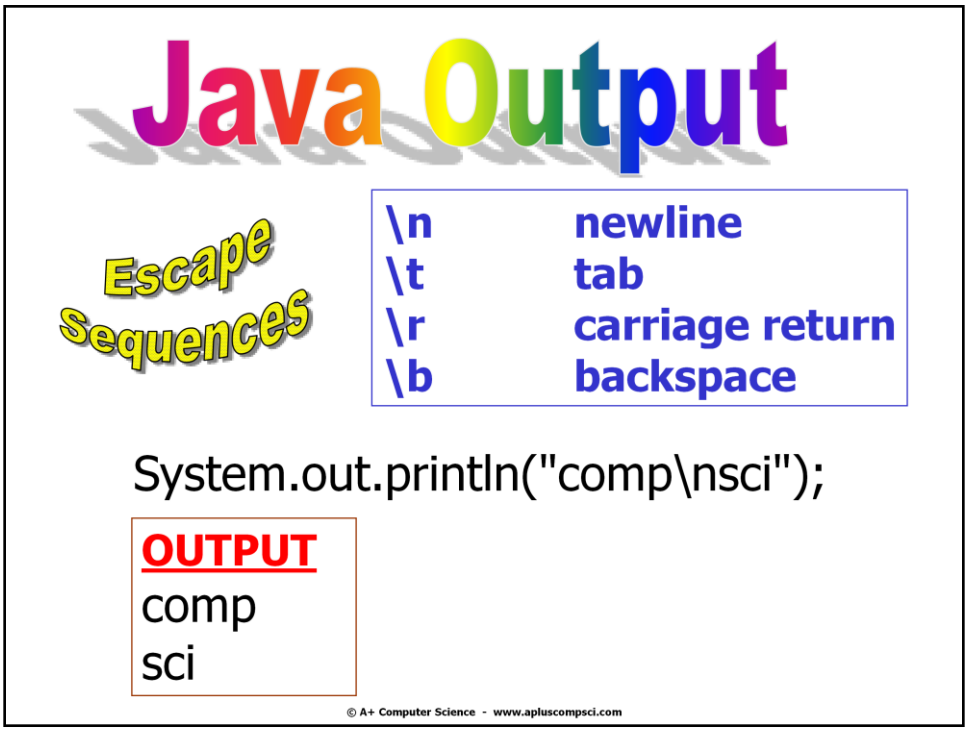

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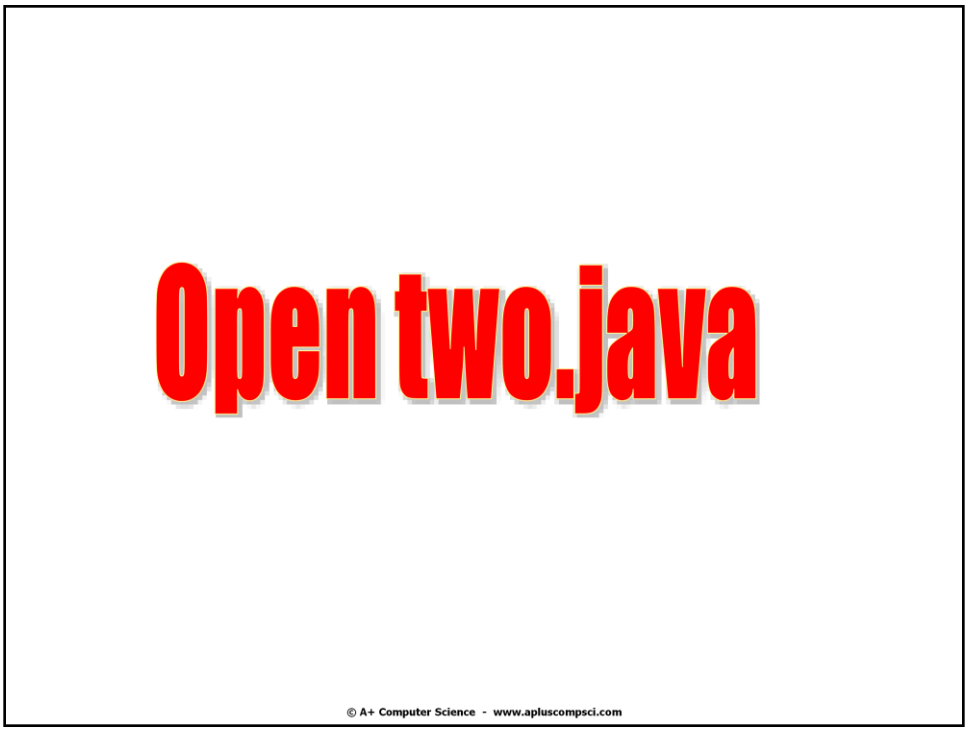
Open two.java
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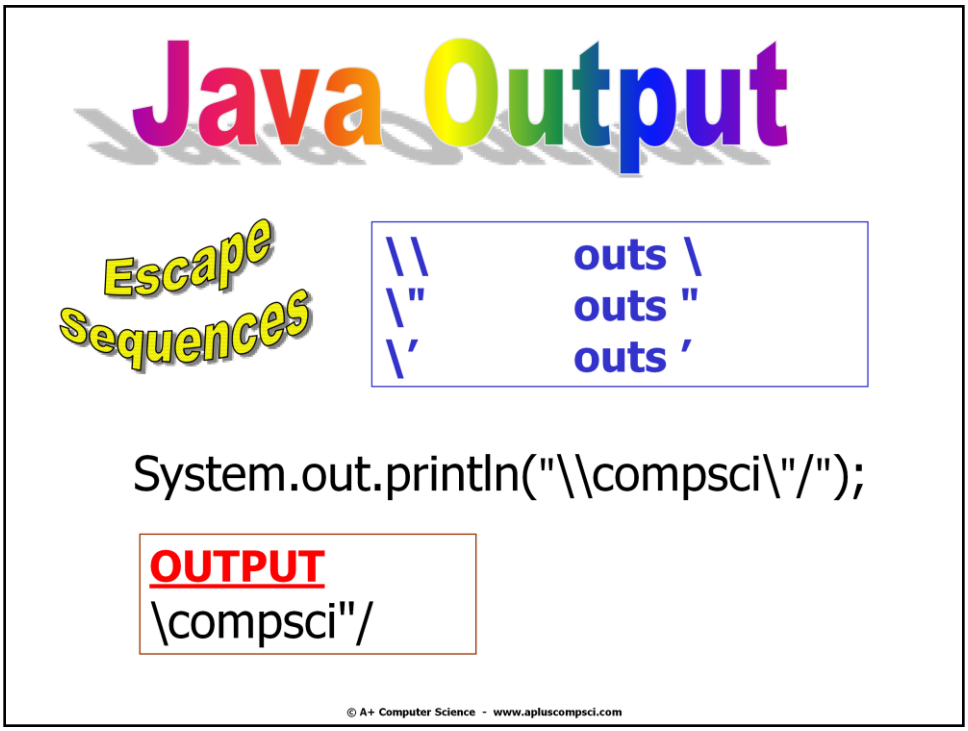
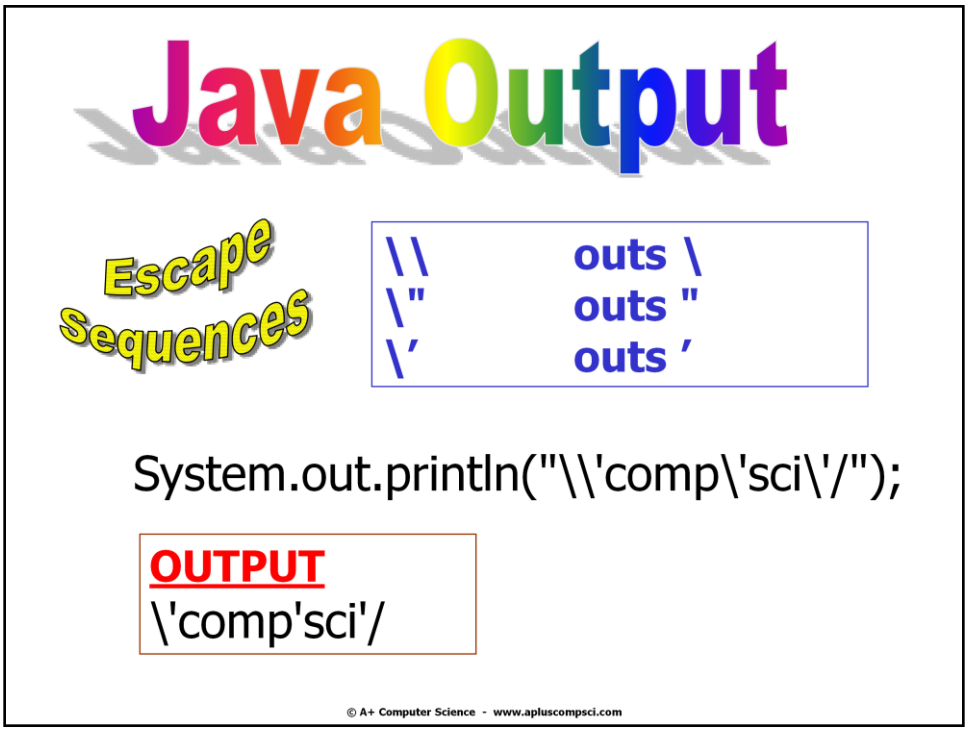


`\\, \", and \'` are common escape sequences used with to print out a `\, '`, and a `"`.

`\\` is used to print out a single `\`.

`\"` is used to print out a single `"`.

`\'` is used to print out a single `'`.



`\\`, `\"`, and `\'` are common escape sequences used with to print out a `\`, `'`, and a `"`.

`\\` is used to print out a single `\`.

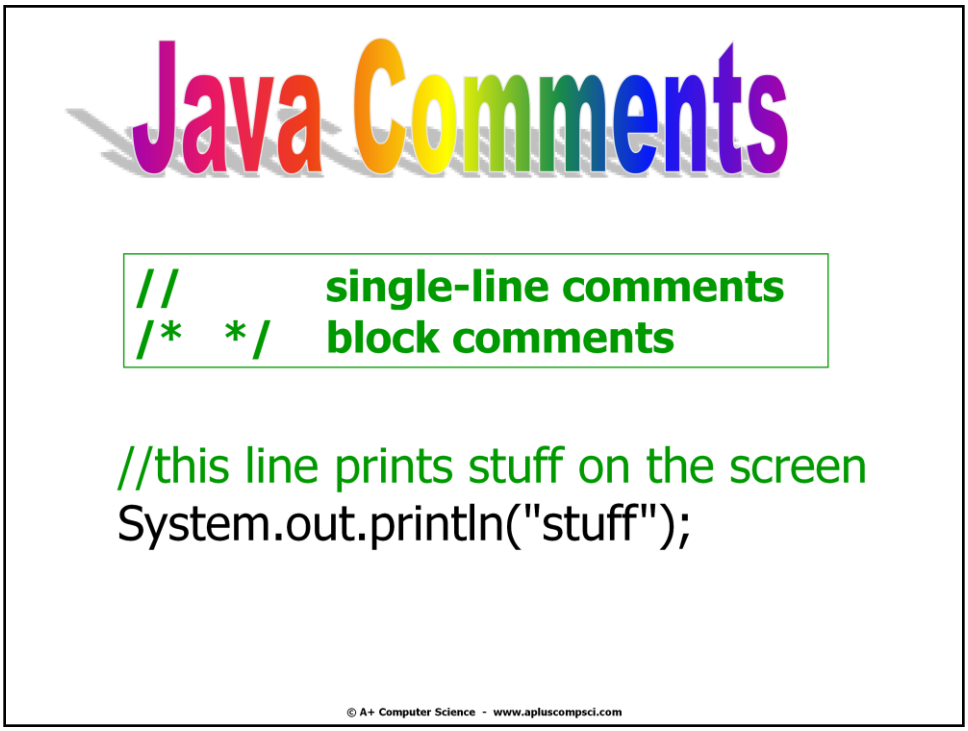
`\"` is used to print out a single `"`.

`\'` is used to print out a single `'`.

Escape Sequences
frequently used combinations

Name	Use
\t	tabs over five spaces
\n	moves to front of next line
\b	deletes previous character
\r	moves to front of current line
\\	nets one backslash \
\"	nets one double quote "
\'	nets one single quote '

This chart lists the most commonly used escape sequences. This chart should be a great reference point when working on labs and when preparing for quizzes and tests.

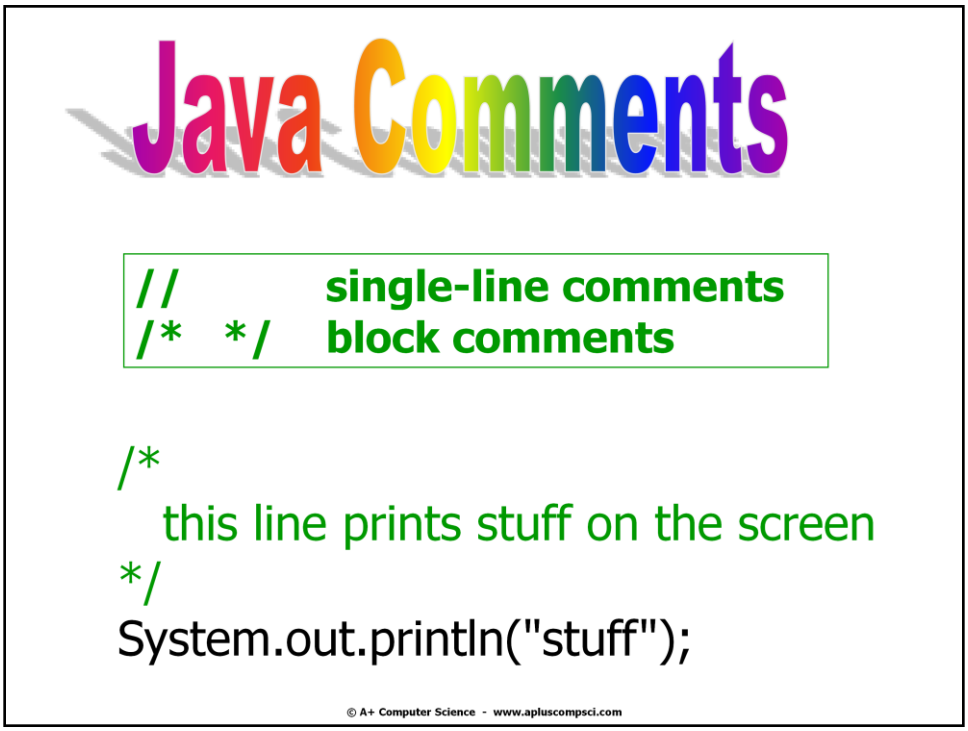


Comments are used to add clarity and descriptions to code. When properly placed, comments can add quite a bit of readability to a piece of code.

`//` is a single line comment used for a single line.

`/* */` is used when multiple comment lines are needed.

Comments are also very useful to isolate a section of code when testing/debugging. It is very handy to comment off a section of code in order to the test the remaining code.



Comments are used to add clarity and descriptions to code. When properly placed, comments can add quite a bit of readability to a piece of code.

`//` is a single line comment used for a single line.

`/* */` is used when multiple comment lines are needed.

Comments are also very useful to isolate a section of code when testing/debugging. It is very handy to comment off a section of code in order to the test the remaining code.

Java Output

```
System.out.printf("%s","compsci\n");
```

OUTPUT
compsci

`printf` is a method used to print values on the console window. `printf` can be used to set the number of decimal when printing a decimal number. `printf` can be used to print any type of data.

Open three.java

Syntax errors occur when you type something in wrong, causing the code to not compile.

```
//missing semicolon - ; expected
System.out.println("stuff")

//case problem – should be System
system.out.println("stuff")
```

Runtime errors occur when something goes wrong while the program is running.

```
//an out of bounds exception is thrown
String s = "runtime_error";
System.out.println( s.charAt(15) );
```

Open four.java


Start work
on the labs
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