COMP642 Advanced Programming
Object Oriented Programming Assignment 2

Worth:	25%
Due:	**Friday, 15 September 2023 5:00pm.**
Late Penalty:	Work not received by the due time attracts an immediate penalty of up to 25% of the marks available. No work will be accepted after **Sunday 17 September 2023 5:00pm**.
Submission:	Zip your completed files and submit the .zip through the link on COMP642 LEARN page.

Design and implement in Python, a set of classes that work together to manage information for a small medical centre. Once implemented, the application must be able to:

- Keep track of doctors, patients and consultations.
- Create doctors.
- Create patients.
- Assign doctor to a patient.
- Add a consultation.
- Search for a doctor.
- Display doctor's information.
- Search for a patient.
- Display patient's information.
- Display consultation report.
- Display all patients.
- Display all doctors.
- Display patient list for a particular doctor.
- Display consultation list for a particular doctor.
- Display consultation list for a particular patient.

Your design should be based on the Model View Controller (MVC) pattern:

- The model deals with the information about patients, doctors, and consultations.
- The controller class should look after creating and maintaining objects in the model.
- The system must support the development of different views in which user can interact with the system (such as form, web form or data from files).

The class diagram for this application is shown below, where the Patient, Doctor and Consultation classes are the model, and the Clinic class is the controller.

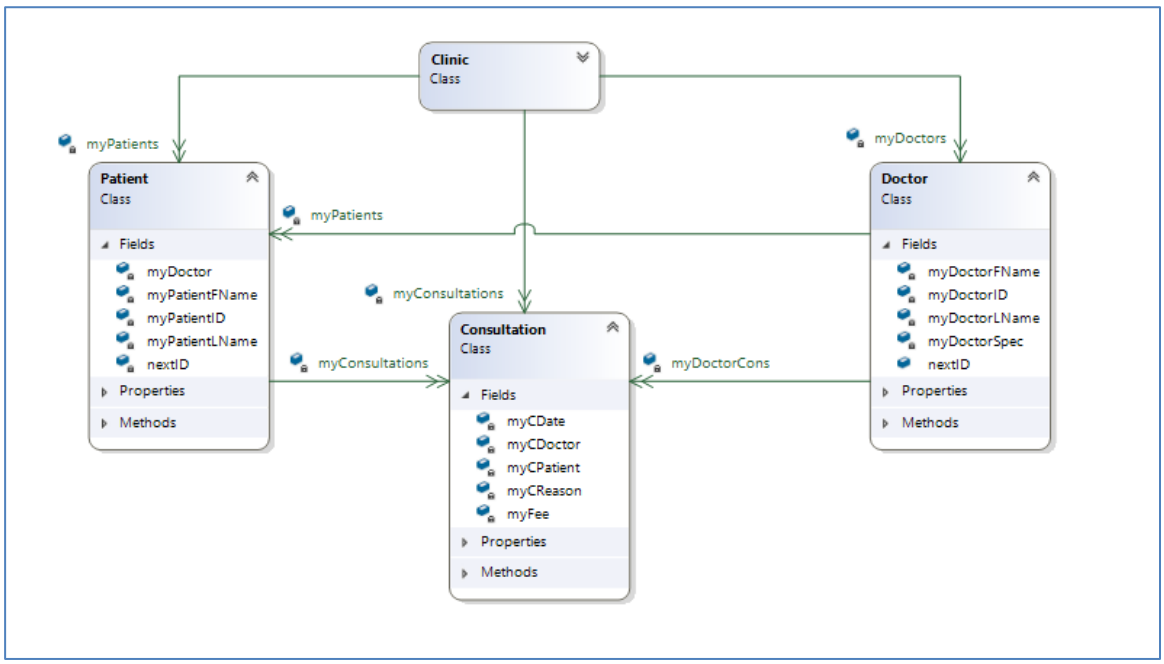

Figure 1 Class Diagram

Criteria

Your application must:

- Run correctly to the specified requirements.
- Read the supplied files and create the appropriate doctor and patient objects, files described below.
- Assign a doctor to a patient.
- Add a consultation between a doctor and patient which may contain information about the date, reason for appointment and fee.
- Display full information for a selected doctor with the list of the patients they have and the list of consultations.
- Display full information of a selected patient, the doctor's name, a list of consultations and the total fees due.
- Display the consultation report for the clinic.
- Have a user interface with:
    - appropriate controls
    - useful feedback
    - prevention of input errors

Your **code** must:

- Make appropriate use of the model and controller classes provided based on the class diagram shown in Figure 1.
- Well-structured and easy to maintain.
- Be appropriately commented.
- Each class must provide getter and setter methods and any other appropriate methods.

What you are to do:

You are to create a Python application to manage the medical centre. The two files "Patient.txt" and "Doctor.txt" contain information about doctors (first name, last name and specialisation) and patient (first name and last name) and can be downloaded from COMP642 web page.

1. Implement the class diagram shown in Figure 1 so that:
   - A patient can be assigned to a doctor.
   - A consultation can be added for a patient and a doctor.
   - It provides the following information for a doctor:
     - The doctor personal information (id number, full name and specialisation).
     - The list of patients.
     - The list of consultations with patients.

```
1000 James Wright General Practitioner

Patient List
100 Misha Patel
101 Kevin Chin
102 Doris Grant

Consultations
01/08/2023 Headache Doris Grant $57.00
01/08/2023 Regular checkup Kevin Chin $50.00
01/08/2023 Bleeding Misha Patel $58.00
```

Example 1: Possible doctor information report format.

   - It should provide the following information for a patient:
     - The patient personal information (patient number and full name).
     - The doctor information.
     - The list of consultations and total fees due.

```
100 Misha Patel
- Doctor: 1000 James Wright

Consultations
James Wright 1/08/2023 12:00:00 am $58.00
James Wright 10/08/2023 12:00:00 am $50.00

Total Fees Due: $108.00
```

Example 2: Possible patient information report format.

- It should display the consultation report, example below.

```
Consultation Report for XYZ Medical Center

01/08/2023 Headache Doris Grant $57.00
01/08/2023 Regular Checkup Kevin Chin $50.00
01/08/2023 Bleeding Misha Patel $58.00
10/08/2023 Blood Pressure Check Misha Patel $40.00

Total Fees: $205.00
```

Example 3: Possible Consultation Report format.

2. Write and test the code for all the classes.
3. Write code for an application that uses the classes to:
   - Read the files and create the appropriate doctors and patient objects (your Controller will have methods to create these objects).
   - Implement an appropriately designed view (GUI interface). An example is shown in Figure 2 that will:
     - Allow the user to assign a patient to a doctor.
     - Allow the user to add a consultation.
     - Allow the user to view full information about a selected doctor.
     - Allow the user to view full information about a selected patient.
     - Allow the user to view the consultation report.

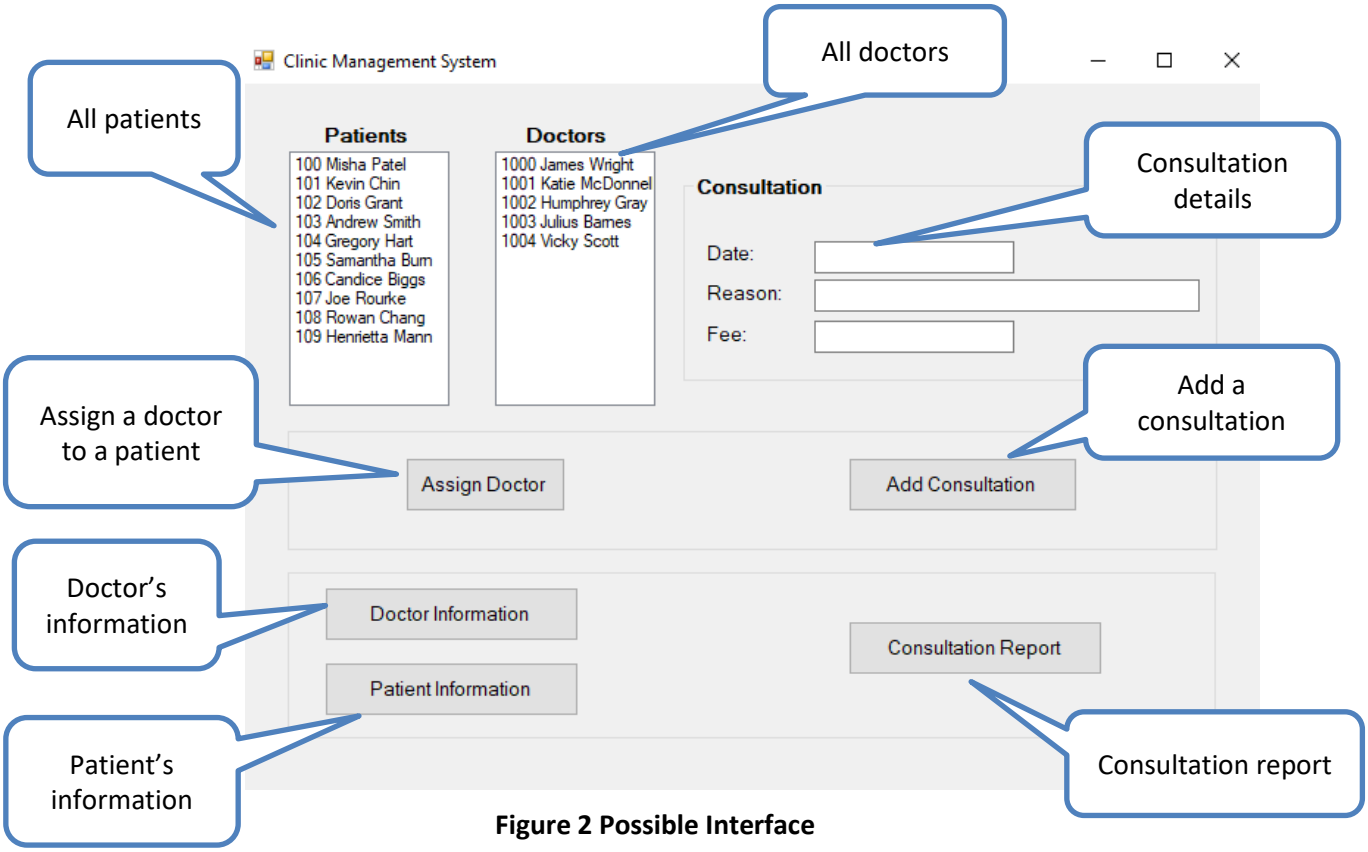

Figure 2 Possible Interface

4. Your application:
    - **Does not** have to provide facilities for the user to add new doctors or patients, or to delete existing objects.
    - **Does not** have to provide facilities for a user to amend details of consultations, doctors or patients (other than adding new consultations).

Note: You may add additional methods as you see fit. You do not need to replicate the GUI provided in Figure 2. Feel free to design your own user interface.

Marking

Criteria	Marks (out of 100)
Model (Patient, Doctor, Consultation)	**30**
Controller	**30**
User Interface	**20**
Error handling	**10**
Coding style, comments, clear logic	**10**

Text Files

Doctor.txt
James,Wright,General Practitioner
Katie,McDonnell,Gynaecologist
Humphrey,Gray,Surgeon
Julius,Barnes,Paediatric
Vicky,Scott,General Practitioner

Patient.txt
Misha,Patel
Kevin,Chin
Doris,Grant
Andrew,Smith
Gregory,Hart
Samantha,Burn
Candice,Biggs
Joe,Rourke
Rowan,Chang
Henrietta,Mann