

Abstract Base Classes and Class Summary

12-7-2001

Opening Discussion

- What did we talk about last class?
- Do you have any questions about assignment #7? What about quiz #6 which was just returned?
- What are the two roles that inheritance plays in programming languages? How much do you think we can separate these two roles in a real language (like C++)?

Previous Topics

- Virtual Functions
 - When there is a method that all subtypes of a base class should have, but which require different implementations you use a virtual function.
- Pure Virtual or Abstract Functions
 - If the base class doesn't have a default behavior for that function you should make it pure virtual so there is no definition associated with the base class.

Abstract Classes

- A class that has pure virtual functions is an abstract class. These can't be instantiated.
- A class with even one pure virtual function is abstract, but it is interesting to consider the case of a class where all of its methods are pure virtual. Even more extreme would be to make it so it has no members (no data).

Separating Public Interfaces

- An abstract class as defined on the previous slide is, in many ways, the definition of a shared public interface. There are no implementation details specified in the base class, only a public interface which the subclasses MUST implement in some way.
- This is subtyping without any reuse and while it is a bit convoluted to do in C++, it is a standard practice in Java.

Brief Review

- This semester we have covered a broad spectrum of topics that cover the foundations of computational logic and gone beyond to simple data structures and design considerations.
 - Expressions, functions, conditionals, loops, arrays, classes, pointers and dynamic memory, list, stack, queues, inheritance, polymorphism.

Closing Comments

- I'd like you to take a second to think about how far you have come this semester. For many of you, tasks that had seemed impossible are now quite tractable, even easy.
- What could you write given the knowledge that you have gained from this class? You have the ability to write the logic for ANYTHING. Only library details are lacking.

Minute Essay

- On Monday we will have a review session for the final. I won't really be preparing anything for it. I expect you to show up with questions. For your minute essay, if you have any questions that you think it might help to have slides for write them down.
- Have a great weekend and remember that assignment #7 is due on Monday.
