### **1.1 Functional Requirements**

1. The system must allow Office Managers to register new Dentists with a unique ID, name, phone, email, and specialization.
2. The system must allow Office Managers to register new Patients with name, phone, email, mailing address, and date of birth.
3. The system must allow Patients to request appointments either by calling or through an online form.
4. The system must allow Office Managers to schedule appointments for Patients with available Dentists.
5. Upon booking, the system must send an appointment confirmation email to the Patient.
6. The system must allow Dentists to sign in and view their scheduled appointments and patient details.
7. The system must allow Patients to sign in and view their appointments and dentist information.
8. The system must allow Patients to cancel or reschedule appointments.
9. The system must store and display Surgery details, including name, location, and phone number.
10. The system must ensure a Dentist cannot be scheduled for more than 5 appointments per week.
11. The system must prevent Patients with unpaid bills from making new appointment requests.
12. The system must record appointment details including date, time, Patient, Dentist, and Surgery location.

### **1.2 Domain Model UML Class Diagram**

Here's a description of the classes and relationships:

#### **Classes & Attributes**

* **Dentist**
  + dentist: String
  + firstName: String
  + lastName: String
  + phone: String
  + email: String
  + specialization: String
* **Patient**
  + patientId: String
  + firstName: String
  + lastName: String
  + phone: String
  + email: String
  + address: String
  + dob: Date
  + hasUnpaidBill: Boolean
* **Appointment**
  + appointmentId: String
  + date: Date
  + time: Time
  + status: String (Scheduled, Cancelled, Completed)
* **Surgery**
  + surgeryId: String
  + name: String
  + address: String
  + phone: String
* **OfficeManager**
  + managerId: String
  + name: String
  + email: String

#### **Relationships/Roles**

* OfficeManager registers 0..\* Dentists
* OfficeManager registers 0..\* Patients
* Patient makes 0..\* Appointment(s)
* Dentist attends 0..5 Appointment(s) per week
* Appointment involves exactly 1 Patient and 1 Dentist
* Appointment occurs at 1 Surgery
* Patient logs in to view/cancel/modify appointments
* Dentist logs in to view appointments