

Bryan Arnold

CSE 2100

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Homework 1

R-2.4

When you change the member variable balance to private visibility in the CreditCard class, it causes the PredatoryCreditCard class' charge method to not function. The previous visibility of protected allowed for any classes in the hierarchy to access that member variable and no others. The PredatoryCreditCard class could access the method and the super.charge method would work, but changing balance to private makes it inaccessible to the PredatoryCreditCard class, so the method call will not work. Also, there is a call for charge(5) in the PredatoryCreditCard class. This would also be a flaw as it calls the PredatoryCreditCard class which is not functional, so this method call does not work. The recursion would work though.

R-2.5

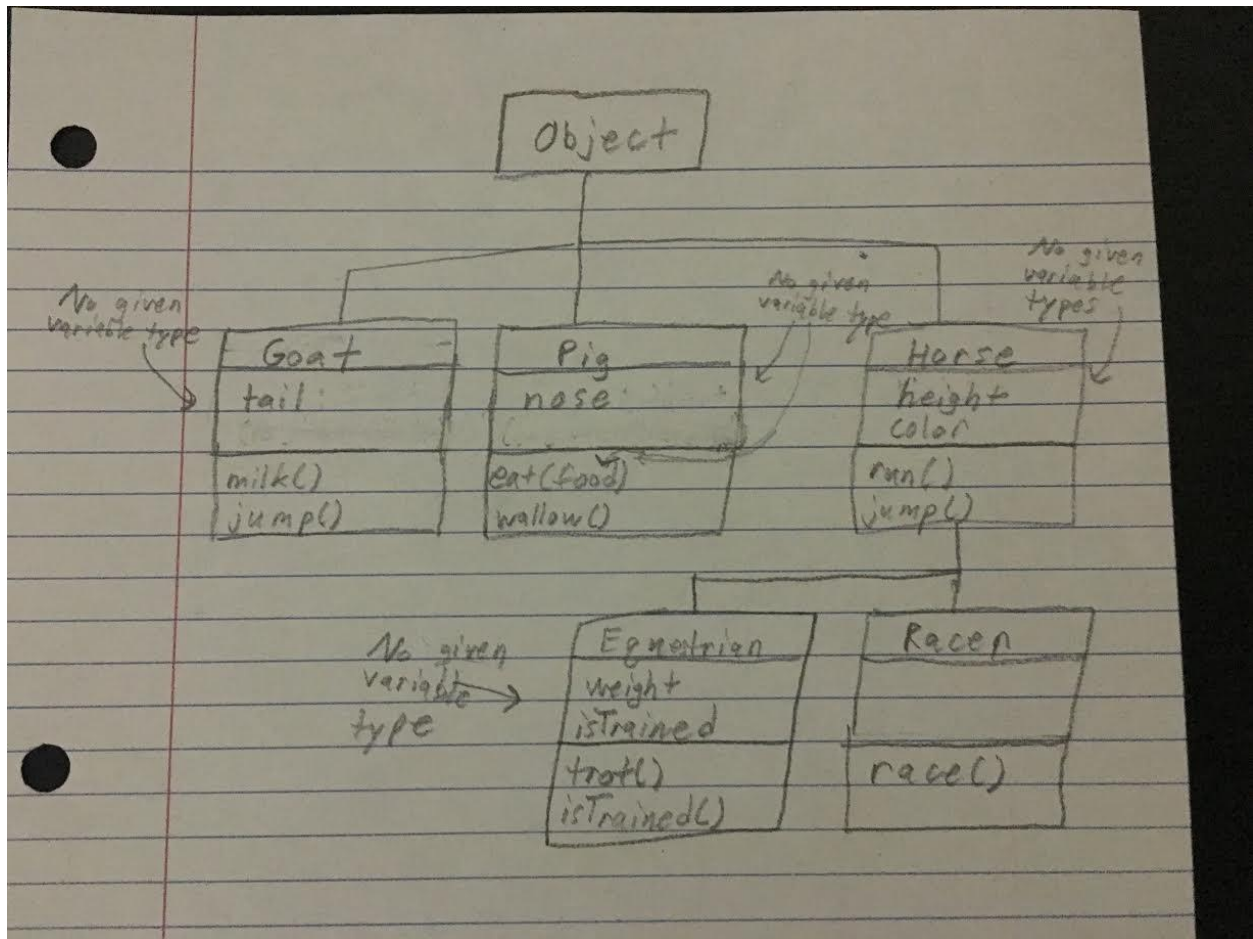
By changing the member variable balance to private visibility in this alteration of the PredatoryCreditCard class' charge method also would cause it to not function. Like in the previous question, the super.charge(price) call will not function as it cannot access the balance in the CreditCard class. This would also break the super.charge(5) call as it also cannot access the private member variable balance of CreditCard class. Without this variable, the charge method in CreditCard cannot work.

R-2.11

Output for the main method in Maryland Class:

```
Read it.  
Ship it.  
Buy it.  
Read it.  
Box it.  
Read it.
```

R-2.12



R-2.13

The object d can be cast to type Racer. Since it refers to the type Equestrian, the object is still of type Horse since Equestrian extends that class and the initial object create is of type Horse. Racer also extends the Horse class meaning every Racer is a Horse, as well as every Equestrian is a Horse. So, the variable d may refer to an Equestrian object, but it is still of type Horse in the hierarchy, so the cast to Racer is still valid as it is also a Horse at all times. If the variable d was initially of type Equestrian, the cast would be invalid as the Racer class doesn't extend Equestrian class in the hierarchy, not does Equestrian extend Racer.