

Inheritance for Reuse

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Opening Discussion

- What did we talk about last class?
- Do you have any questions about assignment #6? How about assignment #7?
- What is inheritance and what have we seen that it can do?

Return Pointers

- When you return something from a function it is returned by value. Like pass by value, this implies that a new copy of it is created.
- If you want to actually have a given object and not a copy of it you should return a pointer to it. That means your return type should be a pointer.

Inheritance

- Last class we started talking about inheritance.
- In C++ we have the ability to make one class inherit from another class.
- When we do this, the class "gets" all of the methods and members of the superclass, but it can't access the private ones. We looked at this briefly for member data Monday.

Inheritance for Subtyping

- The main focus of the class Monday was on the use of inheritance for subtyping.
- If a class B inherits class A it is a subtype of A. This implies that any place we want to use something of type A we can substitute something of type B.
- We briefly examined the implications of this. We will see more of its power when we talk about inclusion polymorphism.

Code Reuse

- We have seen code reuse from the very beginning of this class with normal functions. One of the main reasons for using them was so that we didn't have to rewrite the same code every time we wanted to do something.
- This is very helpful for debugging and maintenance. Inheritance can help us do this for classes.

Inheritance for Reuse

- Inheritance can also help us improve our code reuse. This was mentioned briefly last class when we talked about putting a move function in the MovingObject class that could be used for PacMan, Ghosts, or Fruit.
- Because classes inherit the methods of their superclasses, you don't have to rewrite the function for the subclasses.

Minute Essay

- Think about what it means for inheritance to create subtypes. This implies that subclasses have to inherit the methods and members of the super class. Why is this? Do you always want to have code reuse with inheritance?
- Assignment #6 is due today. We have our 6th and last quiz next Monday.
