TU856/858-2 Object Oriented Programming with Python
Semester 1, Lab Week 8, 13.11.2020
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Please join the virtual classroom in brightspace first, before going to individual lab links. I will provide explanations and hints and tricks regarding the lab at the beginning of the lab sessions. These are recorded.

Please sign your group's lab sign in sheet!
Lab solutions will be discussed in the Monday lecture. Labs are not marked.
Don't forget about your revision item for the week!

Link to the lab groups (click).
Link to python documentation (click).

Objectives:

- Inheritance and encapsulation

Preparation:

- Pull the lab's python file from GitHub and create a new branch for today's lab. Remember to git add and git commit with every new feature you implement.
- The file name is `lab_word_games.py`

Word Games:

In lab 3 you have learnt how to scramble words and sentences. You can re-use much of this code for this lab.

Your task:

1. **Inherit from WordGames for Scrambler**
   - This game is asking the user for a word or sentence. The input is then scrambled and returned.
   - The stub of this child class has been created for you. You need to fill the game logic.
   - Override the **`word_play`** method to achieve this functionality. Overriding means that we use the same name for a function in a child class that exists in a parent class. We use the same name as it has basic functionality that is the same, but some functionality that is specific to the child class. See below for a brief example of method overriding. Try the example first before solving this lab.
   - Observe the use of docstrings in the class **`WordGames`**. Make sure that you use docstrings in the same manner throughout all the code you provide.
2. **Inherit from WordGames for Duplication**
   - This game is asking the user for a word or sentence. The input is then duplicated and returned.

- The stub of this child class has been created for you. You need to fill the game logic.
- Override the `word_play` method to achieve this functionality

3. **Attempt a new game that inherits from Scrambler and Duplication**
    - Experiment with the multiple inheritance
    - Which `word_play` is called?
4. **Separate your code into individual "modules".**
    A module is just a python class in a separate file ending on .py. You can use it in another class or file with the import statement. So for example,
    `import WordGames`

Example on method overriding:

```
# example from
# https://www.tutorialgateway.org/method-overriding-in-python/
# accessed Nov 2020
class Employee:

 def message(self):
   print('This message is from Employee Class')


class Department(Employee):

 def message(self):
   print('This Department class is inherited from Employee')
   # if you want to also use functionality from the parent
   # class's def message, you can use is via
   # super().message()


emp = Employee()
emp.message()

print('------------')
dept = Department()
dept.message()
```

Please also see the lecture slides on method overriding (Lecture Week 8, slides 21+22)

Well done!