HOMEWORK 6 - Basic Object Oriented Programming
REGULAR VERSION

PART I

Complete the in-class exercise at the end of the Week 6 Notes. Place the relevant source code in a file named `hw6_1.py` which should be in your home directory under week6 (**home directory > python > week6**).

PART II

Create a `CashRegister` class that has the following features.

Class CashRegister

- Properties
    - Name
    - Total Amount of Cash
    - Amount of Last Transaction
    - Total Number of Transactions Processed
- Methods
    - Transact
        - Adds money to the register
        - Increments total transactions
        - Changes value of last transaction to amount transacted.
    - Make Change
        - Adds to # of transactions without affecting money in register
    - Empty Out
        - Clears money in register without affecting # of transactions
    - Show Last Transaction
        - Shows how much money was moved in last transaction
    - Clear History
        - Clears total transaction history to 0 transactions

Create 2 `CashRegisters` objects and manipulate the data inside of them so that I can see that you know how to instantiate and manipulate objects. Place the relevant source code in a file named `hw6_2.py` which should be in your home directory under week6 (**home directory > python > week6**).

PART III

Create 2 classes, `Course` and `Intro2Programming`. **`Intro2Programming` should be a subclass of `Course`.**

Class `Course`

- Properties

    - Name
    - Maximum Number of Students (integer)
    - Students (list of ldaps as strings)
    - Room
    - Schedule
- Methods
    - Add Student - takes an ldap and adds it to the students list if it doesn't already exist and there is still space in the Course.
    - Drop Student - takes an ldap and removes it from the students list
    - Reschedule - takes a string and changes the schedule
    - Change Rooms - takes a string and changes the room
    - Get Number of Participants - returns the total students signed up

Class `Intro2Programming`

- Properties
    - Inherited from `Course`
- Methods
    - Inherited from `Course`
    - Nag Students - prints out 'Do your homework! Start Early!'
    - Check Homework - prints 'alberthwang, did you do your homework?!' for each student (replacing alberthwang w/iththe student ldap of course)

Create a `Course` object and call all its methods to show that it works. Create an `Intro2Programming` object and call all its methods (including those inherited from `Course`) to show that it works. Add a few students, drop a few students, etc.

Place the relevant source code in a file named `hw6_3.py` which should be in your home directory under week6 (**home directory > python > week6**).

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PART IV - <u>OPTIONAL</u> - EXTRA CREDIT

Create 2 classes, `Employee` and `Manager`. `Manager` should be a sub-class of `Employee` (since a Manager is a kind of Employee). Create the classes with these specifications:

Class `Employee`

- Properties:
    - LDAP, Name, Location, Salary (Integer), Status (ACTIVE/INACTIVE)
- Methods
    - Transfer - moves employee to new location
    - Quit - changes status to INACTIVE
    - Greet - 'Hi, my name is XX and I work at Google!'

Class `Manager`

- Properties:
    - Inherits all `Employee` properties
    - Reportees - list of `Employee` objects
- Methods:
    - Inherits all `Employee` methods
    - Get Number of Reportees
        - Returns integer of total number of reportees
    - Get Employees
        - Returns list of strings (ldaps of all reportees)
    - Get Locations
        - Returns a list of strings (all locations of reportees)
        - Should be a UNIQUE list, no duplicate locations

Once you have your classes, please do the following:

1. Create 3 `Employee` objects and have them all report to a single `Manager` object.
2. For each `Employee`, have them invoke their `Greet` method
3. For the `Manager`, have it invoke its `Greet` method and all 3 `Manager` methods to prove that they work.
4. Have 2 `Employees` quit and print their status's to show that it worked.

Place the relevant source code in a file named `hw6_4.py` which should be in your home directory under week6 (**home directory > python > week6**).