

Homework 11

The goal of this homework is to practice composite pattern. You need to program a simple shopping application. In this application, you have phones, laptops, and bundles. Each phone has a name and a price. Each laptop has a name and a price. Each bundle has a name, and a discount rate. Each bundle consists zero or more phones, zero or more laptops, and zero or more bundles. The price of a bundle is the sum of its items times the discount rate. You need to design the Phone class, the Laptop class, and the Bundle class, and other classes that you may need to introduce. You must use the following main function in your program:

```
int main(int argc, char** argv) {
    Bundle* b1=new Bundle("b1", 0.9);
    b1->addItem(new Phone("iPhone 7", 1200, 2016));
    b1->addItem(new Laptop("MacBook", 2800, "2.1GHZ"));
    Bundle* b2=new Bundle("b2",0.8);
    b2->addItem(new Phone("iPhone 6", 800, 2015));
    b2->addItem(new Phone("iPhone 5", 500, 2015));
    b2->addItem(new Phone("iPhone 4", 400, 2015));
    Bundle* b3=new Bundle("b3", 1.0);
    b3->addItem(b1);
    b3->addItem(b2);
    b3->print();
    return 0;
}
```

With your classes, this main function will output the following:

```
Bundle b3 contains: (Bundle b1 contains: ((Phone name=iPhone 7, Phone price=1200);
(Laptop name=MacBook, Laptop price=2800); ; Bundle Price=3600);Bundle b2 contains:
((Phone name=iPhone 6, Phone price=800); (Phone name=iPhone 5, Phone price=500);
(Phone name=iPhone 4, Phone price=400); ; Bundle Price=1360);; Bundle Price=4960);
```

You also need to draw the UML diagram for your classes.

Due: March 14th, 11:59PM, 2019.

Turn in one file via handin: the zip file of (1) your whole NetBean directory and (2) your UML diagram file named uml.pdf. The name of your zip file should be: LastName_FirstName.zip. For example, if your name is John Smith, you should turn in one file: Smith_John.zip.