DOCSPOT: SEAMLESS APPOINTMENT BOOKING FOR HEALTH

INTRODUCTION

Overview

The proposed system is to make an online web application for easily taking appointment of a patient see the schedule of doctors, so that everyone can get information about doctor's availability, time period, and send request to any doctor for medicine. Doctors and patients can also easily communicate with each other from anywhere. This project is aimed at developing an online application for patient to appointing doctors. Users have to logging in the system to be able to take appointment of a doctor. Doctors have to logging to see his appointments. The proposed system could be accessed from any corner of the world on net.

Existing System

The existing doctor appointment system can vary widely depending on the specific healthcare provider, location, and the level of technological advancement. However, in a traditional or basic doctor appointment system, the process typically involves the following steps:

1. **Patient Scheduling**: Patients contact the doctor's office through phone, in-person, or by other means to request an appointment. They may need to provide their personal information and a brief description of the reason for the appointment.
2. **Appointment Confirmation**: The doctor's office staff checks the doctor's availability and schedules an appointment date and time. They then inform the patient of the appointment details, either verbally or by sending a confirmation message.
3. **Appointment Reminder**: Often, patients receive a reminder of their appointment a day or two before the scheduled date to reduce no-shows.
4. **In-Person Check-In**: On the day of the appointment, patients arrive at the doctor's office and go through a check-in process, which can involve filling out paperwork and verifying their insurance information.
5. **Consultation**: The patient meets with the doctor for their scheduled appointment. During the consultation, the doctor evaluates the patient's condition, provides medical advice, and prescribes medications or treatment as necessary.
6. **Billing and Payment**: After the consultation, the billing department may handle insurance claims and patient payments, if applicable.

7. **Follow-Up Appointments**: If the doctor prescribes ongoing treatment, patients may need to schedule follow-up appointments.

While this traditional system works, many healthcare providers are transitioning to more modern and efficient systems. These may include:

1. **Online Appointment Booking**: Patients can schedule appointments through the healthcare provider's website or mobile app. This eliminates the need for phone calls and streamlines the process.
2. **Electronic Health Records (EHR)**: Many providers now use EHR systems to maintain patient records, making it easier to access patient information during appointments.
3. **Telehealth**: The COVID-19 pandemic accelerated the adoption of telehealth services, allowing patients to have remote consultations with their doctors through video calls.
4. **Automated Appointment Reminders**: Providers often use automated systems to send appointment reminders via text, email, or phone, reducing no-shows.
5. **Integrated Billing Systems**: Modern systems can handle insurance claims and billing more efficiently, reducing administrative workload.
6. **Patient Portals**: Patients can access their health records, test results, and other relevant information through online patient portals.
7. **Feedback and Reviews**: Many systems allow patients to leave feedback and reviews, helping others choose the right healthcare provider.

These advancements aim to enhance the patient experience, streamline administrative tasks, reduce errors, and improve overall healthcare quality.

Problem Statement

The current booking system is manual as all the work is done and kept in files. Because hospital management staff will be facing some problems issuing booking appointment of patients. All the necessary booking is done in hard copy. So, it become much difficult for staff to keep the records updated all the time. As an example, if the patients need to change the appointments in date it becomedifficult for them to find out the patients booking details for updating as there are so many patient booking records. Again, regarding current system patient cannot give feedback online and staff cannotreply to them promptly.The proposed project is a smart appointment booking system that provides patients or any user an easyway of booking a doctor's appointment online. This is a web based application that overcomes the issue of managing and booking appointments according to user's choice. The task sometimes becomesvery tedious for the compounder or doctor himself in manually allocating appointments for the users as per their availability. Hence this project offers an effective solution where users can view doctors available and select the preferred date and time.

Objective

The system aims to help the patients to take appointment online through internet and track their recordsthrough it. KDU has been facing problems due to its paper-based appointment system. The increase inthe number of patients visiting, it has become difficult to manage the appointment system manually. The purpose of this project is to solve these complications by creating custom-built database softwareto manage the appointment system. For the receptionist it makes easy to set date and time for the treatment of the patient to the relevant doctor. Doctor enters medical prescription and receptionist takesthe print. It also helps to maintain doctor's consultation fee, Laboratories and Testing chargesautomatically.

- The main objective is to develop an Online Appointment system.
- To provide a way to make appointment reservations for patients.
- To choose from different doctors with appointments available, at the time and on the day of theusers' choice
- After the booking, patient can have received e-mail and text message reminders. For anexample, after booking patient received doctor arrival massage.
- To automate the report generation module

To computerized the patients' information review and maintenance

ANALYSIS AND DESIGN

Functional requirements

- View Doctor Information
- Search Doctor
- View Appointment
- Search Module
- Appointment Booking
- Check-in form Submitting
- Appointment management
- Schedule a timing
- Past appointment Management

Non-functional requirements

- Responsive and user friendly UI
- Speed
- Less weight
- Reliability

System Design

Design is the first step in the development stage. Software design involves three technical activities - design, coding, implementation and testing that are required to build and verify the software. The design activities are of main importance in this part, because in this activity, decisions finally affectingthe success of the software implementation and its ease of maintenance. Design is the only way to correctly translate the customer requirements into finished software or a system. Design is the place where quality is bringing up in development.

System Architecture

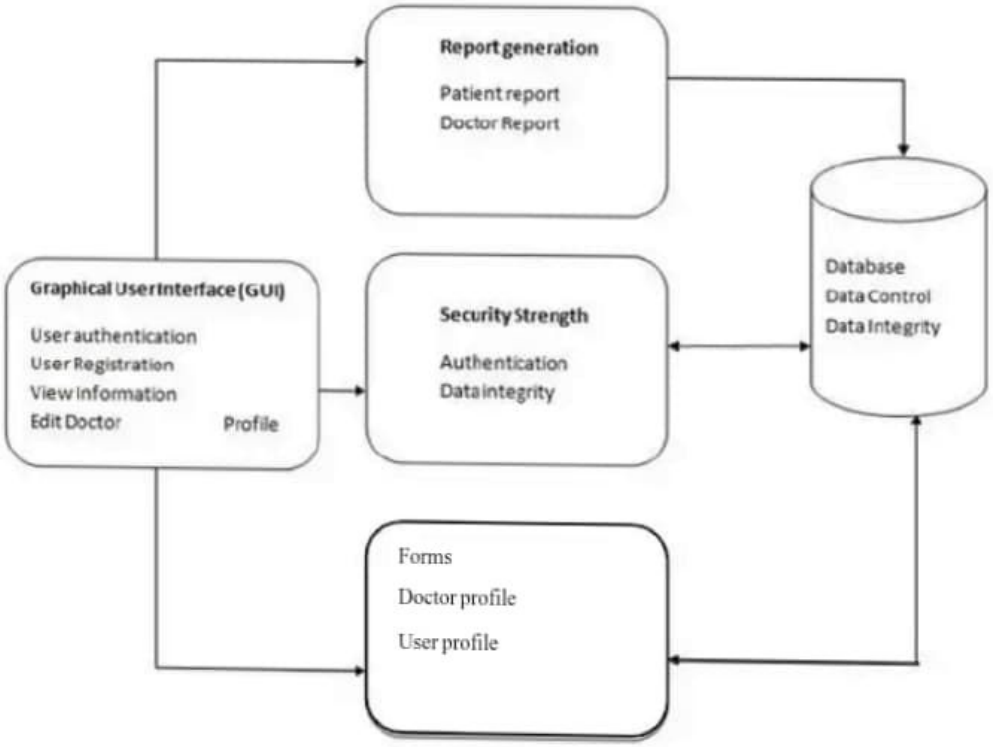


Figure 4.1.System Architecture

Entity Relationship Diagram (ER Diagram)

ER diagram is a graphical representation of entities and their relationship to each other, typically used in computing regarding the organization of data within database or information systems. Entity is a piece of data, object or concept which described which data should store. Relationship is how data is shared between entities.

Entity

Which are represented by rectangle. An entity is an object or concept that has its existence in the real world. It includes all those things about which data is collected. A weak entity is an entity that must defined by a foreign key relationship with another entity as it cannot be uniquely identified by its own attributes alone.

Attributes

Which are represented by ovals. A key attribute is the unique, distinguishing characteristic of the entity.For example, an employee's social security number might be the employee's key attribute.

An Entity Set

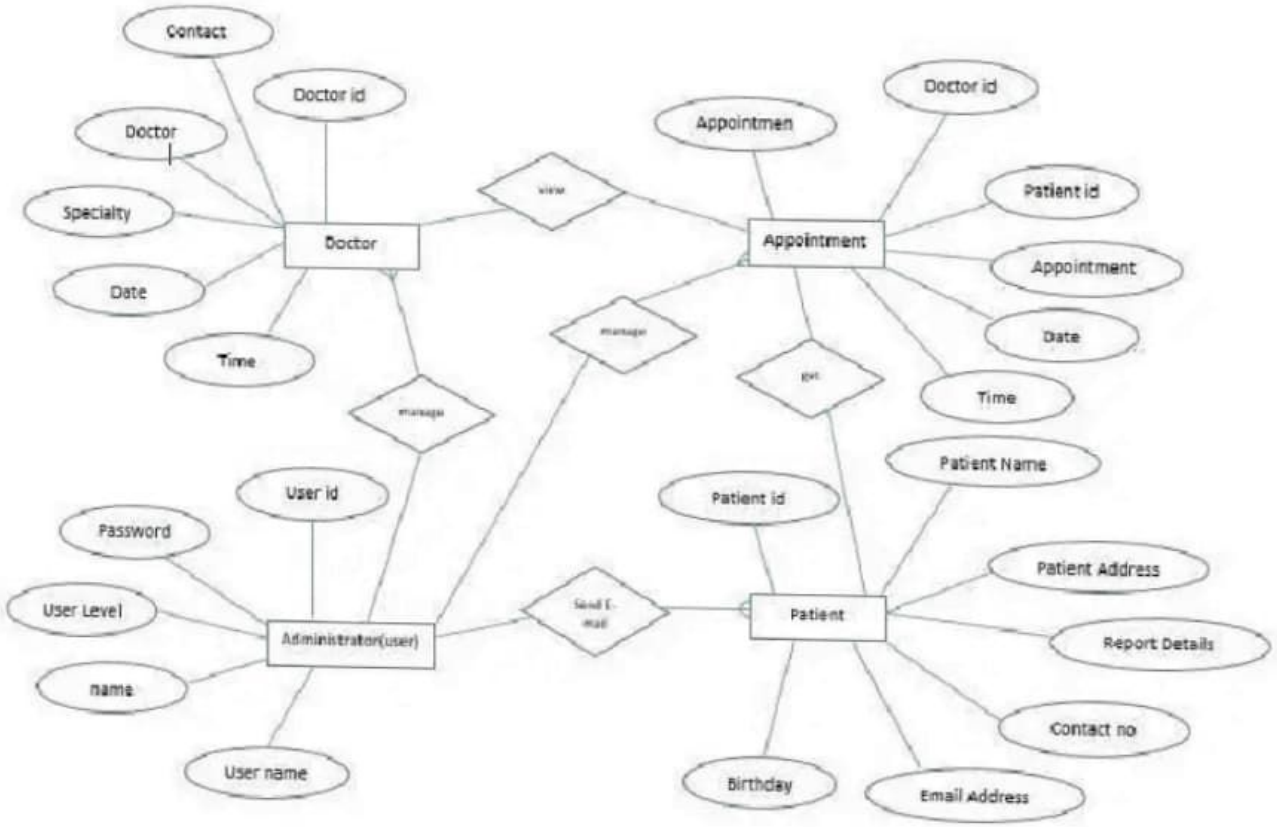
It is a set of entities of the same type that share the same properties, or attributes.

Process

A process shows a transformation or manipulation of data flows within the system.

Actions

Which are represented by diamond shapes, show how two entities share information in the database.



PROPOSED SYSTEM

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Flowchart

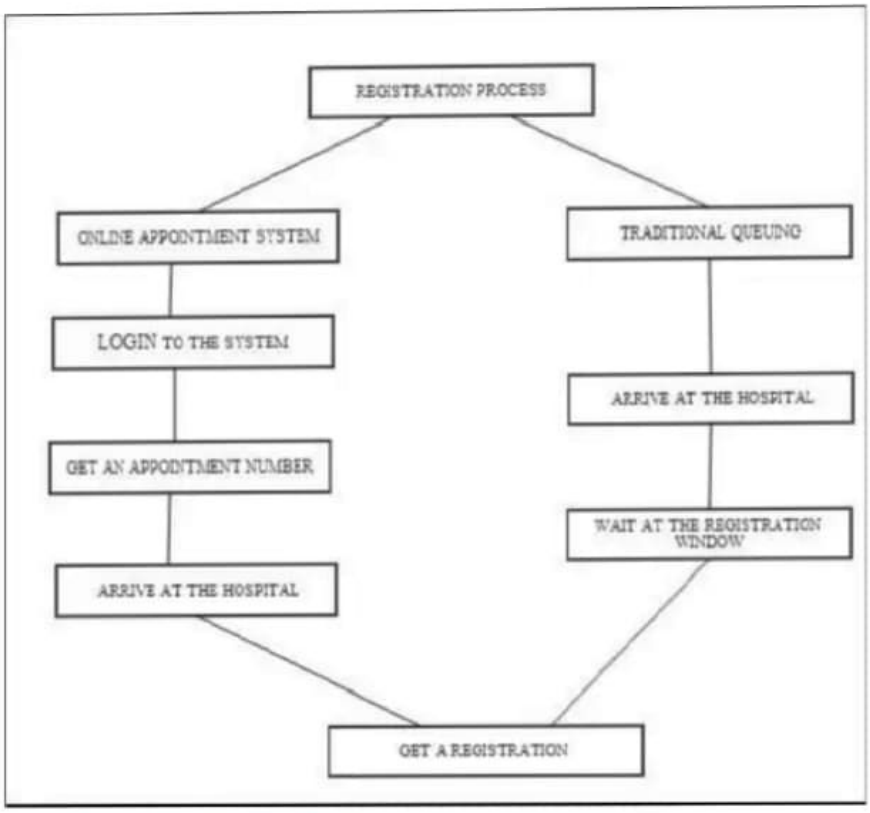


Figure 3:1 Flowchart for Traditional v/s Online Appointment system

System Study

The study was carried out at Patient, Doctors and Hospital the main purpose of the study was to find out how the process of recording patient's data is carried out. The system that is currently being used Patient, Doctor and Hospital is entirety manuals. But we are creating online appointment system, that is very lazy and more hesitation from the real information, doctor availability and proper time maintenance of the doctor appointment system.

Implementation and Testing

Implementation

This activity includes programming, testing and integration of modules into a progressively more complete system. Implementation is the process of collect all the required parts and assembles them into a major product.

Testing

Test Generation

This activity generates a set of test data, which can be used to test the new system before accepting it. In the test generation phase, all the parts are come which are to be tested to ensure that system does not produce any error. If there are some errors then we remove them and further it goes for accepting.

Software Testing

Software testing is a critical element of software quality assurance and moments the ultimate reviews of specification, design and coding. Testing presents an interesting anomaly for the software engineer.

Testing objectives include:

1. Testing is a process of executing a program with the intent of finding an error.
2. A good test case is one that has probability of finding an as yet undiscovered error.
3. A successful test is one that uncovers an undiscovered error.

Testing Principles:

1. All tests should be traceable to end user requirements.
2. Test should be planned long before testing begins.
3. Testing should begin on a small scale and progress towards testing in large.
4. Exhaustive testing is not possible.
5. To be most effective testing should be conducted by an independent third.

EVALUATION

The following items will be considered in testing:

1. Login
2. Logout
3. Create new user (Administrator)
4. Create Type Appointment (Administrator)
5. Create Doctor Profile (Administrator)
6. Book an Appointment(Patient)
7. Edit Doctor Profile (Administrator)
8. Cancel Doctor's Appointment (Administrator)
9. Cancel Patient's Appointment (Patient)

➢ **Login**

Case	Input Data	Expected Results
Login page	correct user Name correct password and press on login Button	Displays the welcome information to the user Based on the user's role (admin, doctor, or patient), the corresponding menu page (admin menu, doctor menu, and patient menu) will be displayed on the page.
	correct User Name incorrect Password and press on login Button	Displays error message
	incorrect User Name correct Password and	Displays error.
	Press on login Button	
	Not enter any username or password Press login button.	Display error message " please input your username and password to retry."

LOG-OUT

Case	Input Data	Expected Results
Logout menu	User click the logout menu	Redirect to the login page The menu pages only has "login" and "register " two menu items

- **Create Patient Profile (Patient)**

On the home page, a new patient can choose 'New Registration' option from the menu.

Case	Input Data	Expected Results
Create Patient Profile	Fill in all the fields in the registration form as required Press Submit button	Display a data insert successfully
	Leave all the fields empty Press Submit button	Display an error message that user needs tofill in the required information
	Fill in the fields according to anexisting patient Press Submit button	Display a message that the record already exists

- **Create new user (Administrator)**

After logging in, the Administrator can choose 'Create New user (nurse)' option from the menu. TheAdministrator will be able to see a form where he/she will be required to fill in all the relevant information in the given fields

Case	Input Data	Expected Results
	Fill in the fields in New user form as required Press Submit button	Display a message confirming that a newuser is created successfully
	Fill in the fields according to anexisting user Press Submit button	Display a message that the record already exists
	Leave all the fields empty Press Submit button	Display an error message that user needs tofill in the required information

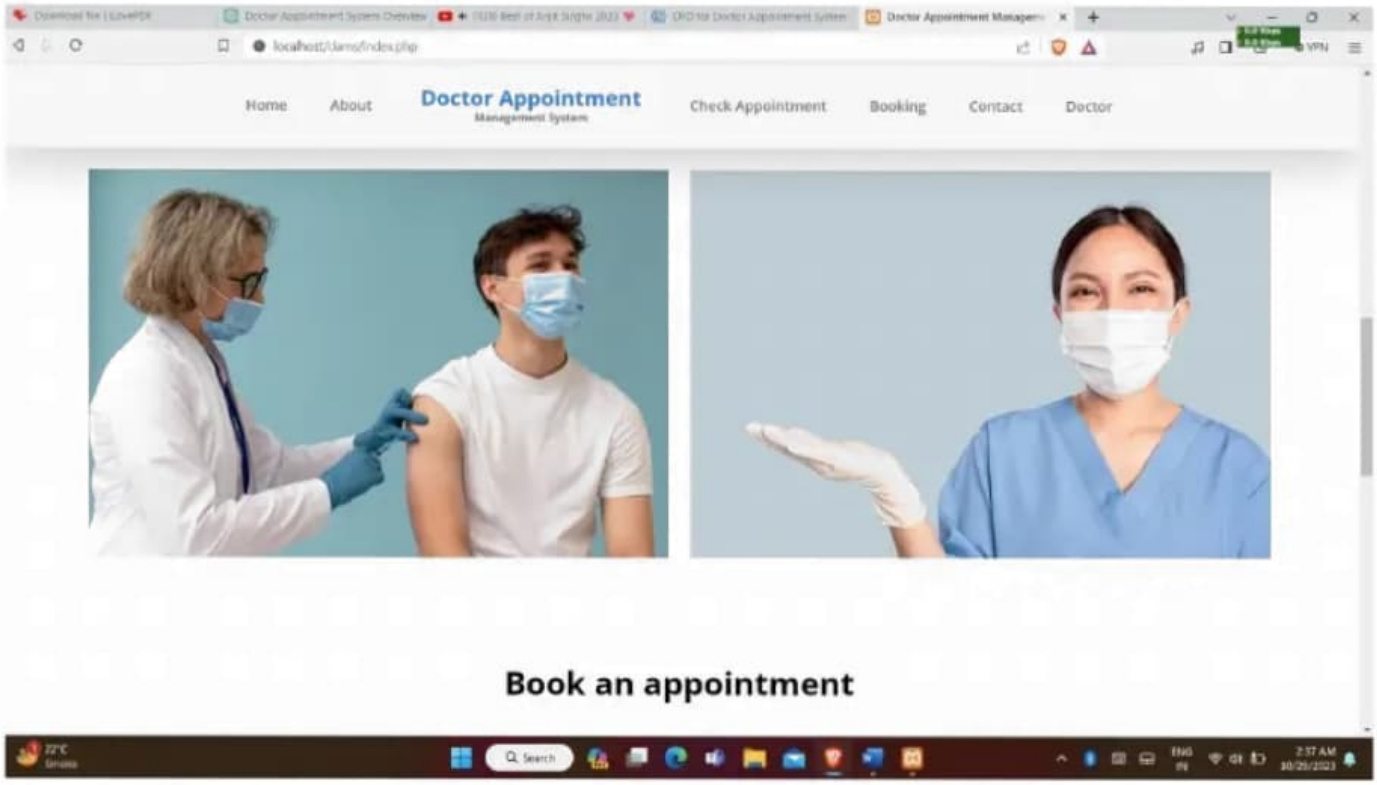
- **Create Type Appointment (Administrator)**

After logging in, the Administrator can choose Create New Appointment Type option from the menu.The Administrator will be able to see a form where he/she will be required to fill in all the relevant information in the given fields

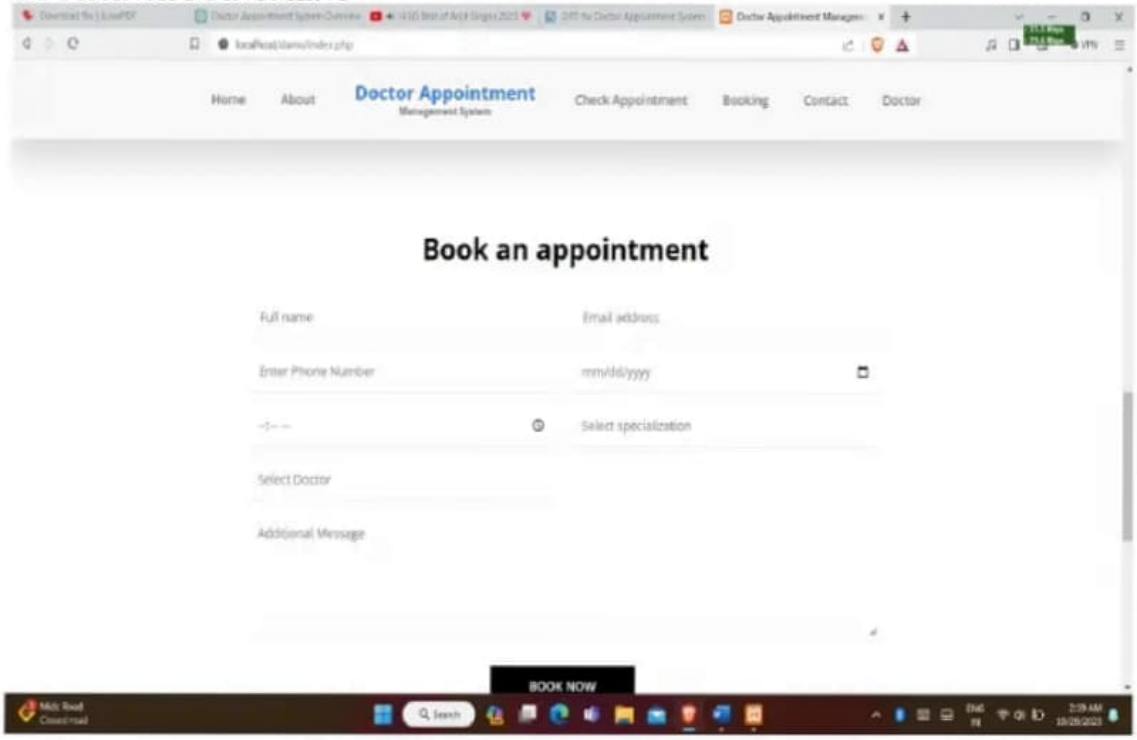
Case	Input Data	Expected Results
	Fill in the fields in New Appointment type form as required Press Submit button	Display a message confirming that a new Appointment type is created successfully
Case	Input Data	Expected Results
	Fill all fields with correct values Click on submit button	A new web page is displayed doctor profile was created successfully.
	Provide a Doctor Login ID that already exists in the system Fill all other fields in the form correctly. Click on submit button	An error message displayed, duplicate login-ID provided.
	Fill in the fields according to an existing Appointment Type Press Submit button	Display a message that the record already exists

SNAPSHOT

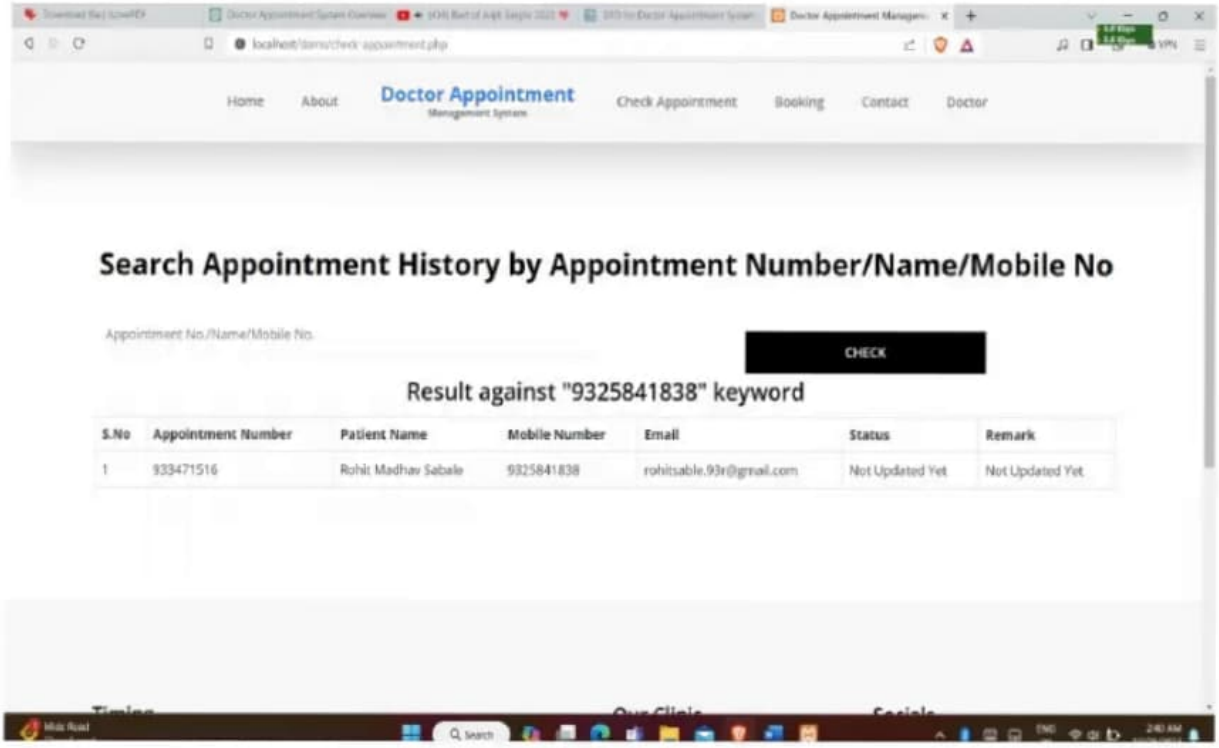
➢ HOME PAGE



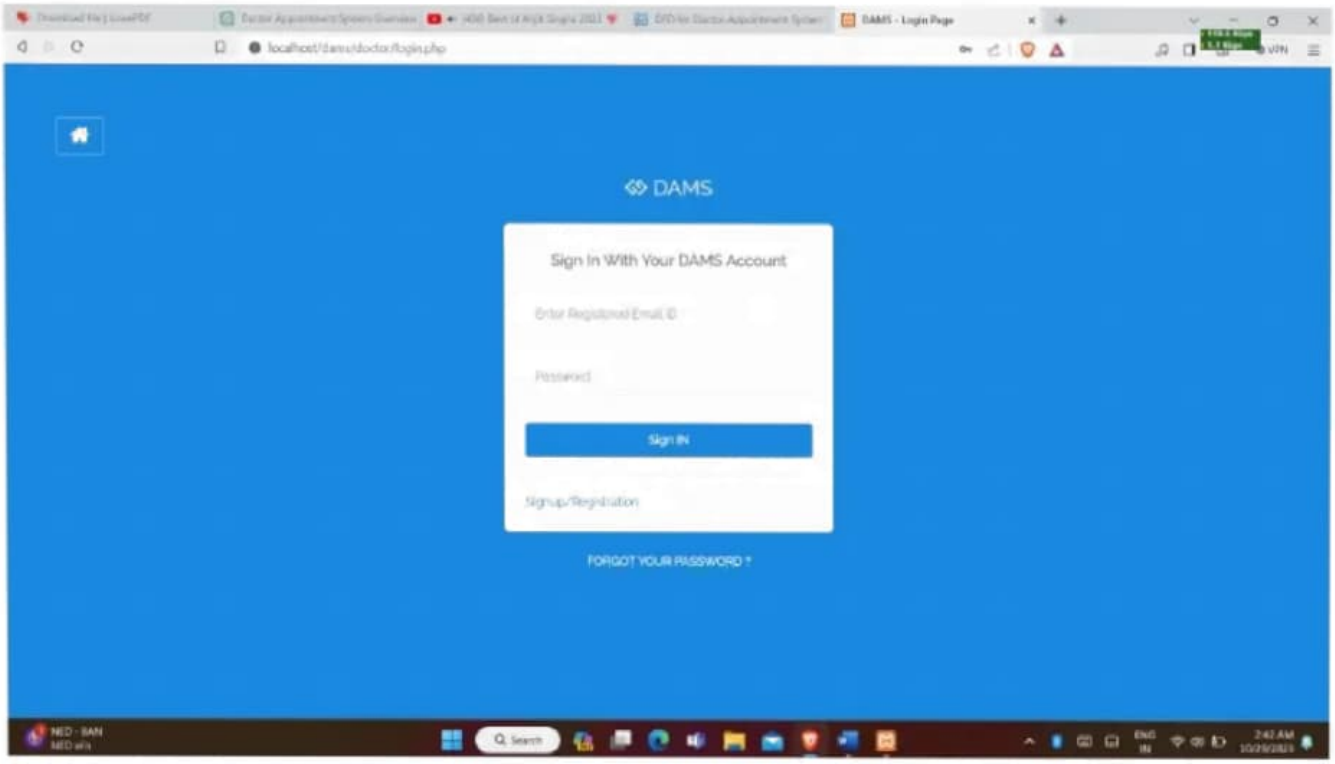
➢ **BOOK AN APPOINTMENT**



➢ **CHEAK APPOINTMENT**



➢ DOCTOR LOG-IN PAGE



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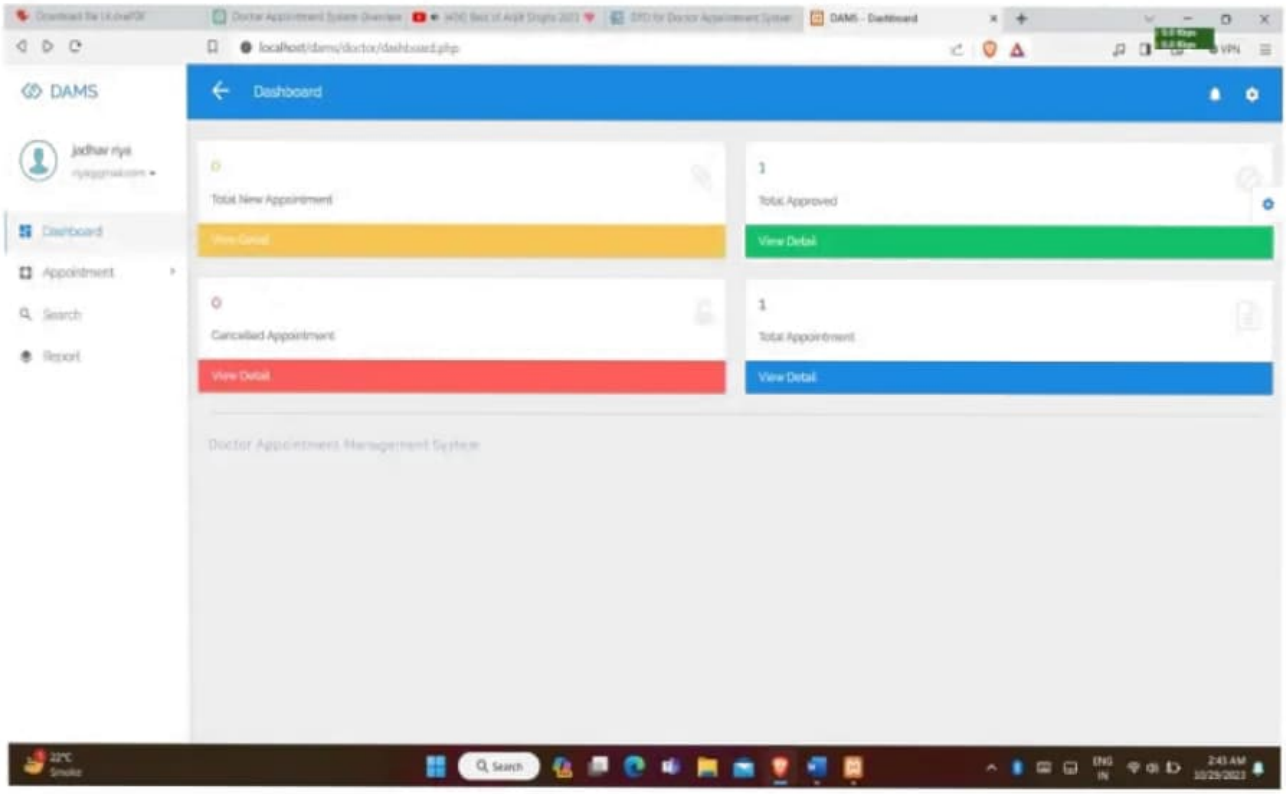
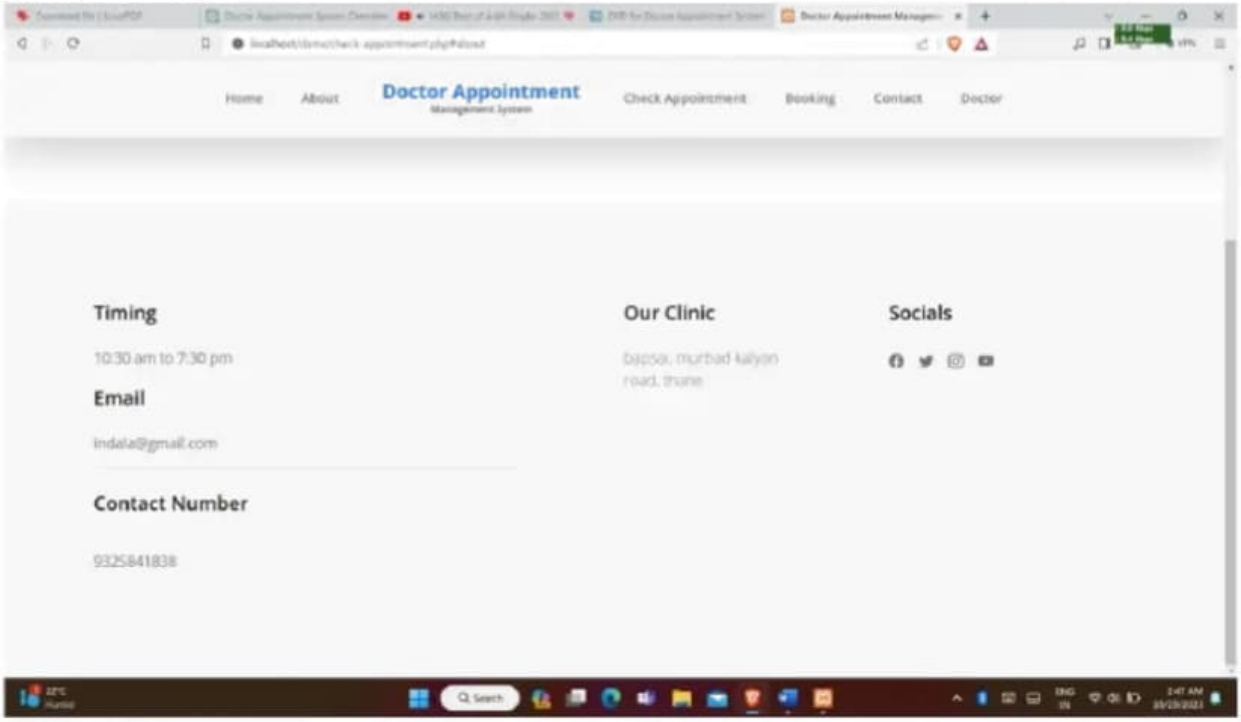


- **ABOUT CLINIC**



Advantages and Disadvantages

Here are some potential advantages and disadvantages of DocSpot, a seamless appointment booking system for healthcare:

Advantages

1. *Convenience*: Patients can book appointments online, 24/7, without having to call the doctor's office or wait in line.
2. *Time-saving*: DocSpot can save patients time and effort in finding available appointment slots and scheduling appointments.
3. *Increased accessibility*: Patients can access DocSpot from anywhere, making it easier for people with mobility issues or those living in remote areas.
4. *Improved patient experience*: DocSpot can provide a more streamlined and efficient appointment booking process, leading to higher patient satisfaction.
5. *Reduced no-shows*: Automated reminders and notifications can help reduce the number of no-shows and last-minute cancellations.
6. *Better resource allocation*: DocSpot can help healthcare providers optimize their schedules and allocate resources more efficiently.

Disadvantages

1. *Technical issues*: Technical problems, such as server downtime or connectivity issues, can prevent patients from booking appointments.
2. *Security concerns*: DocSpot may be vulnerable to cyber threats, compromising patient data and confidentiality.
3. *Dependence on technology*: Patients who are not tech-savvy or have limited access to technology may struggle to use DocSpot.
4. *Limited personal touch*: DocSpot may lack the personal touch and human interaction that patients value in a traditional appointment booking process.
5. *Integration challenges*: Integrating DocSpot with existing electronic health records (EHRs) and practice management systems (PMS) can be complex and time-consuming.
6. *Cost*: Implementing and maintaining DocSpot may require significant upfront investment and ongoing costs.

Potential Mitigations

1. *Regular maintenance and updates*: Regularly update and maintain DocSpot to prevent technical issues and ensure smooth operation.
2. *Robust security measures*: Implement robust security measures, such as encryption and secure authentication, to protect patient data.
3. *User-friendly interface*: Design a user-friendly interface that is easy to navigate, even for patients who are not tech-savvy.
4. *Hybrid approach*: Offer a hybrid approach that combines online booking with traditional phone or in-person booking options.
5. *Training and support*: Provide training and support for patients and healthcare providers to ensure they are comfortable using DocSpot.

Conclusion

Future Scope

The project entitled **Doctor Appointment system** was completed successfully. The system has been developed with much care and free of errors and at the same time it is efficient and less time consuming. The purpose of this project was to develop a web application and an android application for purchasing items from a shop.

This project helped us in gaining valuable information and practical knowledge on several topics like designing web pages using html & css, usage of responsive templates, designing of android applications, and management of database

The entire system is secured. Also the project helped us understanding about the development phases of a project and software development life cycle. We learned how to test different features of a project.

This project has given us great satisfaction in having designed an application which can be implemented to any nearby shops or branded shops selling various kinds of products by simple modifications. There is a scope for further development in our project to a great extent.A number of features can be added to this system in future like providing moderator more control over products so that each moderator can maintain their own products. Another feature we wished to implement was providing classes for customers so that different offers can be given to each class. System may keep track of history of purchases of each customer and provide suggestions based on their history. These features could have implemented unless the time did not limited us.