

Python Programming

Inheritance Homework 2

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Teaching, Training and Coaching since more than a decade!

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Problem #1: Design Review

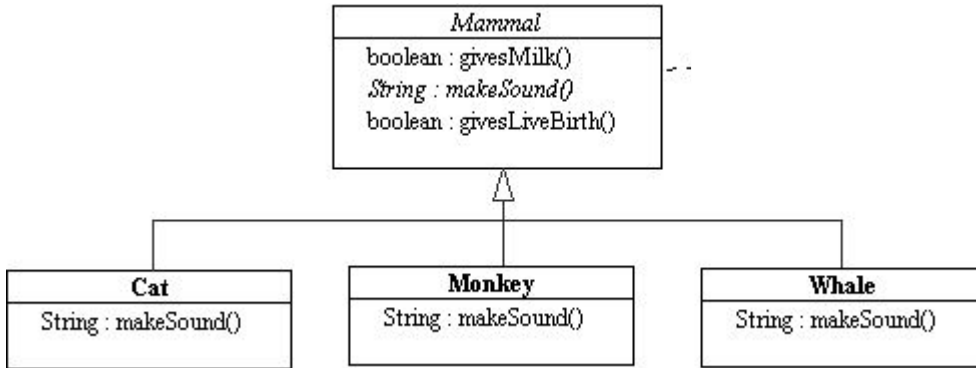
```
class FourWheels:
    # Some variables and methods
    pass

class Engine:
    # Some variables and methods
    pass

class Car(Engine, FourWheels):
    # Some variables and methods
    pass
```

- A fresh engineer implemented this system to express a car
 - Code wise: car has all functions it needs to provide
 - It passed system tests
- What is wrong?
- Give a tip

Problem #2: Future Prediction!



- A fresh engineer designed a system with initial requirements 3 animals (cat, monkey, whale)
- What does this design imply?
- After a year, a new mammal was added to the system, but turned out this design is wrong
 - Find such a mammal
 - Think & Google
- Note
 - boolean/string is a C++ style design

Problem #3: Irrelevant!

```
class Robot:
    def drive(self):...
    def clean(self):...
    def do_funny_actions(self):...

class RealAnimal:
    def go_to_eat(self):...
    def make_sound(self):
        raise NotImplementedError

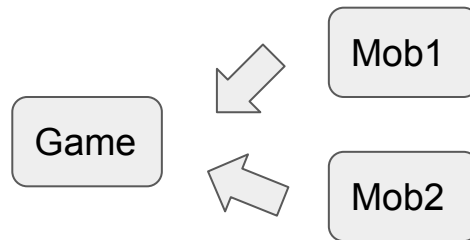
class Cat(RealAnimal):
    def make_sound(self):
        print('Meow')

class Dog(RealAnimal):
    def make_sound(self):
        print("Bark")
```

- Imagine we have 4 classes, each with 20 function
- There is a need for a new class that has a relationship of “**is-a**” with the 4 classes *to a good extent*
 - What is the problem we will face?
 - As more motivation, imagine we wanna Create a RobotDog from the classes on left
 - It is a robot, so it does what robots does
 - It looks like a dog and do its most of its functionalities
 - But it is not real dog, it is a made one

Problem #4: System Design

- In Medal of Honor game, there are millions of online players
 - Sometimes there is some **message** from the game to the players
- There are 2 ways to deliver the message:
 - Each app periodically contacts the server to see if there are new notifications or not
 - Then Game site provide an **API** to be contacted through it
 - Each mobile/desktop/tablet send/receive request/response
 - When user opens the application, a registration message is sent to the game
 - Whenever server has a new message, it iterates on whoever registered and send msg
 - Discuss the 2 options. Any notes on their implementations.



Problem #5: A new Startup

- In every country there are banks where people have money and services where they wanna pay money (Mobile & Electricity bills)
- With every new service to pay (e.g. new mobile network), each bank wants to support paying the bills to this new service.
- To implement that, a team per bank builds something on bank side and something on the service side so that they can communicate
- As an entrepreneur:
 - What are the current issues in this model?
 - E.g. How many software programs are built for N banks and M services?
 - Think in a startup proposal that can offers elegant solution to this problem?
 - How to validate your business model? Do most of startups fails or succeed?

“Acquire knowledge and impart it to the people.”

“Seek knowledge from the Cradle to the Grave.”