Please answer the following questions for Friday’s class.

Java and Python are popular object-oriented languages that differ in important ways. We consider these differences in the following problems.

1. Python is interpreted, while Java is compiled. Describe what this means.

2. What is the main difference between a typed language, like Java, and an untyped language, like Python.

3. Despite being object-oriented, Java has some primitive types that are not objects. What is an example of a primitive type in Java? How does this make the language slightly more difficult to use?

4. There is no “underscore guilt” in Java. Explain how Java’s private keyword helps to support data abstraction in its classes.
5. Java, unlike Python, has a basic or C-style for loop, consisting of three parts: (1) an initialization expression, (2) a condition expression, and (3) an update expression. Demonstrate how you would use a for loop to see if a number, n, was prime. (Recall, a number n > 1 is prime if it has no divisors other than 1 and itself.)

6. Python allows parallel assignment, as demonstrated by following idiom for exchanging two int values:

   a,b = b,a

Parallel assignment is not possible in Java. Write Java code to exchange two int values a and b:

   int a = 1;
   int b = 2;

7. In Java, the contains method is typically implemented to allow users to check to see if a container class holds a value that is equal to a value, v. Write a recursive contains method for the Tree class we’re developing in this week’s lab.

   public boolean contains(String v)

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