

ECE695DL: Homework 1

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# -*- coding: utf-8 -*-
"""ECE695_HW_1_Jianqi_Ruan_v2.ipynb
"""
import string
import random
import numpy as np

class People:
    def __init__(self,first_names,middle_names,last_names):
        self.first_names = first_names
        self.middle_names = middle_names
        self.last_names = last_names

    def __iter__(self):
        return ppl_iter(self)

    def __call__(self):
        sort_last = sorted(self.last_names)
        for k in range(len(sort_last)):
            print(sort_last[k])

class ppl_iter:
    def __init__(self,ppl_obj):
        self.first = ppl_obj.first_names
        self.mid = ppl_obj.middle_names
        self.last = ppl_obj.last_names
        self.index = -1

    def __iter__(self):
        return self
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def __next__(self,order):
    self.index += 1
    if self.index < len(self.first):
        if order == 'fnf':
            name_form = ' '.join([self.first[self.index],self.mid[self.index],
                self.last[self.index]])
        if order == 'lnf':
            name_form = ' '.join([self.last[self.index],self.first[self.index],
                self.mid[self.index]])
        if order == 'lnwcf':
            name_form = ', '.join([self.last[self.index],
                ' '.join([self.first[self.index],self.mid[self.index]])])
        return name_form
    else:
        raise StopIteration
next = __next__

class PeopleWithMoney(People):
    def __init__(self,first_names,middle_names,last_names,wealth):
        People.__init__(self,first_names,middle_names,last_names)
        self.wealth = wealth
    def __iter__(self):
        return ppl_w_money_iter(self)
    def __call__(self):
        sort_idx = np.argsort(self.wealth)
        for k in sort_idx:
            name_form = ' '.join([self.first_names[k],self.middle_names[k],
                self.last_names[k],str(self.wealth[k])])
            print(name_form)

class ppl_w_money_iter(ppl_iter):
    def __init__(self,pwm_obj):
        ppl_iter.__init__(self,pwm_obj)
        self.wealth = pwm_obj.wealth

    def __iter__(self):
        return self

    def __next__(self):
        if self.index < len(self.first):
            name_form = ' '.join([ppl_iter.__next__(self,'fnf'),
                str(self.wealth[self.index])])
            return name_form
        else:
            raise StopIteration

```

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    next = __next__

random.seed(0)

first_names = []
middle_names = []
last_names = []

for i in range(10):
    first_names.append(''.join(random.choices(string.ascii_lowercase,k=5)))
    middle_names.append(''.join(random.choices(string.ascii_lowercase,k=5)))
    last_names.append(''.join(random.choices(string.ascii_lowercase,k=5)))

a_person = People(first_names,middle_names,last_names)
iters = iter(a_person)
for j in range(10):
    print(iters.next('fnf')) # print first name first format
print('')

iters = iter(a_person)
for j in range(10):
    print(iters.next('lnf')) # print last name first format
print('')

iters = iter(a_person)
for j in range(10):
    print(iters.next('lnwcf')) # print last name first with comma format
print('')

a_person()
print('')

wealth = random.choices(range(0,1000),k = 10)

M_person = PeopleWithMoney(first_names,middle_names,last_names,wealth)

M_iters = iter(M_person)
for j in range(10):
    print(M_iters.next()) # print name with wealth
print('')

M_person()}

```
