# APCS – Mr. Ascione

Trio Lunch

OBJECTIVE: This lab was derived from an actual AP Free Response question. It will test your ability to build a class that implements an interface as well as build classes and methods around it.

SPEC: First, read the AP question carefully. It is important to understand the framework of the question before you consider writing any code. In this question, you are being asked to write an entire class from scratch… but they did give you lots of information about how to go about doing this.

AP is providing a MenuItem interface. They also give us a diagram that explains the relationship among classes:
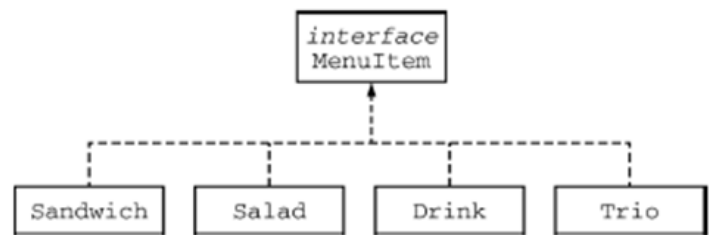
From the diagram we can see that the classes: Sandwich, Salad, Drink and Trio all implement the MenuItem interface. In this regard, a Trio is no different than a Sandwich a Salad or a Drink. However, we are also told that a Trio contains a sandwich a salad and a drink… so we would say that a Trio object HAS A Sandwich, Salad and a Drink. This is an excellent example of Composition… a class that has other class objects within it.

To make this program work we will have to implement the Sandwich, Salad and Drink classes… these are pretty trivial as there are just two methods in the MenuItem interface that correspond to the name and price of each item. Be careful which constructors you implement… they told us our code should support the following behavior:

```
Sandwich sandwich;
Salad salad;
Drink drink;
/* Code that initializes sandwich, salad, and drink */

Trio trio = new Trio(sandwich, salad, drink);   // Compiles without error

Trio trio1 = new Trio(salad, sandwich, drink); // Compile-time error
Trio trio2 = new Trio(sandwich, salad, salad); // Compile-time error
```

OUTPUT: Your finished output should look as below.

Files Needed:

```
Drink.java
MenuItem.java
Salad.java
Sandwich.java
Trio.java
TrioRunner.java
```