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Assignment 3, Prob 4:

* Create a hierarchy of classes that demonstrates polymorphic behavior in the following situation
  + An array of the base class type is created and initialized with a member of each class in the hierarchy
  + Show that a method belonging to the base class is called from a child instance
  + Demonstrate overriding a base class method by a child
  + Demonstrate a child method calling the parent's method
  + Demonstrate use of "as" keyword
  + Demonstrate use of "is" keyword
  + Demonstrate calling a method in a for loop iterating over the instances in the array
  + Demonstrate calling a method in a foreach loop
  + Demonstrate switch statement that responds differently depending upon the type of the object
  + Create an object of "object" type, but initialized of the base class type, then cast it to the actual type so you can call a method
  + Create an object of the base class type but initialized to a child type that has a specialized method. Call the specialized method by using casting.

In our problem four I have created three classes, ChildClass, GrandChildClass, and ParentClass (may be referred to as Child, GrandChild, Parent). The GrandChild inherits from the Child, Child from the Parent.

In the program Main() you can see that it starts with an array of a base class type; myArray, and three slots have been assigned; one of each class. A foreach loop is then used to print the ParentClass array types in myArray, calling upon the ParentClassMethod. ParentClassMethod is a Parent Class that has been overridden in the Child class.

A foreach is then used with a switch to print based upon the class type or using the default.

A foreach loop is then used to call the parent class from the child class and demonstrate the use of as and that responds differently to the type of class using getType.

A foreach is then used to demonstrate is using an if-else statement that responds to children classes different than a parent class.

New instances of the classes are then created to assign the variables pc, cc, and pccc. The p2 instance of the ParentClass as GrandChildClass uses casting to call the ParentClassMethod. Each variable pc, cc, and pcc then call the ParentClassMethod.

An array of object type called AnotherArray is then created with three objects in it, pc, cc, and pccc. It is then printed showing it’s contents.