



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

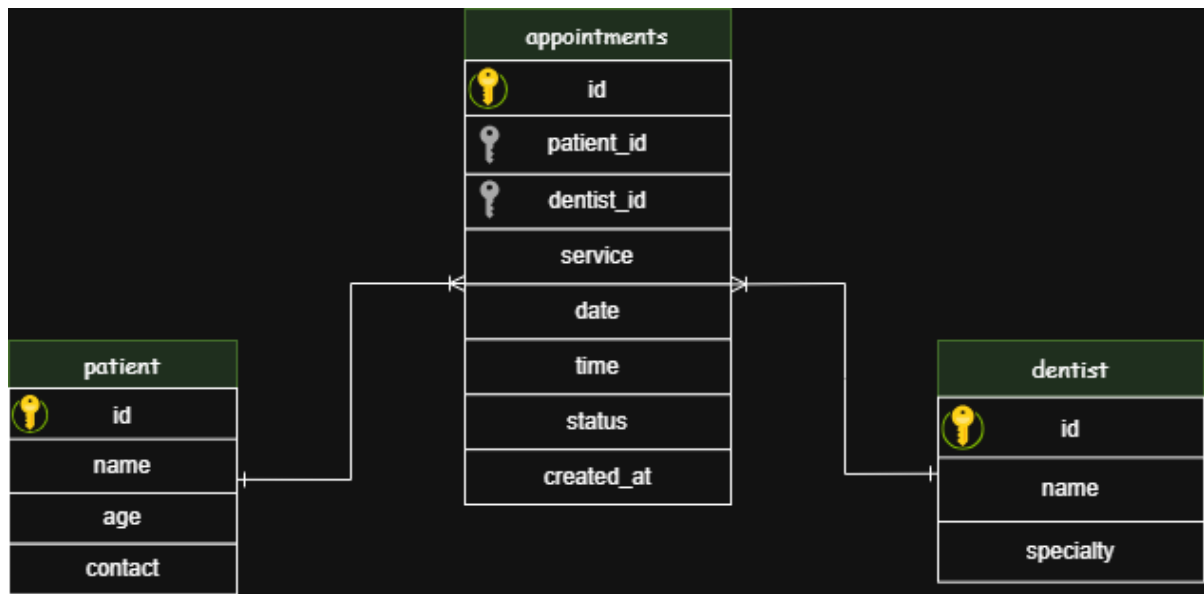
Patient Use Case:

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

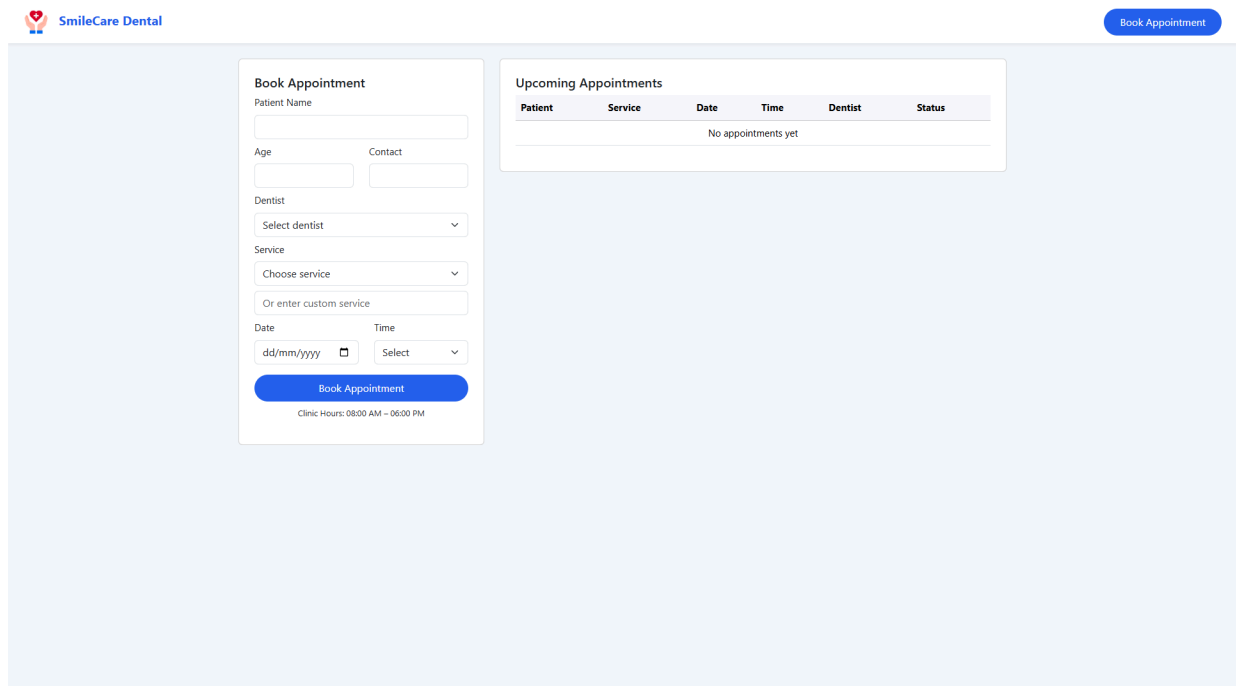
Table 2: Dentist

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

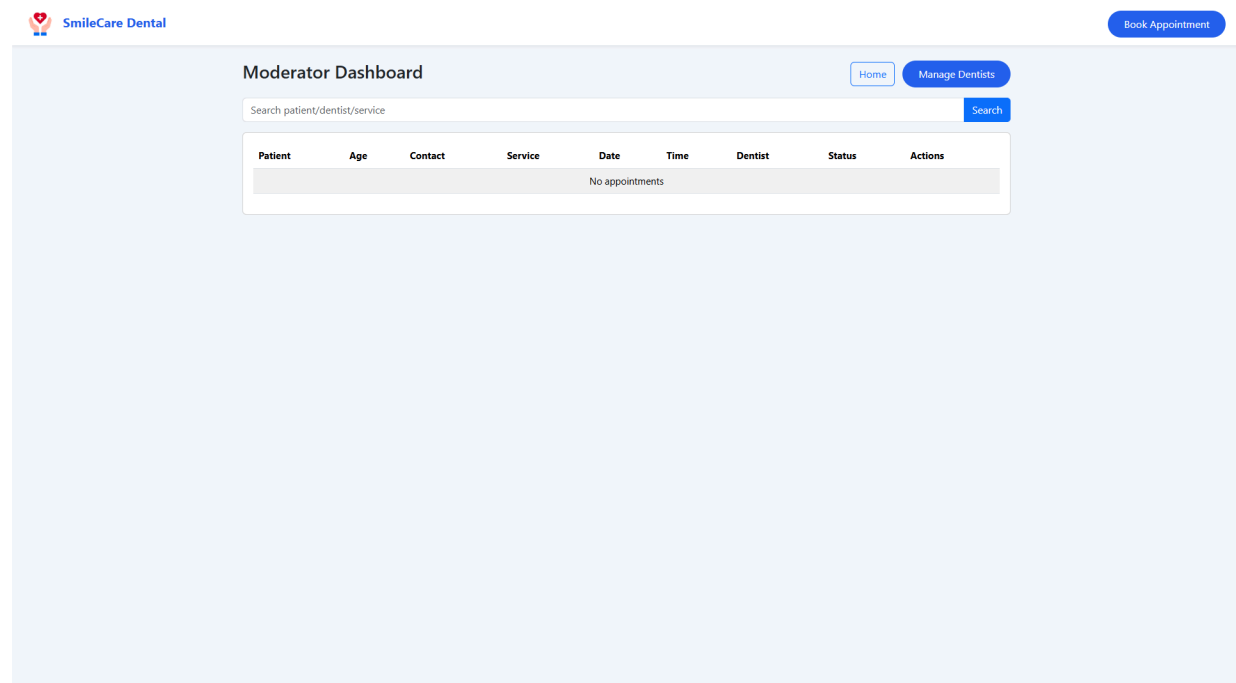
User Interface



The image shows the 'SmileCare Dental' booking page. At the top left is the logo, and at the top right is a 'Book Appointment' button. The main content area is divided into two sections. The left section, titled 'Book Appointment', contains a form with the following fields: 'Patient Name' (text input), 'Age' (text input), 'Contact' (text input), 'Dentist' (dropdown menu with 'Select dentist' as the placeholder), 'Service' (dropdown menu with 'Choose service' as the placeholder), and 'Or enter custom service' (text input). Below these is a date and time selector with 'Date' (calendar icon, 'dd/mm/yyyy') and 'Time' (dropdown menu with 'Select' as the placeholder). A blue 'Book Appointment' button is at the bottom of the form, with 'Clinic Hours: 08:00 AM - 06:00 PM' displayed below it. The right section, titled 'Upcoming Appointments', features a table with columns: Patient, Service, Date, Time, Dentist, and Status. The table currently shows '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 image shows the 'SmileCare Dental' Moderator Dashboard. At the top left is the logo, and at the top right is a 'Book Appointment' button. The dashboard has a header with 'Moderator Dashboard' on the left, and 'Home' and 'Manage Dentists' buttons on the right. Below the header is a search bar with the placeholder text 'Search patient/dentist/service' and a blue 'Search' button. The main content area features a table with columns: Patient, Age, Contact, Service, Date, Time, Dentist, Status, and Actions. The table currently shows '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

Existing Dentists

No dentists yet

Close

Figure 4: Manage Dentist

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