Dental Clinic Management System

A project submitted to

BABU MADHAV INSTITUTE OF INFORMATION TECHNOLOGY

Bachelors of Science

in

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for

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By

Group No. 40

Mohammedkaif Amalsadi

202106100110014

Vivek Katariya

202106100110054

Saad Ogasia

202106100110057

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Babu Madhav Institute of Information Technology

Uka Tarsadia University

Bardoli – 394350

Table of Content

Chapter 1: Introduction

1.1 Problem Definition

To develop a smart dental clinic system that solves the problem of appointment scheduling, minimizes wait-times, and provides user friendly tools for patients, receptionist, and dentists. This system should enable patients to book appointments online, optimize queue management, help receptionist and dentists to manage their receptionist effectively.

1.2 Project Objectives

The objective of the Dental Clinic Management System is to make a user-friendly computer program that helps the dental clinic with patient records, appointment scheduling, billing, inventory, and receptionist schedules. It also keeps patient information secure and improves the clinic's efficiency.

1.3 Project Scope

The project scope for the Dental Clinic Management System is limited to the dental clinic's physical location or locations where it will be implemented. The system will be designed and deployed to serve the needs of the specific dental clinic involved in the project. It will not extend beyond the physical boundaries of the dental clinic for which it is Intended.

Chapter 2: Overall Description

2.1 Product Perspective/ Environment Description

2.1.1 Hardware Interface/ Hardware Specification

The Dental Clinic Management System will require a computer

System with the following minimum hardware specifications

Processor: Intel Core i3

RAM: 4 GB

Storage: 128 GB SSD

Display: 13-inch screen or larger with a minimum resolution of 1366x768

Internet Connection: Broadband/Wi-Fi connection for online features

Operating System: Windows 10, macOS, or Linux Software

2.2.2 Software Interface/ Software Specification

The Dental Clinic Management system will be developed using following

Technologies:

Server-Side Scripting Language: PHP (version 7.0 or higher).

Web Technologies: HTML5, CSS3Database: MySQL or any compatible relational database management system by meeting these hardware and software specifications.

Server Environment: XAMPP (Apache, MySQL, PHP, phpMyAdmin) for local development and testing

The Dental Clinic Management System will ensure optimal performance and compatibility with standard computer system commonly used in dental clinic**.**

Chapter 3: System Specification Requirements

3.1 Functional Requirements

Register and Login

FRN	Description	Comments
FR1	This module will allow users to register and login into the system.	Register and login page
FR2	With this module, the admin can register dentists and staff members into the system.	Register page
FR3	This facility allows patients to register themselves into the system, or it can be done by staff members on their behalf	Register page

Manage Users

FRN	Description	Comments
FR1	Dashboard will allow admin to manage users of the system, including task like viewing, updating and deleting profiles.	Dashboard page
FR2	Patient will also be able to manage their profile.	Dashboard page
FR3	Dentist will have capability to search and view their patients.	Appointment page
FR4	Using this module patient will be able to view all available doctors.	Treatments page

Treatment options

FRN	Description	Comments
FR1	Patient will have access to view and explore various treatments options, along with detailed information about each treatment.	Treatments page
FR2	Each treatment will contain information like treatment name, description, duration, cost etc.	Treatments page
FR3	Staff members will have capability to modify treatment details, enabling them to update any changes or corrections to the information related to each treatment.	Treatments page

Manage Appointments

FRN	Description	Comments
FR1	Patient will be able to request an appointment for their treatment.	Booking page
FR2	Staff members will be able to access appointment page to view available appointment requests and perform task like scheduling or canceling appointments as needed it.	Appointment page
FR3	Patient can use this page to check status of their appointments.	Appointment page
FR4	With this module, dentist can access and view the booked appointments of their patients.	Appointment page

Patient records

FRN	Description	Comments
FR1	With patient records module, the clinic can maintain accurate and up-to-date information about patient's personal data, billing, and a complete record of all received treatments.	Patient records page
FR2	Staff will have capability to regularly update and maintain the treatment details of each patient within the records.	Patient records page
FR3	Patient treatment details will be accessible by dentist, staff and patients.	Patient records page

Payment management

FRN	Description	Comments
FR1	The system will provide patients with comprehensive and itemized billing statements, offering a clear and detailed breakdown of services received and associated charges.	Payment page
FR2	Patient will have the flexibility to make payments either physically at the clinic.	Payment page

Feedback

FRN	Description	Comments
FR1	The feedback page will function for patients, dentists and page administrator.	Feedback
FR2	Patient will be able to provide feedback on services and page experience.	Feedback
FR3	The feedback page will be accessible for dentists, enabling page them to view patient feedbacks.	Feedback
FR4	Admin will be able to access and review the feedback for page continuous improvement and enhanced patient satisfaction	Feedback

3.2 Non-Functional Requirements

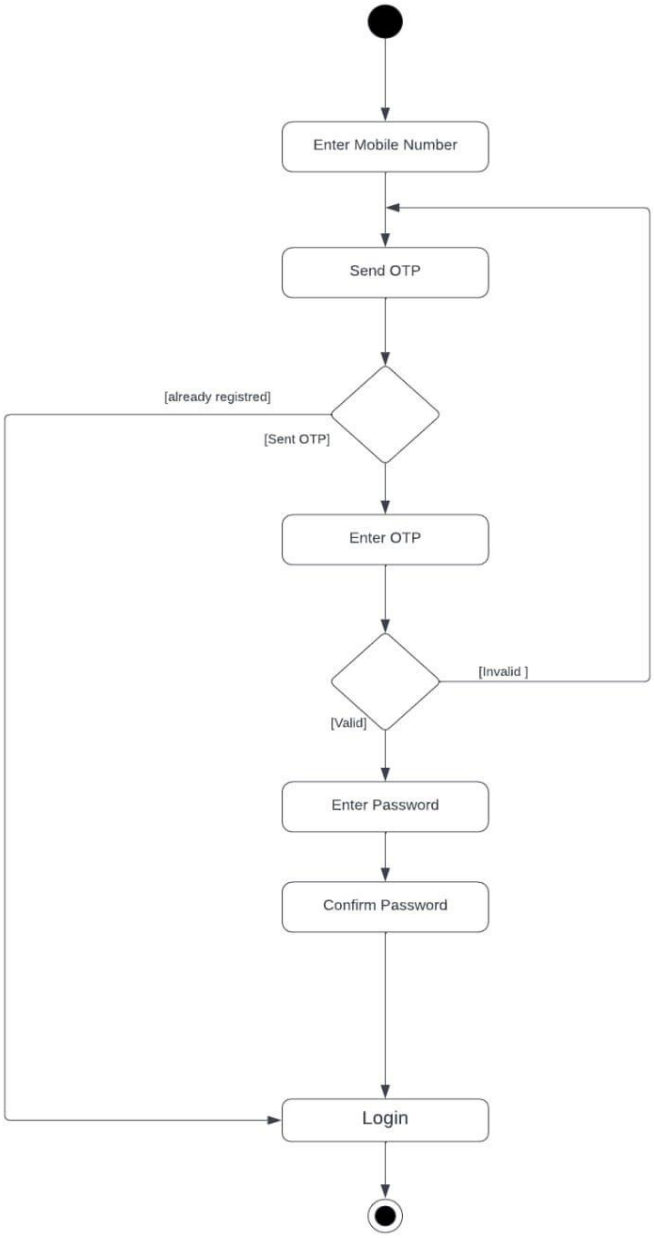
NFRN	Description	Comments
NFR1	The system should respond quickly and efficiently to user Interactions, providing a smooth and seamless experience.	Performance
NFR2	The system should be dependable and robust, ensuring minimal downtime and data Integrity.	Reliability
NFR3	The system should be able to handle an increasing number of users and patient data without compromising performance.	Scalability
NFR4	The system should have robust security measures to protect patient data and ensure confidentiality and privacy.	Security
NFR5	The system should be user-friendly and Intuitive, making it easy for receptionist to learn and navigate.	Usability
NFR6	The system should be compatible with various devices and browsers to accommodate user's preferences	Compatibility
NFR7	The system should be easy to maintain and update, with well-organized code and documentation.	Maintainability

Chapter 4: UML Diagrams

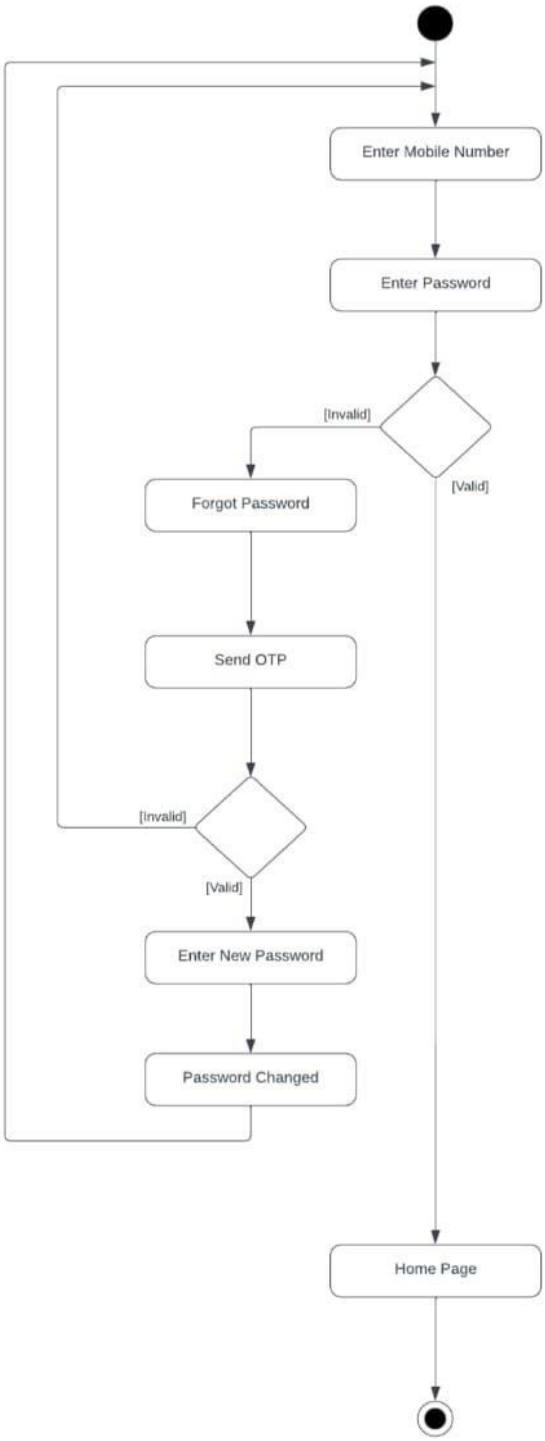
4.1 Use Case Diagram

4.2 Activity Diagram

1. Register



2. Login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Enter Password
[Invalid]
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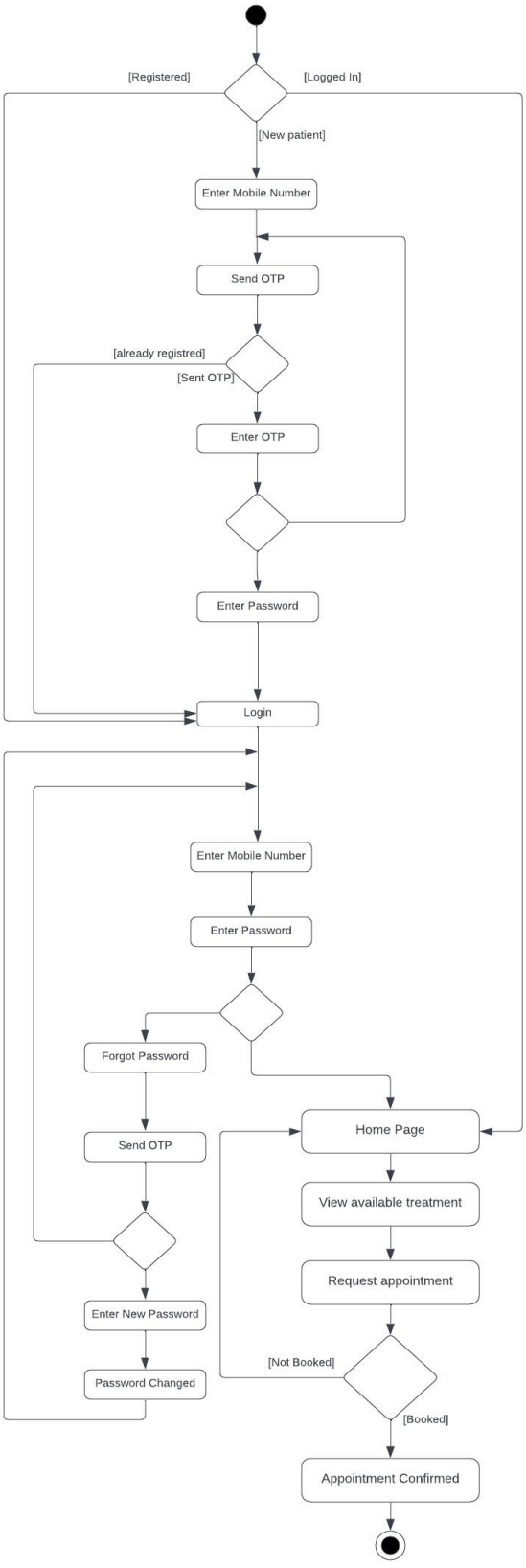
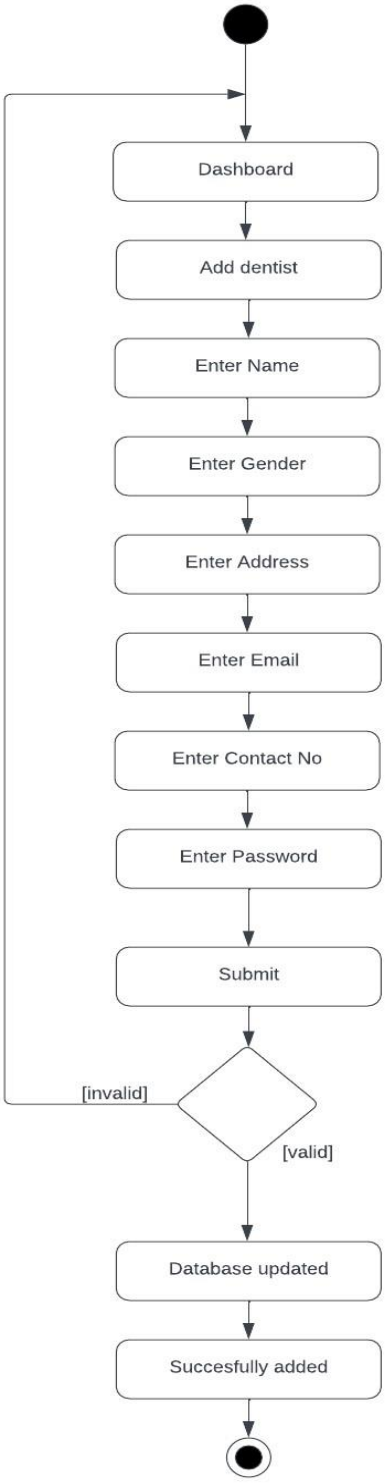
Forgot Password
Send OTP
[invalid]
[Valid]
Enter New Password
Password Changed
Home Page

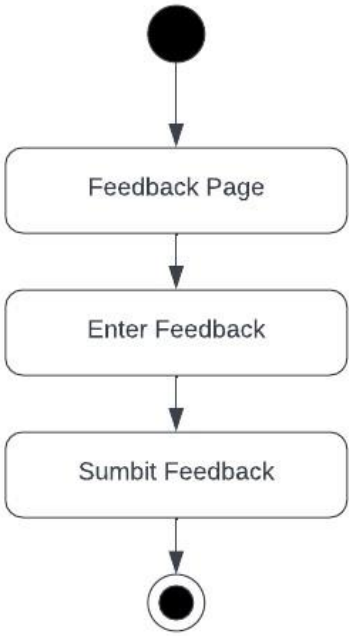
3.Appointment



4. Add Dentist



5. Feedback



Chapter 5: System Design

5.1 Database Design

5.1.1 Database Schema

1. Tbl_Admin (Admin_ID (PK), Password)
2. Tbl_Dentist (Dentist_ID (PK), Dentist_Name, Gender, Address, Email, Contact_No, Password)
3. Tbl_Receptionist (Receptionist_ID (PK), Receptionist_Name, Gender, Address, Email, Contact_No, Password)
4. Tbl_Patient (Patient_ID (PK), Patient_Name, DOB, Gender, Medical_Condition, Address, Email, Contact_No, Password)
5. Tbl_Treatments (Treatment_ID (PK), Treatment_Name, Treatment_Desc, Cost, Dentist_ID(FK), Status)
6. Tbl_Availability (Dentist_ID (FK), Status)
7. Tbl_Appointment (Appointment_ID (PK), Patient_ID(FK), Treatment_ID(FK), Status,Date)
8. Tbl_Schedule (Patient_ID (FK), Dentist_ID (FK), Appointment_ID (FK), Treatment_ID (FK))
9. Tbl_Payment (Payment_ID (PK), Patient_ID (FK), Treatment_ID (FK), Date)
10. Tbl_TreatmentRecords (Record_ID (PK), Patient_ID (FK), Dentist_ID (FK), Payment_ID (FK), Treatment_ID (FK))
11. Tbl_Feedback (Feedback_ID (PK), Patient_ID (FK), Comment, Date)

5.1.2 Database Dictionary

1. Admin

No.	Field Name	Datatype	Size	Constraint	Description
1.	Admin_ID	Int	-	Primary key, Auto increment	ID of admin
2.	Password	Varchar	50	Not null	Password of admin

2. Dentist

No.	Field Name	Datatype	Size	Constraint	Description
1.	Dentist_ID	Int	-	Primary key, Auto increment	ID of registered Dentist
2.	Dentist_Name	Varchar	60	Not null	Name of the Dentist
3.	Gender	enum	-	Not null	Gender of the Dentist
4.	Address	Varchar	150	Not null	Address of Dentist
5.	Email	Varchar	50	Not null	Email ID of Dentist
6.	Contact_No	Long	-	Not null	Contact number of Dentist
7.	Password	Varchar	50	Not null	Password of the Dentist by which he/she can log Into the system

3. Receptionist

No.	Field Name	Datatype	Size	Constraint	Description
1.	Receptionist _ID	Int	-	Primary key, Auto increment	ID of Receptionist
2.	Receptionist_Name	Varchar	60	Not null	Name of the Receptionist
3.	Gender	Enum	-	Not null	Gender of the Receptionist
4.	Address	Varchar	150	Not null	Address of Receptionist
5.	Email	Varchar	150	Not null	Email id of Receptionist
6.	Contact_No	Int	-	Not null	Contact No of Receptionist
7.	Password	Varchar	50	Not null	Password of Receptionist

4. Treatment

No.	Field Name	Datatype	Size	Constraint	Description
1.	Treatment _ID	Int	-	Primary key, Auto increment	ID of the treatment
2.	Treatment _Name	Varchar	60	Not null	Name of the treatment
3.	Treatment_Desc	Varchar	1000	Not null	Detailed description of the treatment
4.	Cost	Int	-	Not null	Cost of the treatment
5.	Dentist_Id	Int	150	Not null	Dentist ID
6.	Status	enum	-	Not null	Status of treatment

5. Appointment

No.	Field Name	Datatype	Size	Constraint	Description
1.	Appointment_ID	Int	-	Primary key, Auto increment	ID of the appointment
2.	Patient_ID	Int	-	Foreign key	ID of Patient who is requesting the appointment
3.	Treatment_ID	Int	-	Foreign key	ID of treatment selected by Patient
4.	Status	enum	-	not null	Status of an appointment request, it can be confirmed or cancelled

6. Availability

No.	Field Name	Datatype	Size	Constraint	Description
1.	Dentist_ID	Int	-	Foreign key	ID of the Dentist
2.	Status	enum	-	Not null	Status of Dentist if he/she is available or not

7. Appointment

No.	Field Name	Datatype	Size	Constraint	Description
1.	Appointment_ID	Int	-	Primary key, Auto increment	ID of the appointment
2.	Patient_ID	Int	-	Foreign key	ID of Patient who is requesting the appointment
3.	Treatment_ID	Int	-	Foreign key	ID of treatment selected by Patient
4.	Status	enum	-	not null	Status of an appointment request, it can be confirmed or cancelled
5	Date	date	-	not null	Date of the appointment

8. Schedule

No.	Field Name	Datatype	Size	Constraint	Description
1.	Patient_ID	Int	-	Foreign key	ID of the Patient
2.	Dentist_ID	Int	-	Foreign key	ID of the Dentist
3.	Appointment_ID	Int	-	Foreign key	ID of the Appointment
4.	Treatment_ID	Int	-	Foreign key	ID of the treatment to be performed

9. Payment

No.	Field Name	Datatype	Size	Constraint	Description
1.	Payment_ID	Int	-	Primary key, Auto increment	ID of transaction
2.	Patient_ID	Int	-	Foreign key	ID of patient who is transacting
3.	Treatment_ID	Int	-	Foreign key	ID of treatment which was performed
4.	Date	date	-	not null	Date on which the transaction is done

10. Records

No.	Field Name	Datatype	Size	Constraint	Description
1.	Record_ID	Int	-	Primary key, Auto increment	ID of the Record
2.	Patient_ID	Int	-	Foreign key	ID of the Patient
3.	Dentist_ID	Int	-	Foreign key	ID of the Dentist
4.	Treatment_ID	Int	-	Foreign key	ID of the Transaction
5.	Payment_ID	Int	-	Foreign key	ID of the transaction

11. Feedback

No.	Field Name	Datatype	Size	Constraint	Description
1.	Feedback_ID	Int	-	Primary key, Auto increment	ID of the feedback
2.	Patient_ID	Int	-	Foreign key	ID of the patient
3.	Comment	Varchar	200	not null	Comments on service provided by system
4.	Date	date	-	not null	Date of the feedback