Name: _____   Name: _____

CS 159: Comparing Python and Java

Work with a partner to compare the Java and Python code on the given sheets. Answer the questions below based on your observations.

First off:

Write down the most interesting thing you and your partner have in common:

Comparing the code for **CircleMath**:

1. What is the file extension for Python files? _____   for Java files? _____

2. What is different about declaring a variable in Java vs. Python?

3. What must be put at the end of most code statements in Java? _____

4. Write a single line of Java code to create a variable called "length" that stores the number 5:

5. How do you print to the console...
    a. In Python?
    b. In Java?

6. Draw an arrow next to the *calculateArea* function definition in Python. Do the same with Java.
    a. What is different about the function definitions? *(Hint: think about the parameters and return)*

7. How do you know what code is contained "inside" a function...
    a. In Python?
    b. In Java?

8. List any other differences and similarities you see between the two code snippets.
    (Hint: you should notice one or two depending on your answers above)

Comparing the code for **Dog**:

In Python, you have *functions*. In Java, these are called ***methods*** instead (we'll learn why later!)

1. Look at the top of the Java code and fill in the blank:

    a. All methods in a file must be inside something called a _____. (hint: it starts with *c*)

2. In Python, a file can just contain code and it will run. In Java, this is not the case.

    a. In Java, code to be run must be put in a *static* method named _____.

3. Find and circle a comment in both the Python code. Do the same with the Java code.

    a. What is used to start a single-line comment in Python? _____ In Java? _____

    b. How do you write a multi-line comment in Python? _____ In Java? _____

4. List the types you can use in Python (recall CS 149): _____

    a. Do you see any similar types in Java? List them: _____

    b. What do you think a "char" represents in Java? _____

    c. What do you think a "double" represents in Java? _____

5. What is the difference between System.out.print() and System.out.println()?

6. Any other interesting similarities or differences you notice between the Dog.py and Dog.java files?

Challenge Problem:

What do you think the following code would output? _____

```java
public class Challenge {
    public static String mystery(double x) {
        return "Hello" + x * 2;
    }

    public static void main(String[] args) {
        String message = "Testing";
        System.out.print(message);
        message = mystery(5);
        System.out.println(message);
        //System.out.println("World");
    }
}
```

Part 1 – Circle Math

CircleMath.py	CircleMath.java

<pre># Define a function to calculate area of a circle 	
def calculateArea(radius):
    squared = radius * radius
    area = 3.14 * squared
    return area
 	
if __name__ == "__main__":
    radius = 5
    ans = calculateArea(radius)
 	
    print(ans) # prints 78.5
    print(calculateArea(10)) # 314.0
 	
    shape = "circle"
    print("My shape is a " + shape)
 	
    count = 2
    print("I have " + str(count) + " of them")</pre>
	<pre>public class CircleMath {
	    // Define a method to calculate area of a circle
	    public static double calculateArea(double radius) {
	        double squared = radius * radius;
	        double area = 3.14 * squared;
	        return area;
	    }
	
	    public static void main(String[] args) {
	        int radius = 5;
	        double ans = calculateArea(radius);
	
	        System.out.println(ans); // prints 78.5
	        System.out.println(calculateArea(10)); // 314.0
	
	        String shape = "circle";
	        System.out.println("My shape is a " + shape);
	
	        int count = 2;
	        System.out.println("I have " + count + " of them");
	    }
	}</pre>

Part 2 – Dog

Dog.py	Dog.java

``python
def bark(name, initial):
    """
    This function makes the dog bark.
    Woof.
    """
    print(name + " " + initial + ". barked")
 	
def growOlder(age):
    return age + 0.5
 	
if __name__ == "__main__":
    name = 'Pongo'
    age = 5.5
    lastInitial = "W"
 	
    # Prints "Pongo W. barked"
    bark(name, lastInitial)
 	
    # Prints "They are: 6.0 years old" on one line
    print("They are: ", end="")
    age = growOlder(age)
    print(age, "years old")
``
	``java
	public class Dog {
	    /*
	    This method makes the dog bark.
	    Woof.
	    */
	    public void bark(String name, char initial) {
	        System.out.println(name + " " + initial + ". barked");
	    }
	
	    public double growOlder(double age) {
	        return age + 0.5;
	    }
	
	    public static void main(String[] args) {
	        String name = "Pongo";
	        double age = 5.5;
	        char lastInitial = 'W';
	
	        // Prints "Pongo W. barked"
	        bark(name, lastInitial);
	
	        // Prints "They are: 6.0 years old" on one line
	        System.out.print("They are: ");
	        age = growOlder(age);
	        System.out.println(age + " years old");
	    }
	}
	``