Small Clinic Management System Report

1. Object-Oriented Analysis (OOA)

Objects (Nouns): Patient, ChronicPatient, Doctor, Appointment, ClinicSystem

Attributes (Descriptive Nouns):

- Patient: name, id, age, medicalHistory

- ChronicPatient: conditionType, lastCheckupDate

- Doctor: name, id, specialty

- Appointment: date, time, reason, status, patientID, doctorID

- ClinicSystem: list of patients, list of doctors, list of appointments

Methods (Verbs):

- Patient: scheduleAppointment(), updateHistory(), displayInfo()

- ChronicPatient: scheduleAppointment() [overridden], displayInfo()

- Doctor: displayInfo(), getID()

- Appointment: updateStatus(), displayInfo()

- ClinicSystem: addPatient(), addDoctor(), createAppointment(), cancelAppointment(), showAllAppointments()

Inheritance: ChronicPatient inherits from Patient, overrides scheduleAppointment().

2. Class Design & Inheritance

Appointment manages appointment details.

Patient represents a regular patient with history.

ChronicPatient extends Patient with condition details.

Doctor represents a medical staff member.

ClinicSystem connects patients, doctors, and appointments.

Design demonstrates encapsulation, inheritance, and polymorphism.

3. Code Walkthrough

- Appointment: updateStatus(), displayInfo()

- Patient: scheduleAppointment(), updateHistory(), displayInfo()

- ChronicPatient: overrides scheduleAppointment(), adds displayInfo()

- Doctor: displayInfo(), getID()

- ClinicSystem: addPatient(), addDoctor(), createAppointment(), cancelAppointment(), showAllAppointments()

4. Testing & Sample Output

Main workflow: create clinic, add doctors & patients, create appointments, display, cancel, display again.

Sample Output:

Appointment scheduled for patient John Doe

Chronic patient Jane Doe requires frequent checkups.

Appointment scheduled for patient Jane Doe

--- All Appointments ---

Appointment on 2025-09-10 at 10:00 | Reason: Routine Checkup | Status: Scheduled | PatientID: 101 | DoctorID: 1

Appointment on 2025-09-15 at 14:00 | Reason: Diabetes Follow-up (Chronic Care) | Status: Scheduled | PatientID: 102 | DoctorID: 2

--- After Canceling Appointment 0 ---

Appointment on 2025-09-10 at 10:00 | Reason: Routine Checkup | Status: Canceled | PatientID: 101 | DoctorID: 1

Appointment on 2025-09-15 at 14:00 | Reason: Diabetes Follow-up (Chronic Care) | Status: Scheduled | PatientID: 102 | DoctorID: 2

5. LLM Usage

Used ChatGPT to brainstorm attributes, methods, and example outputs. Final code and explanation written by me.