README

This code is used to implement the system design for a local doctors' surgery.

The code allows doctors to issue prescriptions, patients to have a prescription reissued and receptionist to make and cancel appointments. Moreover, the appointment schedule can be consulted to see the appointment availability and add or cancel appointments.

INSTRUCTIONS

The code is written in Python and can be run in the Codio workspace.

The user needs to open the file surgery.py to access the code, which consists of eight classes containing attributes and methods to enable the user to perform the operations offered by the application.

The code has two global variables which are dataframes containing issued prescriptions and patients' appointments.

The pandas library needs to be imported to use the dataframes, which can be accessed by multiple classes to store and update the containing data.

The implemented system applies object-oriented programming features such as:

- Inheritance (a super class Healthcare_Professionals passes its attributes and methods to the child classes Doctor and Nurse).
- Aggregation
- Composition

TEST AND VALIDATION

Considering the complexity of the code, a glass box testing technique has been used where the tester, knowing the code structure, performs basis path testing by "executing each instruction at least once" (Brookshear at al., 2018: chapter 7).

The relevant sections for each test are identified in the python script.

TEST 1: Consultations by Healthcare staff

- Run the code. The name of the Doctor or Nurse is provided.
- After the prompt "Consultation:" input a message.
- The function returns *"Patient seen by [doctor or nurse name]. Findings: [your text]"*.

TEST 2: Doctor issuing a prescription

- Run the code. The doctor and prescription details are provided.
- Running D.issue_prescription returns the dataframe containing the issued prescription.

TEST 3: Patient requests to have a prescription reissued or requests an appointment.

- Run the code. The doctor and prescription details are provided.
- A patient has been already assigned. Call the method P.request_repeat()
- A prompt asks the patient to insert their name which is used to search the dataframe prescription_list.
- The patient's prescriptions are retrieved, who can choose which one to have

reissued.

- After the selection a prompt confirms that the prescription details were sent to the local pharmacy.
- Run P.request_appointment(). The patient is prompted to call the surgery.

TEST 4: Receptionist making appointments

- Run the code. The receptionist details are provided.
- A series of appointment examples are included for the make_appointment method.
- When the receptionist runs make_appointment, the appointment will be added to appointment_list and the dataframe will be returned.

TEST 5: Receptionist cancelling appointment

- Run the code. The receptionist details and appointment examples are provided.
- Run the method cancel_appointment, prompting a message asking for the patient's name.
- The patient's name is searched for in appointment_list and the relevant subset is retrieved.
- Choose which appointment to cancel.
- A prompt confirms the cancellation.

TEST 6: Access appointment schedule.

- Run the code, the receptionist details and appointment examples are provided.

- The appointment to be checked in the schedule is given.
- Running the method show_schedule prints information about the surgery opening times, time slots for appointments and existing appointments sorted by date and time.
- Following the previous step, the method add_appointment will add further appointments to the schedule.
- The method cancel_scheduled_appointment prompts a message asking for the patient's name requesting a cancellation. A subset with the patient's appointments is retrieved from appointment_list.
- Choose which appointment to cancel.
- A prompt confirms cancellation.

REFERENCES

Brookshear, G., Brookshear, J. G., Brylow, D. 2018, Computer Science: An Overview, eBook, Global Edition, 13th Edition, Pearson (Intl). Available via the Vitalsource Bookshelf. [Accessed 21 May 2022].