Medical Clinic Management System

Project Phase I

Project Description

This Java OOP project simulates a system to **record, manage, and analyze data about patients attending to medical clinics**.

A Patient can make a Visit to a Clinic. The Visit can be a Blood Test, Alcohol Test, Incident, or Immunization. In this project, students should apply **OOP concepts** such as abstraction, inheritance, encapsulation, aggregation, association, interfaces, ArrayLists, and file handling.

OOP Concepts Covered

- **Encapsulation**: Private fields with getters/setters in all classes.
- **Abstraction**: Abstract class `Visit` defines shared behavior for `Blood Test, Alcohol Test, Incident, and Immunization.`
- **Inheritance**: Blood Test, Alcohol Test, Incident, and Immunization inherit from `Visit`
- **Interfaces**: `Reportable` interface implemented by all classes that inherit from Visit to print their data to the console.
- **Association**: `Patient is` associated with `Visit`; a `Patient` can have several `Visits`, And each Visit is operated at one Clinic, while a Clinic can have several Visits.
- **ArrayLists**: Used for storing lists of Visits, Patients, and so on.
- **File Handling**: Data is read from a text file and saved back to a text file. This class will be implemented in Phase 2.

Class Overview

Note: below are some of the attributes for the classes, you may need to add more.

- **Patient**: name, Date Of Birth, gender, city occupation, has insurance or not, etc
- **Visit**: Abstract class for medical visits, has common attributes such as visit date, symptoms, diagnosis, etc
- **Blood Test**: Inherits Visit, has attributes RBC, WBC, PLT, etc.
- **Clinic**: clinic name, location, telephone.
- **Incident**: Inherits Visit, has attributes severity (LOW/MEDIUM/HIGH), body part, etc.
- **Alcohol Test**: Inherits Visit, has attributes Blood Alcohol Concentration. test result (POSITIVE/NEGATIVE).
- **Immunization**: Inherits Visit, has attributes Vaccine name, dose.
- **Reportable (interface)**: Method: generateReport(), prints Visit and sub classes data on console
- **FileManager**: Reads data from a text file and saves data back.

Key Functionalities

1. Add/View Patient Information.
2. Add a Visit type and Clinic for a Patient.

3. Print Visit information on console.
4. All data entry and data view in Phase 1 will be done using the console.

Tasks

1. Draw the UML class diagram for the "Medical Clinic Management System".
    - Use any free UML tool (e.g., draw.io) and save it as PDF.
    - Include the `FileManager` class and `Reportable` interface.
2. **Implement the classes in Java** following OOP principles (except File Manager)
3. **Create a driver class with a menu** to test the functionalities:
    - Using the Console you should display a menu options:
        1. New Blood Test visit.
        2. New Alcohol Test visit.
        3. New Incident visit.
        4. New Immunization visit.
        5. Print Patient visit information.
        6. Exit.
    - By selecting any options from the above visits, user shall enter Patient information, visit information, and Clinic information.
    - By selecting option 5, the user can enter Patient name. and the system will search for that Patient and prints all patient and visit information on screen.

Important Notes

- Follow best practices (encapsulation, clean code, comments).
- This is an **individual project**. Collaboration is not permitted.
- Submitting AI-generated code will be considered **academic dishonesty**.