CS 115 - Introduction to Programming in Python

Lab Guide 08B

Lab Objectives: Inheritance.

a) Create a class, **`Patient`**, with the following data members and methods. Note all data members and class variables should be private.

Data Members:

- **pName**: stores the string name of the patient
- **isInsured**: boolean field that indicates if patient has private insurance.
- **coveragePercent**: stores the percent (as decimal value) of the patient's insurance coverage. Zero if not insured.

Class Variable:

- **hospitalFee**: stores the fee for the hospital visit, 500TL.

Methods:

- **__init()__**: initializes the pName, isInsured, coveragePercent (default parameter set to zero if not passed) to values passed as parameters. Should initialize coveragePercent using the set method.
- **Get and set methods** for all data members. The set method for coveragePercent should only set the variable if the value passed as a parameter is a positive value.
- **Get method to return the value of the __hospitalFee.**
- **__repr()__**: returns a string representation of a Patient object formatted as shown in the sample run (includes patient name and insurance information only).
- **calculateFee ()**: calculates and returns the amount of the hospital fee the patient must pay. If the patient is insured, deduct the insurance portion.

b) Create a class, **`Outpatient`**, with the following data members and methods. Note all data members should be private.

Data Members:

- **polyClinic**: stores the string name of the poly clinic for the patient's appointment.
- **doctorName**: stores the string name of the doctor the patient will visit.
- **appointmentDate**: stores the date of the appointment.
- **appointmentTime**: stores the time of the appointment.

Methods:

- **`__init()__:`**
  - Takes the following parameters: name, insurance, appointment date, appointment time, poly clinic, doctor name, and coverage percent (default 0.0) as parameters.

- Initialize the Patient data using the super class `__init__` method. If the polyclinic is Dentistry or Optometry, the coverage percent passed as a parameter should be divided by 2.
- Initialize appointment date, time, doctor and poly clinic to the parameter values.
- Use the set method to initialize the appointment date.

- **Get and set methods for Outpatient attributes**:
  - **`setAppointmentDate()`** takes a string as a parameter (assume 'YYYYmmdd') and converts it to a date object using the date time module.
  - **Example:**
    datetime.datetime.strptime(varName, '%Y%m%d').date() converts the given varName string to a date, where %Y indicates the position of the 4 digit year, %m the two digit month, and %d the two digit date.

```
today = datetime.datetime.strptime('20190123', '%Y%m%d').date()
today
Out[13]: datetime.date(2019, 1, 23)
```

- **__lt()__**: compares two Outpatients by their appointment date and time. If self has an appointment date and time before other, return True, else return false.
-
- **__repr()__**: returns a string representation of an Outpatient object. The method should call the Patient __repr__ to get the Patient data, and append the Outpatient data, formatted as shown in the sample run.

c) Write a script **`PatientApp`** with the following functions:
- **schedulePatients():** takes a string filename and list of Outpatients as parameters. Reads the patient data from the file and adds the outpatients in the file to the list passed as a parameter.
- **The script** should do the following:
  - Create an empty list to store patients.
  - Schedule the patients in the file `patients.txt` using the function above.
  - Sort the list of patients according to their appointment times.
  - Display the list of patients.

Sample Run:

```
[
Appointment Date: 2019-02-15 08:30
Patient Name: Syreeta Coachman Insurance: (no)
Poly Clinic: Gastroenterology (Dr. Irem Basar)
Fee: 500
,
Appointment Date: 2019-02-15 10:15
Patient Name: Charlena Tebbs Insurance: (yes)
Poly Clinic: Dentistry (Dr. Ali Ayhan)
Fee: 325.0
,
Appointment Date: 2019-02-16 12:15
Patient Name: Arlie Peek Insurance: (no)
Poly Clinic: ENT (Dr. Jale TunÃ§)
Fee: 500
,
Appointment Date: 2019-02-16 15:30
Patient Name: Elwood Depaul Insurance: (no)
Poly Clinic: Optometry (Dr. Mehmet Keskin)
Fee: 500
,
Appointment Date: 2019-02-22 15:30
Patient Name: Janell Huey Insurance: (yes)
Poly Clinic: ENT (Dr. Melis KoÃ§)
Fee: 100.0
,
Appointment Date: 2019-03-15 11:00
Patient Name: Lenore Bechard Insurance: (yes)
Poly Clinic: Cardiology (Dr. Ayla GÃ¼ner)
Fee: 325.0
,
Appointment Date: 2019-03-17 10:30
Patient Name: Lolita Shore Insurance: (yes)
Poly Clinic: Cardiology (Dr. Veysel KarakuÅŸ)
Fee: 150.0
,
Appointment Date: 2019-03-17 15:30
Patient Name: Maudie Plummer Insurance: (yes)
Poly Clinic: Optometry (Dr. Elif Som)
Fee: 275.0
]
```