

AP Computer Science

Inheritance & Polymorphism

Lab 62A

In this lab, you'll design a new product for your online company and implement a part of its ordering system. The template for this program contains two products that you currently offer modeled by the `MyComputer` and `MyPhone` classes. Examine the design of each of these classes including its instance variables and constructors.

Here are the specs for this lab (sample output is on the next page):

- a. Design your own electronic device (e.g., `MyWatch`, `MyGadget`, etc.) that contains instance variables named `price`, `memory`, `isInStock` as well as at least one other instance variable unique to your device. Include both zero and multi-argument constructors, along with the identical `shipItem()` method from either the `MyComputer` or `MyPhone` class, and a unique `toString()` method for your class.
 - b. Create a driver class, `DeviceDriver`, that creates two instances each of the `MyComputer`, `MyPhone`, and `YourDevice` objects; one instantiated using its zero-argument constructor and one using its multi-argument constructor, for a total of six objects.
 - c. In the driver, call and print the result of each object's `toString()` method.
 - d. In the driver, create an array called "shoppingCart" that can hold three objects of type `MyComputer`. Place the two previously created `MyComputer` objects into the array and use a for-each loop to cycle through the array and call each object's `toString()` and `shipItem()` method (we'll leave the third element of the array `shoppingCart` empty for now).
 - e. In the driver, create an `ArrayList` called "wishList" that can hold objects of type `YourDevice`. Place the two previously created `YourDevice` objects into the `ArrayList` and use a for-each loop to cycle through the array and call each object's `toString()` and `shipItem()` method.
 - f. A customer has decided to add a `MyPhone` to his `shoppingCart` and a `MyComputer` to his `wishList`. Write the lines of code to accomplish this and compile your program.
 - g. Something interesting happens after you complete part (f) above. Describe what and why you think it happens. Write your short explanation as a comment at the end of the driver.
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Greenfoot: Terminal Window - P5A MyDeviceScenario I NO Inheritance
***** Printing Individual Devices *****
Computer statistics:
Price: $0.0      In Stock: false Memory: 0
Computer statistics:
Price: $1999.99 In Stock: true  Memory: 4
Phone statistics:
Price: $0.0      Memory: 0      In Stock: false Carrier: unlocked
Phone statistics:
Price: $899.99  Memory: 64      In Stock: true  Carrier: AT&T
Robot statistics:
Price: $0.0      Memory: 0      In stock: false Bluetooth Connected? false
Robot statistics:
Price: $99.99   Memory: 64      In stock: true  Bluetooth Connected? true
***** Printing Shopping Cart *****
Computer statistics:
Price: $0.0      In Stock: false Memory: 0
Your item is currently out of stock, it will ship when it is back in stock

Computer statistics:
Price: $1999.99 In Stock: true  Memory: 4
Your item has been shipped.

***** Printing WishList *****
Robot statistics:
Price: $0.0      Memory: 0      In stock: false Bluetooth Connected? false
Your item is currently out of stock, it will ship when it is back in stock

Robot statistics:
Price: $99.99   Memory: 64      In stock: true  Bluetooth Connected? true
Your item has been shipped.
```

Figure 1 – Sample output from P5A