



CS26/L – Software Fundamentals and Development

(4381)

## **Dental Appointment System**

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*Figure 1: Logo*

## **Dental Appointment System**

The Dental Appointment and Management System is a web-based application developed using Python, Flask, and SQLite. It provides an efficient way for patients to schedule appointments and for moderators to manage appointments and dentist availability. The system reduces manual errors, prevents scheduling conflicts, and ensures smooth operation of a dental clinic.

## Problem 1: Inefficient Appointment Scheduling

Many dental clinics rely on manual appointment logs, which often result in scheduling conflicts, lost records, or missed appointments. Managing patient information and dentist availability manually is time-consuming and prone to human error.

## Solution 1: Digital Appointment Booking System

The system allows patients to book appointments directly through a user-friendly interface. It automatically records patient details, preferred dentist, service type, date, and time. This eliminates the need for manual logs and reduces scheduling errors.

## Problem 2: Lack of Centralized Management

Without a centralized system, moderators or clinic administrators cannot easily monitor or update appointment statuses. Approving, completing, or cancelling appointments requires manual tracking, which is inefficient and unreliable.

## Solution 2: Moderator Dashboard

The moderator dashboard provides administrators with real-time access to all appointments. They can search, filter, and update the status of appointments, ensuring that the clinic's operations remain organized and transparent.

## Problem 3: Difficulty in Tracking Dentist Availability

Patients may not know which dentist is available at a given time, and clinics cannot quickly manage which dentists are booked or free. This can lead to overbooking and dissatisfied patients.

## Solution 3: Dentist Scheduling Integration

The system includes a dentist dropdown selection, ensuring that patients can only book appointments with available dentists. The moderator can view all appointments per dentist, preventing conflicts and improving scheduling accuracy.

## **Conclusion**

The Dental Appointment and Management System simplify the booking and management of dental appointments. By digitizing patient records and integrating a moderator dashboard, it reduces manual work, prevents scheduling conflicts, and enhances communication between patients and dentists. This system increases efficiency, accuracy, and overall satisfaction for both patients and clinic staff.

## **Tools**

- Python – Backend logic
- Flask – Web framework
- SQLite – Database
- Bootstrap – UI styling
- UUID – Unique identifiers for patients, dentists, and appointments
- tkcalendar – For date selection (optional if using Flask date input)

## **Use Cases**

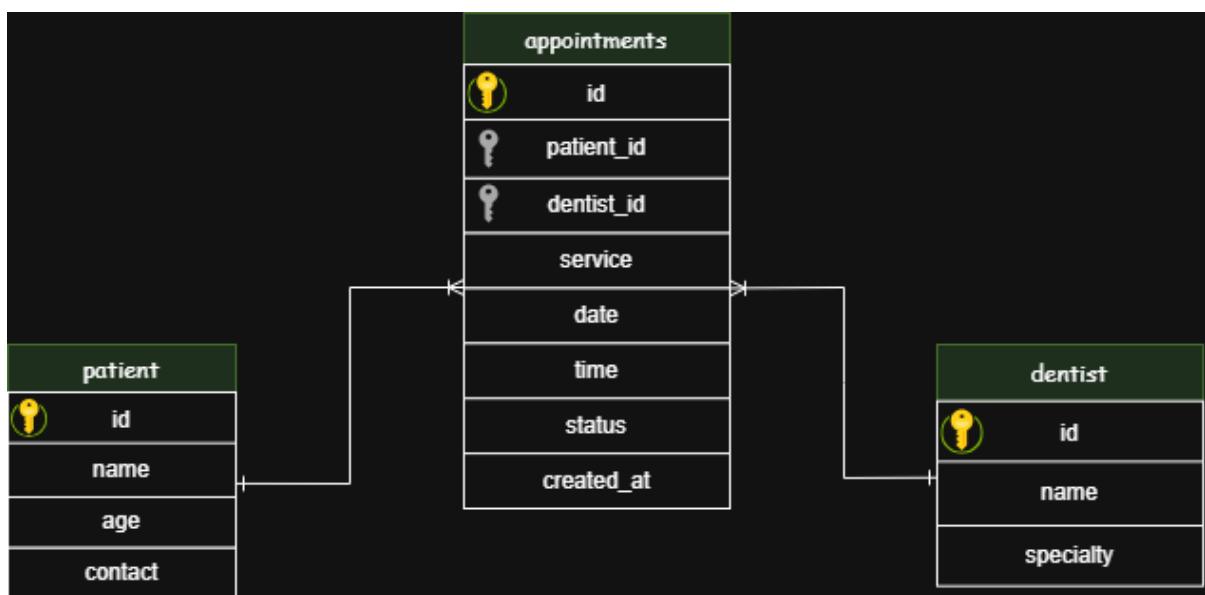
Patient Use Case:

1. Open the booking page
2. Fill personal details
3. Select dentist, service, date, and time
4. Submit Appointment

Moderator Use Case:

1. Open moderator dashboard
2. View all appointments
3. Approve, cancel, or complete appointments
4. Add or remove dentists

## Entity Relationship Diagram



## Data Dictionary

Table 1: Patient

Column	Data Type	Description
patient_id	TEXT	Unique patient (UUID)
name	TEXT	Full name of the patient
age	TEXT	Age of the patient
contact	TEXT	Contact number of the patient

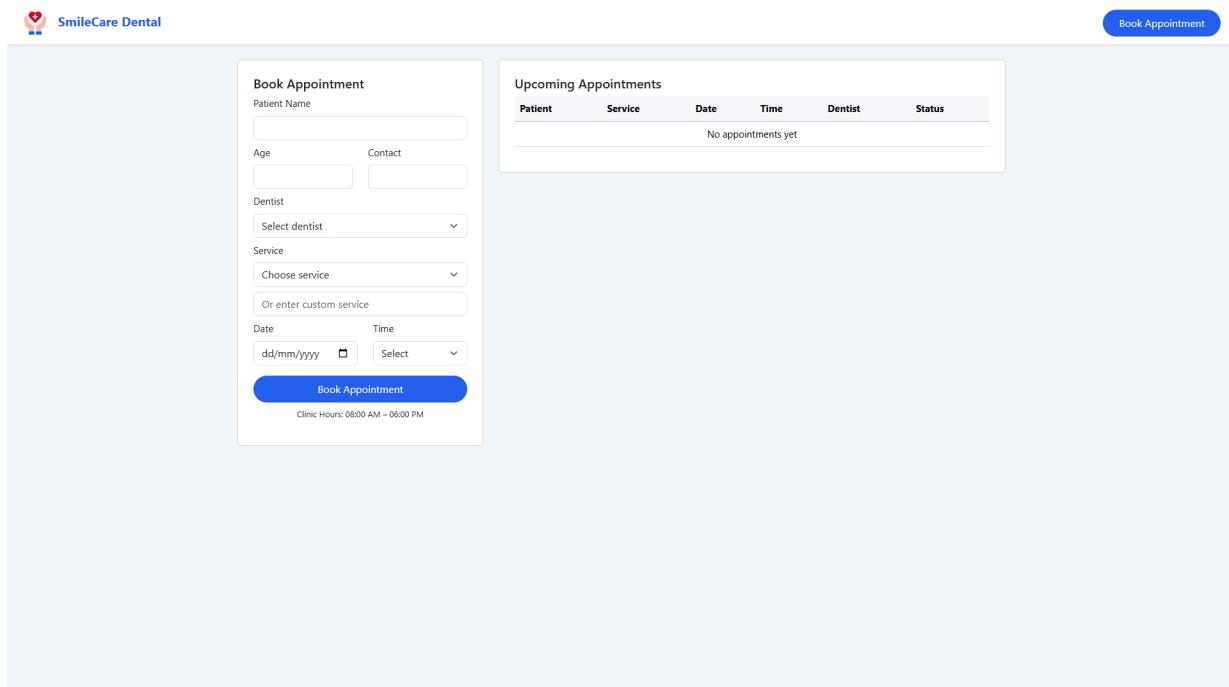
Table 2: Dentist

Column	Data Type	Description
dentist	TEXT	Unique patient (UUID)
name	TEXT	Full name of the patient
age	TEXT	Age of the patient

Table 3: Appointments

Column	Data Type	Description
appointment_id	TEXT	Unique appointment (UUID)
patient_id	TEXT	Foreign key referencing Patient(ID)
dentist_id	TEXT	Foreign key referencing Dentist(ID)
service	TEXT	Type of dental service
date	TEXT	Appointment date
time	TEXT	Appointment time
status	TEXT	Appointment status (pending/approved/etc.)
created_at	TEXT	Timestamp when appointment was created

## User Interface



The screenshot shows the 'Book Appointment' page for SmileCare Dental. At the top left is the logo and the text 'SmileCare Dental'. At the top right is a blue button labeled 'Book Appointment'. The main area is divided into two sections: 'Book Appointment' on the left and 'Upcoming Appointments' on the right.

**Book Appointment Section:**

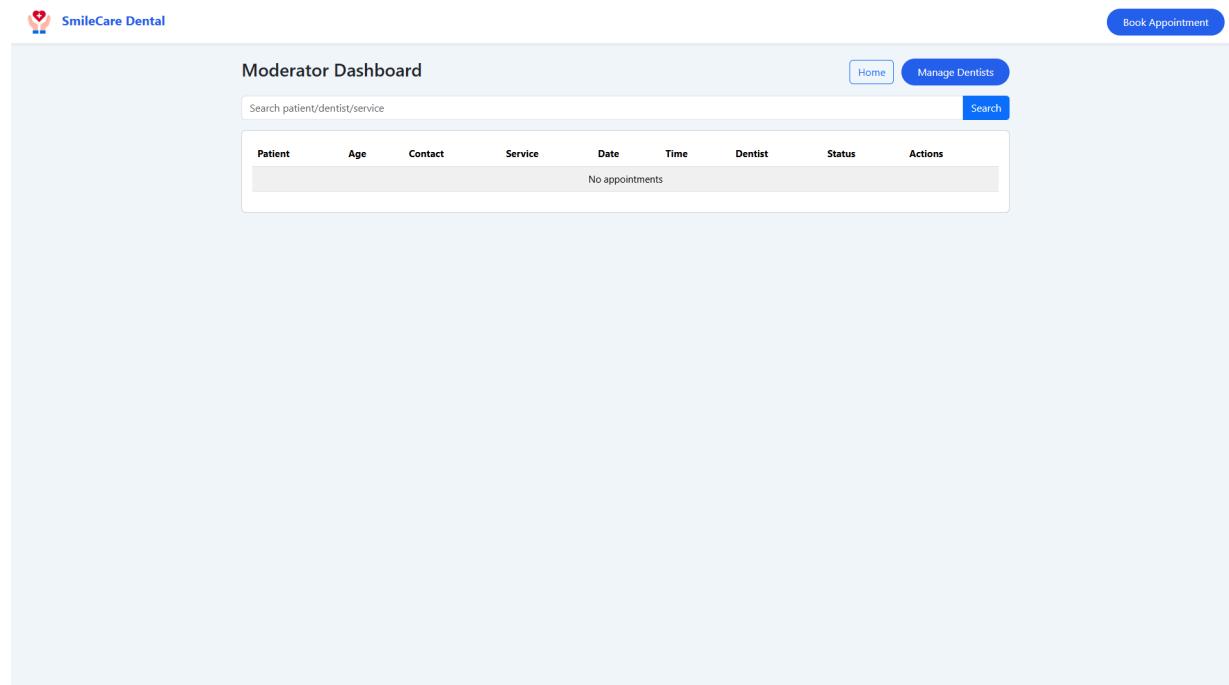
- Patient Name: Input field.
- Age: Input field.
- Contact: Input field.
- Dentist: A dropdown menu labeled 'Select dentist'.
- Service: A dropdown menu labeled 'Choose service'.
- Or enter custom service: Input field.
- Date: Input field with placeholder 'dd/mm/yyyy'.
- Time: Input field with placeholder 'Select' and a dropdown arrow.
- A large blue button labeled 'Book Appointment'.
- A note at the bottom: 'Clinic Hours: 08:00 AM – 06:00 PM'

**Upcoming Appointments Section:**

Patient	Service	Date	Time	Dentist	Status
No appointments yet					

Figure 2: Booking Page

Description: Form with patient details, dentist selection, service, date, and time. Time slots generated dynamically for each dentist



The screenshot shows the 'Moderator Dashboard' page for SmileCare Dental. At the top left is the logo and the text 'SmileCare Dental'. At the top right are buttons for 'Home' and 'Manage Dentists'. The main area is titled 'Moderator Dashboard' and contains a search bar and a table.

**Moderator Dashboard Section:**

- Search patient/dentist/service: Input field.
- Search: Blue button.
- A table with columns: Patient, Age, Contact, Service, Date, Time, Dentist, Status, Actions.
- The table displays the message: 'No appointments'.

Figure 3: Moderator Dashboard

Description: Searchable, sortable appointment table. Buttons to approve, complete, cancel, or delete appointments.

**Manage Dentists**

Add Dentist

Dentist name	Specialty	Add
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Existing Dentists

No dentists yet
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**Close**

The image shows a modal dialog box titled "Manage Dentists". At the top right is a close button (an "X"). Below the title is a section labeled "Add Dentist" containing two input fields: "Dentist name" and "Specialty", followed by a blue "Add" button. Below this is a section labeled "Existing Dentists" with a message "No dentists yet". At the bottom right of the dialog is a "Close" button.

*Figure 4: Manage Dentist*

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