

CSCI 485 Programming Languages

Assignment 9

Due Friday, April 15

1. (10 points) Describe the three characteristic features of object-oriented languages. Illustrate the characteristic features using examples in Java.
2. (10 points) What is the difference between a class variable and an instance variable? Illustrate the concept using examples in Java.
3. (10 points) What is a polymorphic variable? Illustrate the concept using examples in Java.
4. (10 points) What is a virtual method? What is an abstract method? What is an abstract class? Illustrate the concepts using examples in C++.
5. (10 points) Are all C++ subclasses subtypes? If so, explain. If not, why not? Illustrate your answer using examples.
6. (10 points) Does Ruby support multiple inheritance?
7. (10 points) What is boxing?
8. (15 points) Use examples in C++ and Java to show a programming situation where multiple inheritance has a significant advantage over interfaces?
9. (15 points) Explain why allowing a class to implement multiple interfaces in Java and C# does not create the same problems that multiple inheritance in C++ creates.