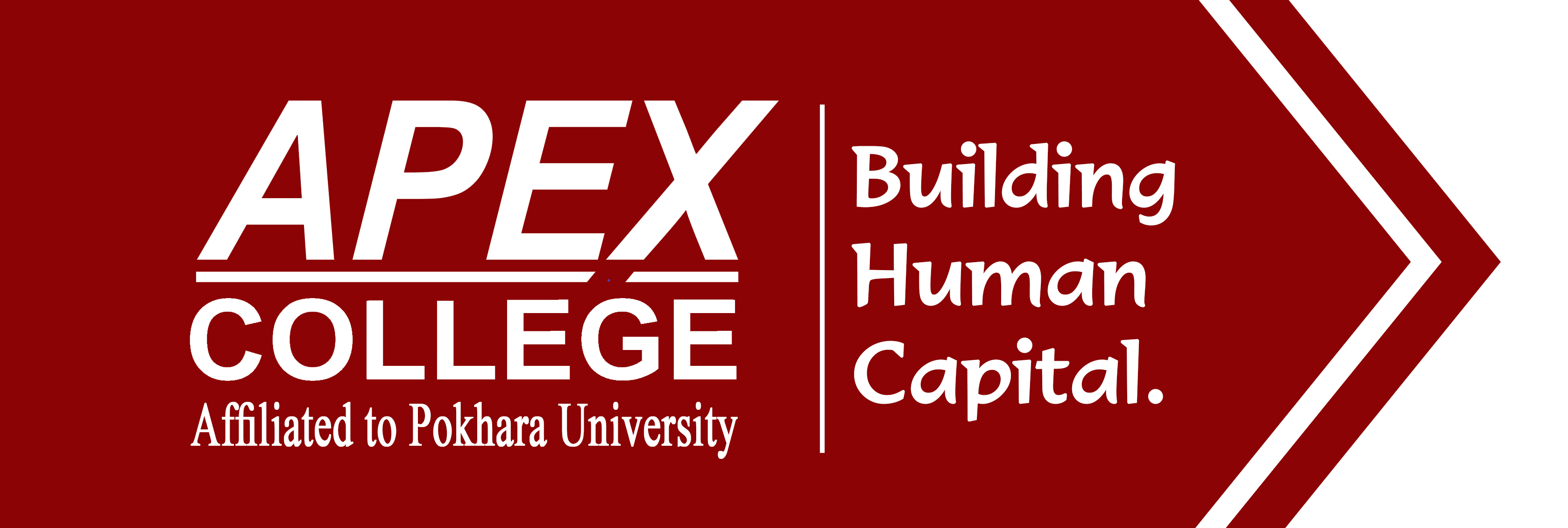
**POKHARA UNIVERSITY**

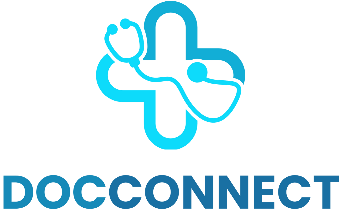
APEX COLLEGE

Department of Management

MAJOR PROJECT REPORT

ON



**DOCTOR’S APPOINTMENT BOOKING SYSTEM**

BY

Ajai Shakya - (19080026)

Anish Kayastha - (19080030)

Ishwor Shrestha - (19080040)

Manish Chaulagain - (19080047)

A PROJECT WORK SUBMITTED TO THE DEPARTMENT OF MANAGEMENT IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE BACHELOR OF COMPUTER INFORMATION SYSTEM

**KATHMANDU, NEPAL**

**2023**

**POKHARA UNIVERSITY**

**APEX COLLEGE**

**Department of Management**

The undersigned certify that they have read, and recommended to Pokhara University for acceptance, the project report titled **“DOCTOR’S APPOINTMENT BOOKING SYSTEM”** submitted by Ajai Shakya (19080026), Anish Kayastha (19080030), Ishwor Shrestha (19080040), Manish Chaulagain (19080047) in partial fulfillment of the requirement for the Bachelor of Computer Information System.

**Ujjwol Shakya**,

Project Supervisor

BCIS Program Head, ,Apex College

**Saurav Subedi**,

Internal Examiner,

Lecturer - BCIS Faculty, Apex College

**Dipak Malla**,

External Examiner,

CEO, Treeleaf Technologies

**Sabin Maharjan**,

External Examiner,

Country Manager, Auxfin Development Nepal

**Yogendra Maharjan**,

External Examiner,

CEO, ITGlance

**POKHARA UNIVERSITY**

**APEX COLLEGE**

**Department of Management**

The undersigned certify that they have read, and recommended to Pokhara University for acceptance, the project report titled **“DOCTOR’S APPOINTMENT BOOKING SYSTEM”** submitted by Ajai Shakya (19080026), Anish Kayastha (19080030), Ishwor Shrestha (19080040), Manish Chaulagain (19080047) in partial fulfillment of the requirement for the Bachelor of Computer Information System.

**Ujjwol Shakya**,

Project Supervisor

BCIS Program Head, , Apex College

**Saurav Subedi**,

Internal Examiner,

Lecturer - BCIS Faculty, Apex College

**DECLARATION**

The project report titled “**DOCCONNECT**” submitted for the partial fulfillment of the requirement for the degree of Bachelors of Computer Information System to Pokhara University, comprises only original work and due acknowledgement have been made to the materials used in this report.

Ajai Shakya - (19080026)

Anish Kayastha - (19080030)

Ishwor Shrestha - (19080040)

Manish Chaulagain - (19080047)

**24th July, 2023**

# ACKNOWLEDGEMENT

We would like to acknowledge our debt to each & every person associated in this Project Development. The Project Development required huge Commitment from all the individuals involved in it. We would like to extend our special gratitude to our project coordinator Mr. Anmol Shrestha whose contribution in stimulating suggestions and encouragement helped us to coordinate our project especially in writing this report. Furthermore, we would like to appreciate the guidance given by our project supervisor **Mr. Ujjwol Shakya** who has provided proper guidance and invested his full effort in guiding the team in achieving the goal.

We would also like to acknowledge with much appreciation the crucial role of the teachers who gave the permission to use all required equipment and the necessary materials to complete the **MAJOR PROJECT**. Special thanks go to our team mates who helped us to assemble the parts and aided in the successful completion of this project with effective team work. We have to appreciate the guidance given by other supervisors as well as the panels especially in our project presentation that has improved our presentation skills thanks to their comment and advice. The Project is a result of the efforts of all the people who are associated with the **'DOCCONNECT – Doctors’ Appointment Booking System'** directly or indirectly, who helped us to successfully complete the project within the specified time frame.

We assure you that in upcoming times we will do better and better. This report helped us a lot to know about website development and designing.

Thank You!

# ABSTRACT

The Doctor’s Appointment Booking System, "DOCCONNECT," is a user-centric web-application that aims to directly connect patients with healthcare providers in Nepal. By streamlining the process of scheduling doctor appointments, DOCCONNECT enhances healthcare accessibility and efficiency for users.

Extensive research and a thorough literature review have provided valuable insights into the challenges faced by patients and healthcare providers in the appointment booking process. Drawing from successful implementations and best practices in the field, DOCCONNECT is designed to address these challenges effectively.

The system design and implementation phase focuses on creating a user-friendly platform that offers comprehensive doctor profiles, real-time appointment updates, and an intuitive dashboard for healthcare providers. Robust backend frameworks are employed to ensure data security and privacy, adhering to relevant industry standards.

Comprehensive testing and debugging are integral parts of the development process. Various testing methodologies, including functionality testing, usability testing, security testing, and performance testing, are conducted to validate DOCCONECT's functionality and user experience. Identified defects and issues are meticulously resolved to ensure a seamless user journey.

The results of testing and debugging confirm the success of DOCCONNECT in meeting its objectives. The web-application delivers a reliable and secure platform for doctor appointment bookings. Positive user feedback reinforces its impact on enhancing healthcare accessibility and appointment management.

Despite its completion, DOCCONNECT has certain limitations. Internet connectivity challenges in remote areas and digital literacy requirements may limit some users' access. Addressing data security concerns and language localization can further enhance the platform's reach and inclusivity.

**TABLE OF CONTENTS**

[ACKNOWLEDGEMENT i](#_Toc140962319)

[ABSTRACT ii](#_Toc140962320)

[LIST OF FIGURES vi](#_Toc140962321)

[LIST OF TABLES vii](#_Toc140962322)

[LIST OF ABBRIVIATIONS viii](#_Toc140962323)

[CHAPTER I 1](#_Toc140962324)

[INTRODUCTION 1](#_Toc140962325)

[1.1 Background 1](#_Toc140962326)

[1.2 Scope 2](#_Toc140962327)

[1.3 Project Description 2](#_Toc140962328)

[1.4 Objectives 3](#_Toc140962329)

[1.4.1 Academic Objectives 3](#_Toc140962330)

[1.4.2 Project Objectives 4](#_Toc140962331)

[CHAPTER II 5](#_Toc140962332)

[LITERATURE REVIEW 5](#_Toc140962333)

[CHAPTER III 7](#_Toc140962334)

[SYSTEM DESIGN AND IMPLEMENTATION 7](#_Toc140962335)

[3.1 System Design 7](#_Toc140962336)

[3.1.1 Context Flow Diagram 7](#_Toc140962337)

[3.1.2 Data Flow Diagram 7](#_Toc140962338)

[3.1.3 E-R Diagram 8](#_Toc140962339)

[3.1.4 Use Case Diagram 9](#_Toc140962340)

[3.2 System Description 9](#_Toc140962341)

[3.2.1 User Registration and Authentication 9](#_Toc140962342)

[3.2.2 Comprehensive Doctor Profiles 10](#_Toc140962343)

[3.2.3 Flexible Appointment Scheduling 10](#_Toc140962344)

[3.2.4 Secure Dashboard for Doctors 10](#_Toc140962345)

[3.2.5 Data Privacy and Security 11](#_Toc140962346)

[3.2.6 Technologies Tools used for System Development 11](#_Toc140962347)

[3.3 System Analysis 12](#_Toc140962348)

[3.3.1 Requirements Gathering 12](#_Toc140962349)

[3.3.2 Feasibility Study 12](#_Toc140962350)

[CHAPTER IV 15](#_Toc140962351)

[TESTING, DEBUGGING AND RESULTS 15](#_Toc140962352)

[4.1 Testing 15](#_Toc140962353)

[4.2 Debugging 21](#_Toc140962354)

[4.3 Results 22](#_Toc140962355)

[CHAPTER V 23](#_Toc140962356)

[SUMMARY 23](#_Toc140962357)

[5.1 Conclusion 23](#_Toc140962358)

[5.2 Limitations 24](#_Toc140962359)

[5.3 Future Enhancement 24](#_Toc140962360)

[REFERENCES 25](#_Toc140962361)

[APPENDICES 26](#_Toc140962362)

# LIST OF FIGURES

[Figure 1 – Context Flow Diagram 7](#_Toc140962313)

[Figure 2 - Data Flow Diagram. 8](#_Toc140962314)

[Figure 3 - ER Diagram 8](#_Toc140962315)

[Figure 4 - Use Case Diagram 9](#_Toc140962316)

# LIST OF TABLES

[Table 1 - [01] User Registration - Valid Credentials 16](#_Toc140962304)

[Table 2 - [02] User Registration - Invalid or Duplicate Email 16](#_Toc140962305)

[Table 3 - [03] Appointment Booking - Invalid or Unavailable Doctor 17](#_Toc140962306)

[Table 4 - [04] Appointment Booking - Valid Doctor and Time Slot 18](#_Toc140962307)

[Table 5 - [05] Search and Filter - Doctors by Name, Specialty, and Location 18](#_Toc140962308)

[Table 6 - [06] Payment Integration - Invalid Payment Details 19](#_Toc140962309)

[Table 7 - [07] Rating and Reviews - Average Rating Update 20](#_Toc140962310)

[Table 8 - [08] Feedback Collection - Submitting Feedback 20](#_Toc140962311)

[Table 9 - [09] Email Notifications - Forget/Reset Password 21](#_Toc140962312)

# LIST OF ABBRIVIATIONS

|  |  |  |
| --- | --- | --- |
| AJAX |  | Asynchronous JavaScript and XML |
| API |  | Application Programming Interfaces |
| BCIS |  | Bachelor in Computer Information System |
| CI/CD |  | Continuous Integration and Continuous Deployment |
| CMS |  | Content Management System |
| CSS |  | Cascading Style Sheets |
| HTML |  | Hyper Text Markup Language |
| IT |  | Information Technology |
| JS |  | JavaScript |
| PU |  | Pokhara University |
| SCSS |  | CSS with Superpowers |
| UI |  | User Interface |
| XHTML |  | Extensible Hypertext Markup Language |
| XML |  | Extensible Markup Language |

# CHAPTER I

# INTRODUCTION

## 1.1 Background

The healthcare system in Nepal and across the global context has long grappled with challenges related to healthcare accessibility and efficiency. In Nepal, the geographical terrain and disparities in medical infrastructure can pose significant hurdles for individuals seeking timely medical services, including doctor appointments. Moreover, in the face of increasing population demands and advancements in medical technology, the traditional approach to scheduling appointments often results in long waiting times and inconvenience for patients.

To address these issues and bridge the gap between patients and doctors, our team embarked on the development of a user-centric web-application called "DOCCONNECT" This project was born out of a vision to harness the potential of Information Technology to improve healthcare accessibility and enhance the patient experience in Nepal and beyond.

The inspiration for this project arose from the realization that modern technology has transformed various industries, and healthcare should not be an exception. Web applications have proven to be powerful tools in streamlining processes, optimizing resource allocation, and improving communication between service providers and users. By introducing DOCCONNECT as a dedicated platform for direct doctor appointments, we aim to transform the way patients access medical care and optimize the scheduling process for healthcare providers.

Moreover, the global tech context emphasizes the significance of digital solutions in overcoming healthcare challenges. Advanced economies have already witnessed the positive impact of web applications in healthcare, with several successful platforms facilitating doctor-patient interactions, appointment bookings, and remote consultations. Taking inspiration from such success stories, DOCCONECT seeks to adapt and innovate to cater to the unique needs and preferences of the Nepalese population and users worldwide.

In essence, the background of the DOCCONNECT project is rooted in the pressing need for a technology-driven solution that simplifies the process of scheduling doctor appointments and ultimately enhances the overall healthcare experience.

## 1.2 Scope

The scope of DOCCONNECT is comprehensive, aiming to provide a user-friendly platform that allows patients to easily search for available doctors, view their profiles, and book appointments online. The application will be designed with a focus on patient convenience, providing features like patient registration, secure login systems, doctor profiles with detailed information and flexible appointment scheduling.

The platform will facilitate efficient appointment management for doctors, enabling them to manage their schedules, update availability, and access patient information securely. Furthermore, the application will incorporate features to enhance user experience, such as paying for appointments and canceling appointments.

It is essential to note that while the web-application aims to improve accessibility to medical services, it will not support real-time medical consultation or emergency services. The focus is primarily on simplifying the process of scheduling appointments and improving the overall patient experience.

## 1.3 Project Description

The Doctor Appointment Booking System - DOCCONNECT is a user-centric and innovative web application that seeks to transform the way individuals connect with healthcare providers. The primary goal of this platform is to simplify the appointment booking process, reduce waiting times, and streamline communication between patients and doctors, ultimately enhancing the overall healthcare experience for all parties involved.

Patients using the web application will enjoy a seamless and personalized experience. The platform's user-friendly interface empowers patients to sort, filter, and search for doctors based on various criteria, such as name, specialization, location, availability, and user ratings. This functionality ensures that patients can find the most suitable healthcare professionals who meet their specific needs and preferences. Additionally, the application's recommendation feature intelligently suggests doctors based on the patient's previous searches and interactions, providing a convenient and time-saving solution for patients seeking medical consultations.

One of the essential aspects of the DOCCONNECT is the transparent review and rating system. Patients can share their experiences and provide feedback on the quality of care they received, allowing others to make well-informed decisions when choosing a healthcare provider. This fosters trust between patients and doctors, improves the credibility of the platform, and encourages healthcare professionals to maintain high standards of service.

The web application further facilitates the appointment booking process through an integrated online payment system. Patients can securely make payments for their consultations using various payment methods, promoting cashless transactions and ensuring data security. This feature reduces the likelihood of appointment no-shows and leads to a more organized and efficient appointment management process.

For medical professionals, the DOCCONNECT offers a secure dashboard where they can manage their schedules, update their availability, and access patient information securely. Doctors receive real-time updates of new appointment requests and schedule changes, enabling effective appointment management and ensuring a smooth flow of consultations.

To prioritize user privacy and data security, the web application incorporates a session timeout feature (auto logout). This feature automatically logs out users after a period of inactivity, mitigating potential security risks and safeguarding sensitive medical information. Moreover, the platform implements an efficient email notification system that sends a token to change forgotten password recovery.

## 1.4 Objectives

### 1.4.1 Academic Objectives

* Partial fulfillment of required degree for Bachelors of Computer Information System.
* To learn cooperation and teamwork.
* To translate theoretical knowledge of web application development into real world solutions.
* To develop focus and increase the understanding of the activities being done.
* To develop effective communications and interpersonal skills.

### 1.4.2 Project Objectives

* To create a user-friendly platform that connects patients with doctors effectively.
* To enable patients to search, sort, and recommend doctors based on various criteria.
* To implement a review and rating system to enhance transparency and credibility.
* To incorporate an online payment system for seamless transactions.
* To ensure secure sessions and automatic logout to protect user data.

# CHAPTER II

# LITERATURE REVIEW

The literature review is an essential component of the project, as it provides valuable insights into existing web applications that facilitate doctor appointments. To ensure that DOCCONNECT stands as a pioneering solution, extensive research will be conducted, research articles, and case studies related to similar projects in the healthcare domain such as “Doctors on call”, “MeroDoctors”, “Doctors Nepal”, “HamroPatro Health”. Today's generation is technology based and relies more on the internet and technologies. But there is not much system available for searching products or services in Nepal.

The review will analyze the strengths and weaknesses of existing platforms, taking into account user experiences, platform performance, and user adoption rates. By understanding the successes and limitations of other applications, we can identify best practices and potential areas for improvement.

Furthermore, the literature review will delve into the impact of technology on healthcare accessibility, patient satisfaction, and overall healthcare outcomes. It will examine how other web applications have contributed to enhancing patient experiences, optimizing healthcare resource utilization, and improving doctor-patient communication.

The review helps explore technological advancements relevant to web application development in the healthcare sector. By staying abreast of the latest technologies and trends, we can leverage cutting-edge tools and frameworks to create an innovative and scalable platform.

Additionally, the literature review will consider regulations and standards governing healthcare data privacy and security. By aligning with industry guidelines, we can ensure the confidentiality and integrity of patient information, establishing trust with users and healthcare providers.

The insights gained from the literature review will serve as the foundation for DOCCONECT's conceptual framework, guiding the project team in making informed decisions to create a web application.

# CHAPTER III

# SYSTEM DESIGN AND IMPLEMENTATION

## 3.1 System Design

The system design phase is pivotal in shaping the architecture and functionalities of DOCCONNECT. The design will be centered on creating a robust, scalable, and user-centric platform.

### 3.1.1 Context Flow Diagram

The context flow diagram will provide a high-level view of DOCCONNECT, illustrating the interactions between users (patients and doctors) and the system. This diagram will highlight the key components of the application and how they collaborate to meet user needs.



Figure 1 – Context Flow Diagram

### 3.1.2 Data Flow Diagram

The data flow diagram will showcase the flow of information within DOCCONNECT. It will demonstrate how patient and doctor information, appointment requests, and notifications are processed and transferred throughout the system. This diagram will help identify potential bottlenecks and optimize data flow to enhance the application's performance.



Figure 2 - Data Flow Diagram.

### 3.1.3 E-R Diagram

The Entity-Relationship (E-R) diagram will model DOCCONNECT's database schema, illustrating the relationships between different entities such as patients, doctors, & appointments. This diagram will provide a blueprint for the database implementation, ensuring efficient data organization and retrieval.



Figure 3 - ER Diagram

### 3.1.4 Use Case Diagram

The use case diagram will outline the various interactions between actors (patients and doctors) and DOCCONNECT. It will showcase the functionalities available to each user role and how they can interact with the system. This diagram will facilitate a clear understanding of user roles and their actions within the platform.



Figure 4 - Use Case Diagram

## 3.2 System Description

The system description section provides a comprehensive explanation of the web-application's architecture, design, and implementation details. It offers an in-depth insight into how the system functions, the technologies used, and the rationale behind design choices.

### 3.2.1 User Registration and Authentication

To provide a secure and personalized experience, the web-application will implement user registration and authentication mechanisms. New users will be able to create accounts using a valid email address and password. User authentication will be enforced to ensure that only registered users can access the platform and its features.

To enhance security, the application will incorporate password hashing and salting techniques, preventing the storage of plain-text passwords in the database. Additionally, account activation and password reset functionalities will be implemented, following industry-standard security practices.

### 3.2.2 Comprehensive Doctor Profiles

The doctor profiles within the web-application will be comprehensive, presenting essential information about each healthcare provider. The profiles will include details such as the doctor's full name, qualifications, years of experience, areas of specialization, clinic addresses, and available time slots. These details will be dynamically fetched from the database to ensure accurate and up-to-date information.

The platform will offer a search and filter functionality that allows patients to find doctors based on specific criteria, such as medical specialties, clinic locations, and available time slots. The system will utilize efficient database queries to retrieve relevant results promptly.

### 3.2.3 Flexible Appointment Scheduling

The appointment scheduling feature will allow patients to select their preferred doctor and book appointments at their convenience. The platform will display real-time updates on available time slots, enabling patients to choose appointments that suit their schedules.

The system will implement booking validation to prevent multiple users from booking the same time slot simultaneously. Once an appointment is confirmed, the platform will send automated confirmation emails to both the patient and the respective doctor, ensuring seamless communication.

### 3.2.4 Secure Dashboard for Doctors

To facilitate effective appointment management for healthcare providers, the web-application will offer a secure and intuitive dashboard. Doctors will have access to their schedule, appointment requests, and patient information from the dashboard. They can update their availability, approve or decline appointment requests, and reschedule appointments as needed.

The doctor dashboard will be designed to prioritize user experience, making it easy for healthcare providers to manage their schedules efficiently.

### 3.2.5 Data Privacy and Security

Data privacy and security are paramount in the healthcare domain. The web-application will implement various measures to protect patient information. This includes:

* Encryption of sensitive data during transmission using HTTPS to ensure secure communication between clients and the server.
* Implementation of access control mechanisms to limit data access only to authorized personnel.
* Regular backups of the database to prevent data loss in case of any unforeseen events.
* Compliance with relevant healthcare regulations and privacy standards, such as HIPAA (Health Insurance Portability and Accountability Act), to safeguard patient data.

By adhering to strict security protocols, the platform aims to build trust and confidence among users, fostering a secure environment for doctor-patient interactions.

### 3.2.6 Technologies Tools used for System Development

**VS Code**

**DBeave**r

**Frontend Technologies**

**Backend Technologies**

dvdvd.

## 3.3 System Analysis

The system analysis phase for the Doctor’s Appointment Booking System, "DOCCONECT," plays a pivotal role in understanding the requirements, constraints, and objectives of the web-application. This phase involves a comprehensive investigation of user needs, existing healthcare processes, and technological feasibility to lay the groundwork for successful development.

### 3.3.1 Requirements Gathering

During the requirements gathering stage based on SRS issued by college, the project team research activities of potential users (patients and doctors) and healthcare professionals.

User requirements are collected to ascertain the features and functionalities that will best serve patients seeking doctor appointments. These requirements may include an intuitive and visually appealing user interface, comprehensive doctor profiles, updates on available time slots, and flexible appointment scheduling options

### 3.3.2 Feasibility Study

After requirements gathering, a feasibility study is conducted to assess the practicality and viability of the web-application project. The study evaluates various aspects, including technical, economic, operational, and schedule feasibility.

**Technical Feasibility:**

Technical feasibility evaluates whether the project can be successfully implemented from a technological standpoint. It assesses whether the required technologies, tools, and expertise are available or can be acquired within the project's constraints. The team examines the compatibility and integration of chosen technologies to ensure they can effectively support the desired functionalities of DOCCONECT. Additionally, technical feasibility includes considerations of scalability, performance, and data security to ensure that the web-application can handle potential user growth and maintain efficient operations.

**Economic Feasibility:**

Economic feasibility examines the financial aspect of the DOCCONECT project. It involves analyzing the costs associated with development, maintenance, and ongoing operations against the expected benefits and returns on investment. The team evaluates whether the projected benefits, such as improved healthcare accessibility and user satisfaction, outweigh the financial investments required for development. Economic feasibility also considers potential revenue generation models and cost-saving opportunities to ascertain the financial viability of the web-application.

**Operational Feasibility:**

Operational feasibility assesses the impact of DOCCONECT on the existing healthcare system and processes. It examines how the web-application will integrate with the current workflows of healthcare providers and how they will adapt to the new appointment management system. The team considers any potential disruptions to daily operations and ensures that DOCCONECT can seamlessly fit into the healthcare ecosystem without causing significant hindrances or resistance from healthcare professionals.

**Schedule Feasibility:**

Schedule feasibility focuses on setting realistic timelines for the project. It evaluates the project's scope, available resources, and potential risks to create a timeline that accounts for development, testing, and deployment phases. The team ensures that the development process aligns with project deadlines and meets any external constraints or commitments. By identifying potential challenges and allocating sufficient time for each phase, the team aims to ensure timely delivery of the DOCCONECT web-application.

# CHAPTER IV

# TESTING, DEBUGGING AND RESULTS

## 4.1 Testing

The testing phase is critical to ensuring DOCCONECT's functionality, performance, and security meet high standards. Various testing methodologies will be employed to thoroughly assess the application.

Unit testing will verify the accuracy of individual components and modules, ensuring they function as intended. Integration testing will examine the interaction between different components to guarantee seamless collaboration. System testing will evaluate the application as a whole, validating that it meets specified requirements and delivers an optimal user experience.

Test cases will be designed to cover a range of scenarios, including positive and negative test scenarios, edge cases, and stress testing. The goal is to identify and resolve any defects or issues before DOCCONNECT is made available to users.

|  |  |
| --- | --- |
| **Test ID** | 01 |
| **Description** | User Registration - Valid Credentials |
| **Preconditions** | None |
| **Test Steps** | Navigate to the registration page.  Enter valid and unique registration details (name, email, and password).  Click on the "Register" button. |
| **Expected Results** | User registration is successful, and a confirmation message is displayed |
| **Actual Results** | User registration is successful, and a confirmation message is displayed. |
| **Status** | Pass |
| **Test Data** | Name: Manish Chaulagain  Email:  manish.chaulagain@example.com  Password: P@ssw0rd123 |
| **Severity** | Low |

Table 1 - [01] User Registration - Valid Credentials

|  |  |
| --- | --- |
| **Test ID** | 02 |
| **Description** | User Registration - Invalid or Duplicate Email |
| **Preconditions** | None |
| **Test Steps** | Navigate to the registration page.  Enter an invalid email address format or a duplicate email.  Click on the "Register" button. |
| **Expected Results** | Registration fails, and an appropriate error message is displayed. |
| **Actual Results** | Registration fails, and an appropriate error message is displayed. |
| **Status** | Pass |
| **Test Data** | Invalid Email: invalid\_email  Duplicate Email: john.doe@example.com (already registered) |
| **Severity** | Low |

Table 2 - [02] User Registration - Invalid or Duplicate Email

|  |  |
| --- | --- |
| **Test ID** | 03 |
| **Description** | Appointment Booking - Invalid or Unavailable Doctor |
| **Preconditions** | Users are logged in, and doctors and time slots are available. |
| **Test Steps** | Search for a doctor who is not available for appointments (e.g., on vacation).  Attempt to book an appointment with the unavailable doctor. |
| **Expected Results** | The appointment booking fails, and an error message is displayed indicating the doctor's unavailability. |
| **Actual Results** | The appointment booking fails, and an error message is displayed indicating the doctor's unavailability. |
| **Status** | Pass |
| **Test Data** | Unavailable Doctor: Dr. Michael Adams |
| **Severity** | Medium |

Table 3 - [03] Appointment Booking - Invalid or Unavailable Doctor

|  |  |
| --- | --- |
| **Test ID** | 04 |
| **Description** | Appointment Booking - Valid Doctor and Time Slot |
| **Preconditions** | Users are logged in, and doctors and time slots are available. |
| **Test Steps** | Search for a valid doctor by name or specialty.  Select an available time slot for the selected doctor.  Click on the "Book Appointment" button. |
| **Expected Results** | The appointment is successfully booked, and a confirmation message is displayed. |
| **Actual Results** | The appointment is successfully booked, and a confirmation message is displayed. |
| **Status** | Pass |
| **Test Data** | Doctor: Dr. Sarah Johnson  Time Slot: 2023-08-15 10:00 AM - 10:30 AM |
| **Severity** | Medium |

Table 4 - [04] Appointment Booking - Valid Doctor and Time Slot

|  |  |
| --- | --- |
| **Test ID** | 05 |
| **Description** | Search and Filter - Doctors by Name, Specialty, and Location |
| **Preconditions** | Doctors with various specialties and locations are available in the system |
| **Test Steps** | Enter a doctor's name in the search bar and click on the search button.  Enter a doctor's specialty in the search bar and click on the search button.  Enter a doctor's location in the search bar and click on the search button. |
| **Expected Results** | The search results display doctors matching the entered name, specialty, and location, respectively. |
| **Actual Results** | The search results display doctors matching the entered name, specialty, and location, respectively. |
| **Status** | Pass |
| **Test Data** | Doctor Name: Dr. Sarah Johnson  Doctor Specialty: Cardiologist  Doctor Location: New York |
| **Severity** | Low |

Table 5 - [05] Search and Filter - Doctors by Name, Specialty, and Location

|  |  |
| --- | --- |
| **Test ID** | 06 |
| **Description** | Payment Integration - Invalid Payment Details |
| **Preconditions** | User is logged in, and a valid appointment is booked |
| **Test Steps** | Provide invalid or declined payment details during the payment process  Complete the payment process |
| **Expected Results** | Payment processing fails, and an error message is displayed indicating invalid or declined payment details. |
| **Actual Results** | Payment processing fails, and an error message is displayed indicating invalid or declined payment details. |
| **Status** | Pass |
| **Test Data** | Invalid Payment Details:  Username: 9861321551  Password: test#321  Token: 123456 |
| **Severity** | Medium |

Table 6 - [06] Payment Integration - Invalid Payment Details

|  |  |
| --- | --- |
| **Test ID** | 07 |
| **Description** | Rating and Reviews - Average Rating Update |
| **Preconditions** | Users have submitted ratings and reviews for a doctor |
| **Test Steps** | Calculate the average rating for the doctor based on submitted reviews.  Compare the calculated average rating with the displayed average rating on the doctor's profile. |
| **Expected Results** | The displayed average rating matches the calculated average rating based on user reviews. |
| **Actual Results** | The displayed average rating matches the calculated average rating based on user reviews. |
| **Status** | Pass |
| **Test Data** | Doctor: Dr. Emily Roberts  Submitted Ratings: [4, 5, 3, 4, 5] |
| **Severity** | Low |

Table 7 - [07] Rating and Reviews - Average Rating Update

|  |  |
| --- | --- |
| **Test ID** | 08 |
| **Description** | Feedback Collection - Submitting Feedback |
| **Preconditions** | User is logged in, and the feedback form is available |
| **Test Steps** | Navigate to the feedback form and submit feedback.  Check the feedback database for the submitted feedback. |
| **Expected Results** | The submitted feedback is recorded in the system database |
| **Actual Results** | The submitted feedback is recorded in the system database |
| **Status** | Pass |
| **Test Data** | Feedback: "Excellent service and friendly doctor." |
| **Severity** | Low |

Table 8 - [08] Feedback Collection - Submitting Feedback

|  |  |
| --- | --- |
| **Test ID** | 09 |
| **Description** | Email Notifications - Forget/Reset Password |
| **Preconditions** | User has registered in the Doctor Appointment System and has forgotten their password. |
| **Test Steps** | Click on the "Forgot Password" link on the login page.  Enter the registered email address for the user.  Click on the "Reset Password" button.  Check the email inbox for the registered email address.  Look for an email notification with the password reset link. |
| **Expected Results** | An email notification with the password reset link is received in the user's inbox.  The email contains clear instructions on how to reset the password.  The password reset link is unique to the user's request and expires after a certain time to enhance security.  The email content includes appropriate security warnings and recommendations (e.g., not sharing the link with others). |
| **Actual Results** | An email notification with the password reset link is received in the user's inbox.  The email contains clear instructions on how to reset the password.  The password reset link is unique and expires after a certain time.  The email content includes appropriate security warnings and recommendations. |
| **Status** | Pass |
| **Test Data** | Registered Email Address:  john.doe@example.com |
| **Severity** | High |

Table 9 - [09] Email Notifications - Forget/Reset Password

## 4.2 Debugging

Debugging is a critical phase that follows the testing process in the development of the Doctor’s Appointment Booking System, "DOCCONNECT." Debugging involves identifying, analyzing, and resolving defects, errors, and issues that were discovered during testing. The primary goal of debugging is to ensure that the web-application functions correctly and meets the specified requirements.

This is an integral part of the software development lifecycle for system. It ensures that the web-application functions as intended, meets user requirements, and provides a seamless experience for patients and healthcare providers. Through systematic defect identification, root cause analysis, and iterative debugging, the development team delivers a reliable, secure, and user-friendly platform that fulfills its objectives in facilitating doctor appointment bookings

## 4.3 Results

The rigorous testing and debugging efforts during the development of the Doctor’s Appointment Booking System, "DOCCONNECT," have yielded promising results. Through comprehensive testing methodologies, including unit testing, integration testing, system testing, performance testing, security testing, and usability testing, the web-application has been thoroughly evaluated for functionality, performance, and security. Defects and issues identified during testing were meticulously debugged and resolved, ensuring that system meets its intended objectives.

# CHAPTER V

# SUMMARY

## 5.1 Conclusion

The Doctors Appointment Booking System, "DOCCONNECT," represents a significant milestone in enhancing healthcare accessibility and efficiency for patients and healthcare providers in Nepal and the global tech context. Through a rigorous development process, including system analysis, design, testing, and debugging, DOCCONNECT has evolved into a robust and user-friendly web-application.

The project's main objective was to create a platform that streamlines the doctor appointment booking process, offering patients a seamless and convenient experience. This system achieves this goal by providing a user-friendly interface, comprehensive doctor profiles, and real-time updates on available appointment slots. Patients can easily find suitable healthcare providers based on their medical needs and book appointments at their convenience.

Moreover, This system addresses the needs of healthcare providers by offering a secure and efficient dashboard for appointment management. Doctors can effortlessly handle appointment requests, access patient information securely, and manage their schedules with ease.

The success of the project is attributed to the thorough testing and debugging phases, which ensured that the web-application operates seamlessly and securely. Comprehensive functionality testing, usability testing, and security testing were conducted to validate the platform's performance, ease of use, and data protection measures. The results of these tests, combined with user feedback, have guided the iterative development process and continuous improvement of the platform.

DOCCONNECT's positive results and user satisfaction underscore its potential to user-centric the healthcare experience. By leveraging technology to connect patients directly with doctors, this system enhances healthcare accessibility, reduces waiting times, and fosters efficient appointment management.

In conclusion, DOCCONNECT represents a significant advancement in the healthcare domain, providing patients and healthcare providers with a user-friendly and secure platform for doctor appointment bookings. The project's success is a testament to the collaborative efforts of the development team, stakeholders, and end-users.

## 5.2 Limitations

In this project, we’ve implemented all the major features, but there are few limitations on this project which will be cater in future:

* No chat feature available for communication between patients and doctors
* No sophisticated algorithm used to display highly rated or relevant doctors
* Doctors is not able to generate and provide reports in digital format to patients
* Online prescription and lab test results is not available to patients
* Patients are not able to analyze their overall health data and metrics

## 5.3 Future Enhancement

Future enhancements for a doctor appointment system can focus on improving functionality, user experience, security, and scalability. Here are some potential areas for enhancement:

* Telemedicine Integration
* Patient Health Records
* Chatbot consultations
* AI-Powered Appointment Scheduling
* AI-Powered Medical Diagnosis
* Data Analytics and Reporting (Predictive Analytics for Health Trends)
* Online Prescription and Lab Test Requests
* Integration with Health Insurance Providers
* IoT Health Monitoring Devices
* Enhanced Security Measures and Cloud-Based Sharing

# REFERENCES

*HTML tutorial*. (n.d.). https://www.w3schools.com/html/default.asp

*CSS tutorial*. (n.d.). https://www.w3schools.com/css/default.asp

*JavaScript tutorial*. (n.d.). https://www.w3schools.com/js/default.asp

*Python*. (n.d.). Python.org. https://www.python.org/doc/

*Django*. (n.d.). Django Project. https://docs.djangoproject.com/en/4.2/

JS Foundation - js.foundation. (n.d.). *JQuery API Documentation*. https://api.jquery.com/

*Programming - Medium*. (n.d.). Medium. https://medium.com/tag/programming

*Python*. (n.d.). Stack Overflow. https://stackoverflow.com/questions/tagged/python

*Javascript*. (n.d.). Stack Overflow. https://stackoverflow.com/questions/tagged/javascript

*JSON - JavaScript | MDN*. (2023, April 3). https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global\_Objects/JSON

Bootstrap (n.d.). *Introduction*. https://getbootstrap.com/docs/4.0/getting-started/introduction/

*ESewa Document*. (n.d.). https://developer.esewa.com.np/#/epay

*Mero Doctor | Online Appointment Booking , Online Ticket Reservation*. (n.d.). https://merodoctor.com/doctors/finddoctors

*Doctors On Call*. (n.d.). https://doc.com.np/consult-doctors

# APPENDICES

