

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.

Objective

The system aims to help the patients to take appointment online through internet and track their records through it. KDU has been facing problems due to its paper-based appointment system. The increase in the 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 software to 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 takes the print. It also helps to maintain doctor's consultation fee, Laboratories and Testing charges automatically.

- 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 the users' choice
- After the booking, patient can have received e-mail and text message reminders. For example, after booking patient received doctor arrival message.
- To automate the report generation module

To computerized the patients' information review and maintenance

Ideation Phase

Define the Problem Statements

Date	26 june 2025
Team ID	LTVIP2025TMID55015
Project Name	DOCSPOT: Seamless Appointment Booking For Health care
Maximum Marks	2 Marks

Customer Problem Statement Template:

Create a problem statement to understand your customer's point of view. The Customer Problem Statement template helps you focus on what matters to create experiences people will love.

A well-articulated customer problem statement allows you and your team to find the ideal solution for the challenges your customers face. Throughout the process, you'll also be able to empathize with your customers, which helps you better understand how they perceive your product or service.

I am	Describe customer with 3-4 key characteristics - who are they?	Describe the customer and their attributes here
I'm trying to	List their outcome or "job" the care about - what are they trying to achieve?	List the thing they are trying to achieve here
but	Describe what problems or barriers stand in the way - what bothers them most?	Describe the problems or barriers that get in the way here
because	Enter the "root cause" of why the problem or barrier exists - what needs to be solved?	Describe the reason the problems or barriers exist
which makes me feel	Describe the emotions from the customer's point of view - how does it impact them emotionally?	Describe the emotions the result from experiencing the problems or barriers

Reference: <https://miro.com/templates/customer-problem-statement/>

Example:



Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
------------------------	-----------------	---------------	-----	---------	---------------------

PS-1	Buyer	Book laptop on mobile	It takes server problem	The website is not responsive.	Frustrated.
PS-2					

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 becomes difficult 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 cannot reply to them promptly. The proposed project is a smart appointment booking system that provides patients or any user an easy way 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 becomes very 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.

Ideation Phase

Empathize & Discover

Date	26 June 2025
Team ID	LTVIP2025TMID55015
Project Name	DOCSPOT:Seamless Appointment Booking For Health care
Maximum Marks	4 Marks

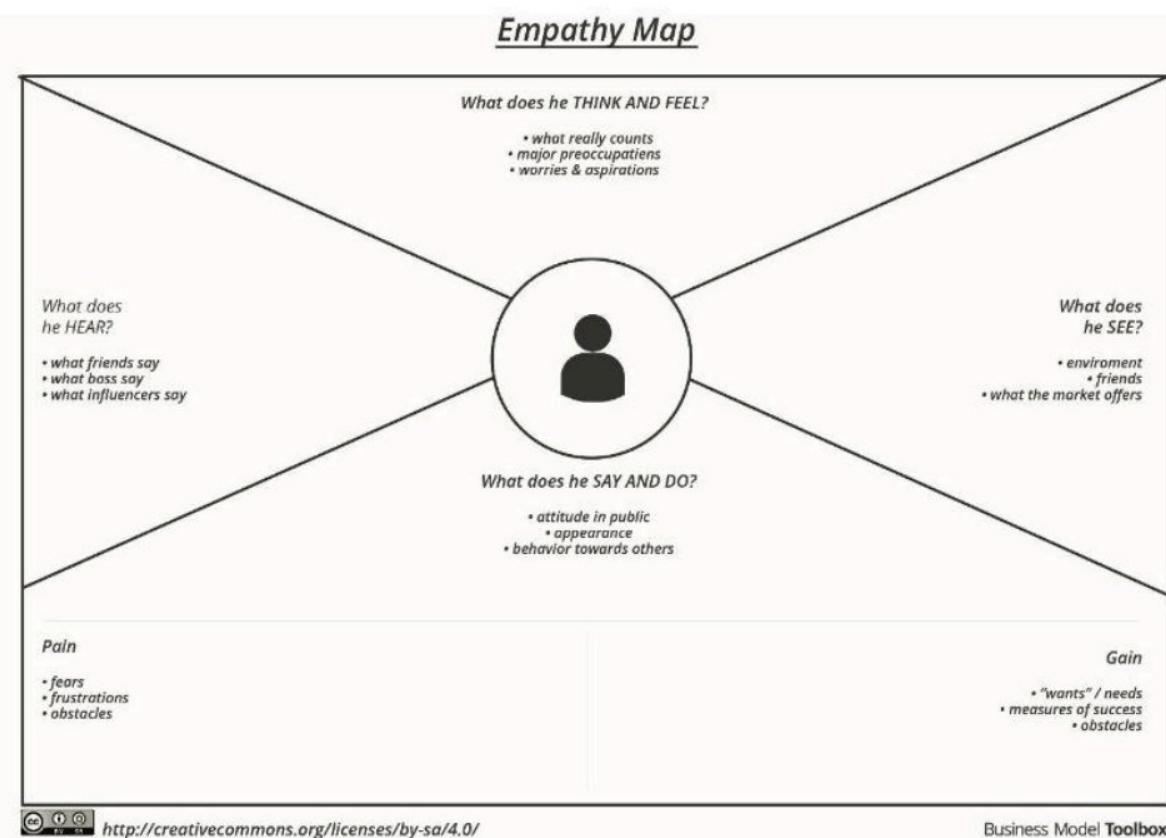
Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes.

It is a useful tool to help teams better understand their users.

Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

Example:



Reference: <https://www.mural.co/templates/empathy-map-canvas>

Ideation Phase

Brainstorm & Idea Prioritization Template

Date	26 June 2025
Team ID	LTVIP2025TMID55015
Project Name	DOCSPOT: Seamless Appointment Booking For Health
Maximum Marks	4 Marks

Brainstorm & Idea Prioritization Template:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

Reference: <https://www.mural.co/templates/brainstorm-and-idea-prioritization>

Step-1: Team Gathering, Collaboration and Select the Problem Statement

The screenshot shows the first step of the template, which is "Team Gathering, Collaboration and Select the Problem Statement". The interface is divided into three main sections:

- Left Column:** Features a lightbulb icon in a speech bubble and a wavy line background. It includes a brief description of the template's purpose: "Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room." Below this are preparation details: "10 minutes to prepare", "1 hour to collaborate", and "2-8 people recommended".
- Middle Column:** Contains three steps:
 - Before you collaborate:** A brief description of preparation: "A little bit of preparation goes a long way with this session. Here's what you need to do to get going." Duration: "10 minutes".
 - Define your problem statement:** A brief description: "What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm." Duration: "5 minutes".
 - PROBLEM:** A box labeled "How might we [your problem statement]?"
- Right Column:** Features a "Key rules of brainstorming" section with six rules:
 - Stay in topic.
 - Defer Judgment.
 - Go for volume.
 - Encourage wild ideas.
 - Listen to others.
 - If possible, be visual.

Step-2: Brainstorm, Idea Listing and Grouping

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

⌚ 10 minutes

TIP
You can select a sticky note and let the pencil [switch to sketch] icon to start drawing!

Person 1

Person 2

Person 3

Person 4

Person 5

Person 6

Person 7

Person 8

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and break it up into smaller sub-groups.

⌚ 20 minutes

TIP
Add customizable tags to sticky notes to make it easier to find, organize, and categorize important ideas as themes with your team.

Person 4

Step-3: Idea Prioritization

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

⌚ 20 minutes

TIP
Participants can use their cursor to point at where a sticky note is located on the grid. The facilitator can comment the spot by using the text input holding the H key on the keyboard.

Importance

If each of these ideas were done without any difficulty or cost, what would have the most positive impact?

Feasibility

Regardless of their importance, which ideas are more feasible than others? (Cost, time, effort, complexity, etc.)

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 affecting the 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

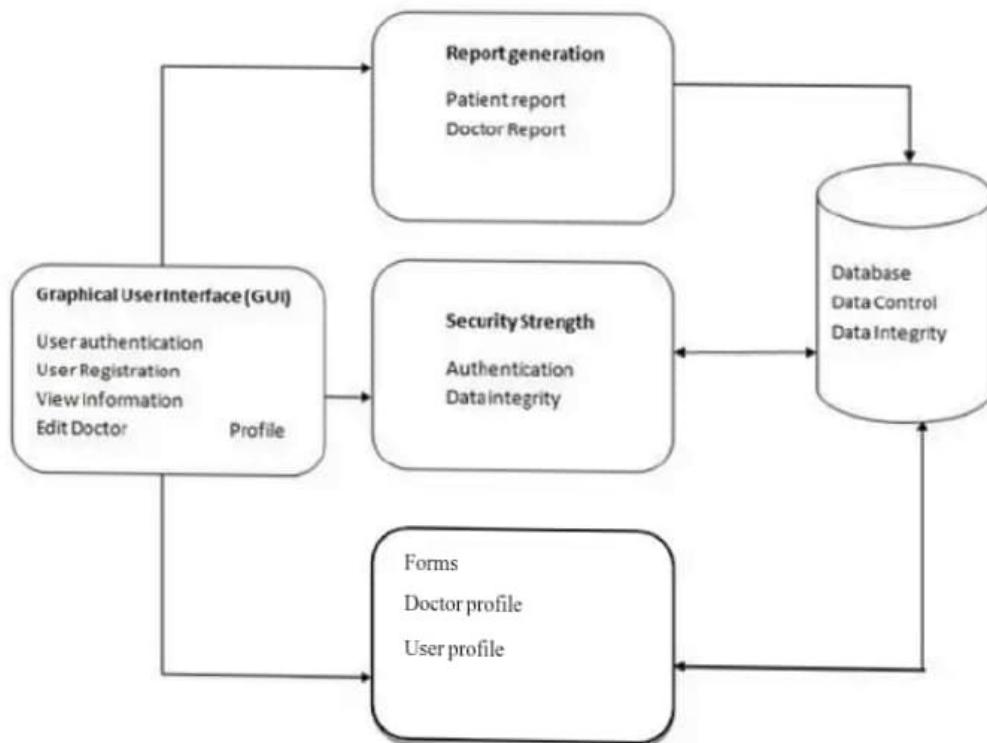


Figure 4.1. System Architecture

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 be 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

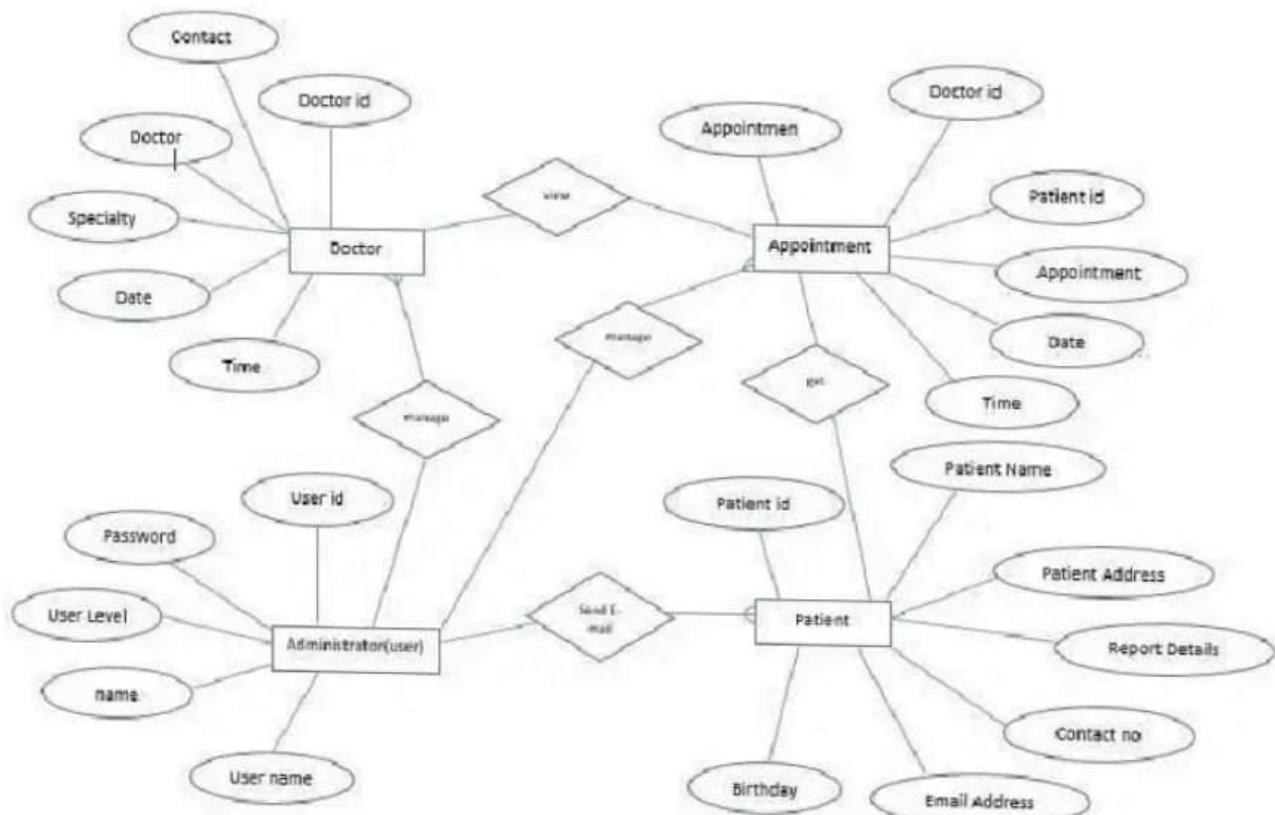
It is a set of entities of the same type that share the same properties, or attributes.

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.



Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	26 June 2025
Team ID	LTVIP2025TMID55015
Project Name	DOCSPOT: Seamless Appointment Booking For Health
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIn
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User login	Login with ID
FR-4	Admin login	Login with ID

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	"The Doctor Appointment App features a simple and intuitive design, making it easy for users to navigate and book appointments."
NFR-2	Security	"The Doctor Appointment App is designed with security in mind, providing an intuitive interface that streamlines the appointment booking process."
NFR-3	Reliability	"The Doctor Appointment App ensures reliable performance, with robust infrastructure and regular updates to minimize downtime and errors."
NFR-4	Performance	"The Doctor Appointment App delivers high-performance capabilities, with fast loading times and seamless navigation."
NFR-5	Availability	"The Doctor Appointment App is designed to be highly available, with a robust infrastructure that ensures 24/7 accessibility."

NFR-6	Scalability	"The Doctor Appointment App is built to scale, handling increasing user demand and appointment volume with ease."
-------	--------------------	---

Project Design Phase-II

Data Flow Diagram & User Stories

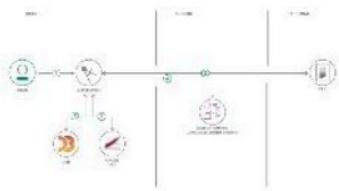
Date	26 June 2025
Team ID	LTVIP2025TMID55015
Project Name	DOCSPOT :Seamless Appointment Booking For Health care
Maximum Marks	4 Marks

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

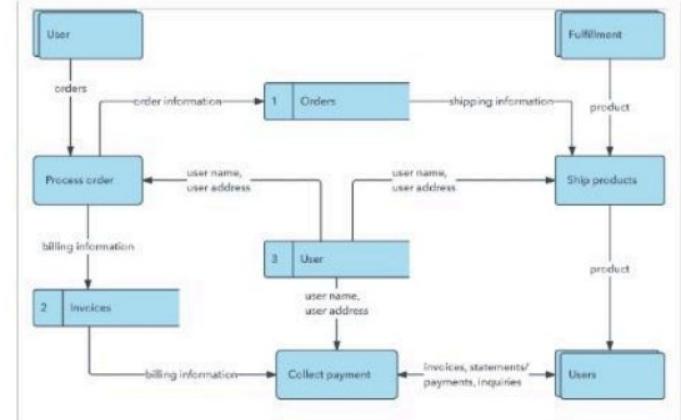
Example: (Simplified)

Flow



1. User configures credentials for the Watson Natural Language Understanding service and starts the app.
2. User selects data file to process and load.
3. Apache Tika extracts text from the data file.
4. Extracted text is passed to Watson NLU for enrichment.
5. Enriched data is visualized in the UI using the D3.js library.

Example: DFD Level 0 (Industry Standard)



User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard					
Customer (Web user)						
Customer Care Executive						
Administrator						

Project Design Phase-II

Technology Stack (Architecture & Stack)

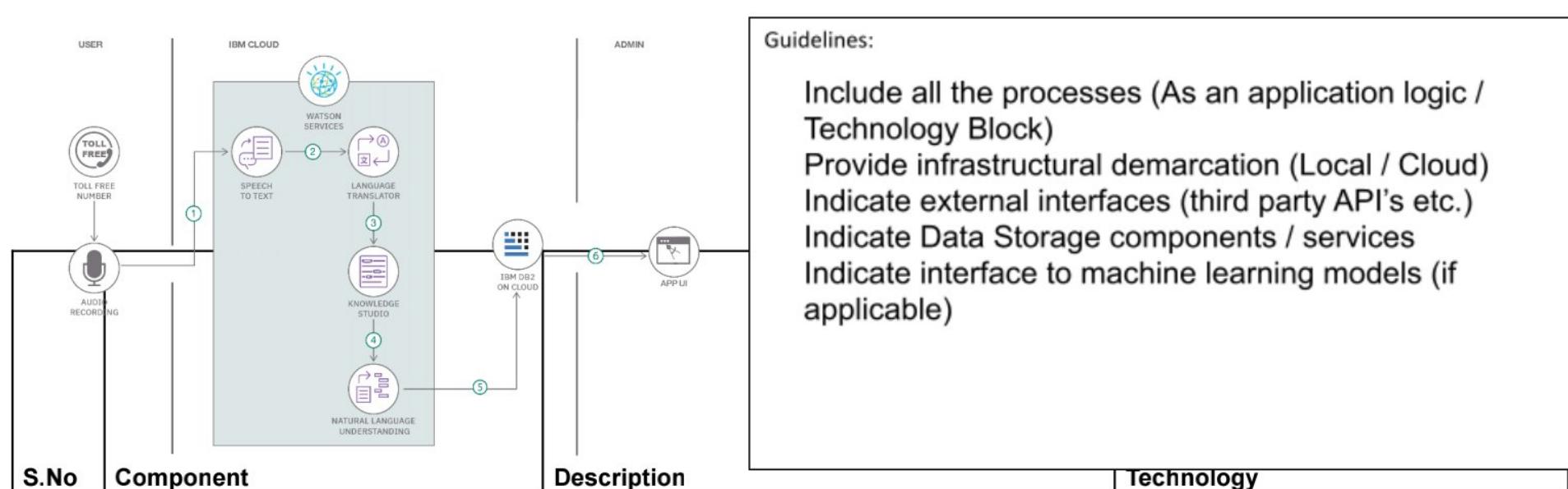
Date	26 June 2025
Team ID	LTVIP2025TMID55015
Project Name	DOCSPOT: Seamless Appointment Booking For Health
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Order processing during pandemics for offline mode

Reference: <https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/>



1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Logic for a process in the application	Java / Python
3.	Application Logic-2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic-3	Logic for a process in the application	IBM Watson Assistant
5.	Database	Data Type, Configurations etc.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Technology of Opensource framework
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Justify the scalability of architecture (3 – tier, Micro-services)	Technology used
4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Technology used

S.No	Characteristics	Description	Technology
5.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

References:

<https://c4model.com/>

<https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/>

<https://www.ibm.com/cloud/architecture>

<https://aws.amazon.com/architecture>

<https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d>

Project Design Phase

Problem – Solution Fit Template

Date	27 June 2025
Team ID	LTVIP2025TMID55015
Project Name	DOCSPOT: Seamless Appointment Booking For Health care
Maximum Marks	2 Marks

Problem – Solution Fit Template:

The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns and recognize what would work and why.

Purpose:

- Solve complex problems in a way that fits the state of your customers.
- Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.
- Sharpen your communication and marketing strategy with the right triggers and messaging.
- Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.
- Understand the existing situation in order to improve it for your target group.

Template:

<p>1. CUSTOMER SEGMENT(S) Who is your customer? I.e. working parents of 0-5 y.o. kids.</p>	<p>6. CUSTOMER CONSTRAINTS What constraints prevent your customers from taking action or limit their choices of solutions? I.e. spending power, budget, no cash, network connection, available devices.</p>	<p>5. AVAILABLE SOLUTIONS Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? I.e. pen and paper is an alternative to digital notetaking.</p>
<p>2. JOBS-TO-BE-DONE / PROBLEMS Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.</p>	<p>9. PROBLEM ROOT CAUSE What is the real reason that this problem exists? What is the back story behind the need to do this job? I.e. customers have to do it because of the change in regulations.</p>	<p>7. BEHAVIOUR What does your customer do to address the problem and get the job done? I.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (I.e. Greenpeace)</p>
<p>3. TRIGGERS What triggers customers to act? I.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.</p>	<p>10. YOUR SOLUTION If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.</p>	<p>8. CHANNELS OF BEHAVIOUR 8.1 ONLINE What kind of actions do customers take online? Extract online channels from #7</p> <p>8.2 OFFLINE What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.</p>
<p>4. EMOTIONS: BEFORE / AFTER How do customers feel when they face a problem or a job and afterwards? I.e. lost, insecure > confident, in control - use it in your communication strategy & design.</p>		<p>AS Explore AS, differentiate</p> <p>BE Focus on JBP, tap into BE, understand RC</p> <p>CH Extract online & offline CH of BE</p>

References:

1. <https://www.ideahackers.network/problem-solution-fit-canvas/>
2. <https://medium.com/@epicantus/problem-solution-fit-canvas-aa3dd59cb4fe>

Project Design Phase
Proposed Solution Template

Date	26 June 2025
Team ID	LTVIP2025TMID55015
Project Name	DOCSPOT:Seamless Appointment Booking For Health care
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in the proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	"Patients struggle to book timely appointments with doctors, leading to frustration and potential health consequences. Existing appointment booking systems are often cumbersome, inflexible, and prone to errors, resulting in poor patient experience and inefficient use of doctor time."
2.	Idea / Solution description	"DocSpot: A seamless doctor appointment booking app that allows patients to easily schedule appointments with doctors, reducing wait times and improving patient experience. By providing real-time availability, automated reminders, and a user-friendly interface, DocSpot streamlines the appointment booking process."
3.	Novelty / Uniqueness	"DocSpot revolutionizes doctor appointment booking with AI-powered matchmaking, predicting patient needs and preferences to suggest optimal appointment times and doctors. Its integrated telemedicine feature enables seamless virtual consultations, expanding access to healthcare services."
4.	Social Impact / Customer Satisfaction	"DocSpot improves healthcare accessibility and customer satisfaction by empowering patients to take control of their appointments, reducing wait times, and increasing access to quality care. By streamlining the appointment booking process, DocSpot enhances the overall patient experience, leading to increased loyalty and satisfaction."
5.	Business Model (Revenue Model)	"DocSpot generates revenue through subscription fees from healthcare providers for access to its appointment booking platform, as well as transaction fees for successful bookings. Additional revenue streams come from partnerships with healthcare organizations and targeted advertising."

6.	Scalability of the Solution	"DocSpot's cloud-based infrastructure and scalable architecture enable seamless growth, handling increasing user demand and appointment volume without compromising performance. Its flexible design allows for easy integration with existing healthcare systems, facilitating widespread adoption."
----	-----------------------------	---

PROPOSED 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.

Flowchart

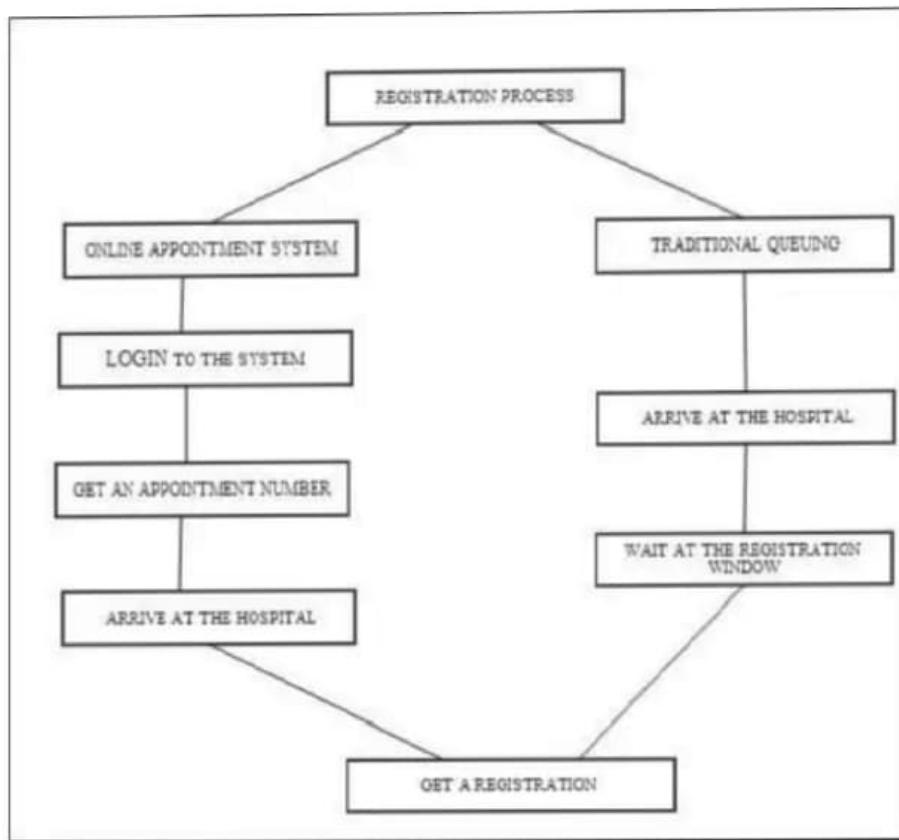


Figure 3: Flowchart for Traditional v/s Online Appointment system

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 entirely 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.

Project Design Phase

Solution Architecture

Date	27 June 2025
Team ID	LTVIP2025TMID55015
Project Name	DOCSPOT:Seamless Appointment Booking For Health care
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

Example - Solution Architecture Diagram:

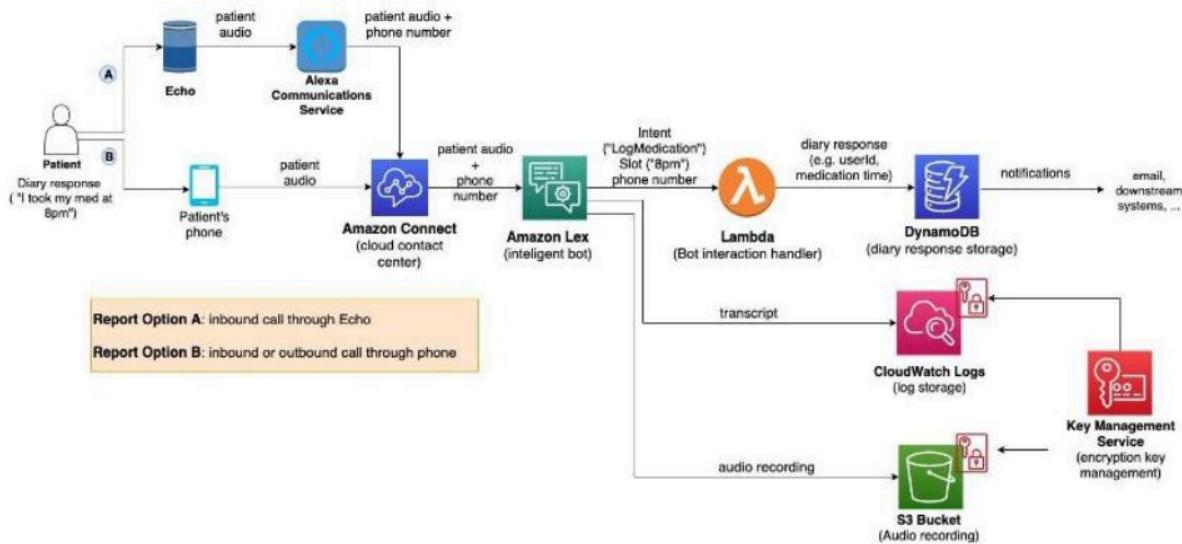


Figure 1: Architecture and data flow of the voice patient diary sample application

Reference:

<https://aws.amazon.com/blogs/industries/voice-applications-in-clinical-research-powered-by-ai-on-aws-part-1-architecture-and-design-considerations/>

Project Planning Phase

Project Planning Template (Product Backlog, Sprint Planning, Stories, Story points)

Date	27 June 2025
Team ID	LTVIP2025TMID55015
Project Name	DOCSPOT:Seamless Appointment Booking For Health care
Maximum Marks	5 Marks

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Jayanthi
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Madhavi
Sprint-2		USN-3	As a user, I can register for the application through Facebook	2	Low	Jayanthi
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Medium	Ashok
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Praveen
	Dashboard					

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	—
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	—
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	—

Velocity:

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{\text{sprint duration}}{\text{velocity}} = \frac{20}{10} = 2$$

Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.

<https://www.visual-paradigm.com/scrum/scrum-burndown-chart/>

<https://www.atlassian.com/agile/tutorials/burndown-charts>

Reference:

<https://www.atlassian.com/agile/project-management>

<https://www.atlassian.com/agile/tutorials/how-to-do-scrum-with-jira-software>

<https://www.atlassian.com/agile/tutorials/epics>

<https://www.atlassian.com/agile/tutorials/sprints>

<https://www.atlassian.com/agile/project-management/estimation>

<https://www.atlassian.com/agile/tutorials/burndown-charts>

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 to fill in the required information
	Fill in the fields according to an existing 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. 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 user form as required Press Submit button	Display a message confirming that a new user is created successfully
	Fill in the fields according to an existing 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 to fill in the required information

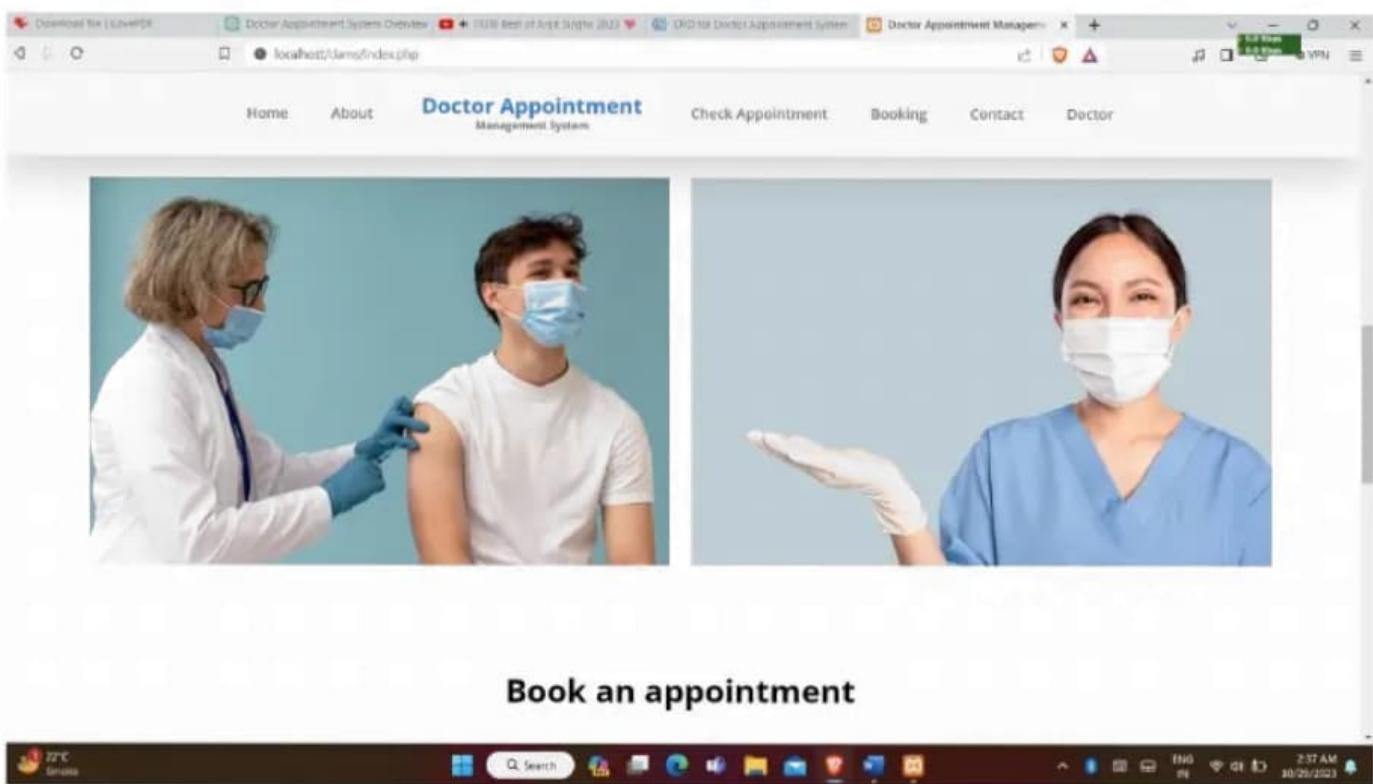
➤ Create Type Appointment (Administrator)

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

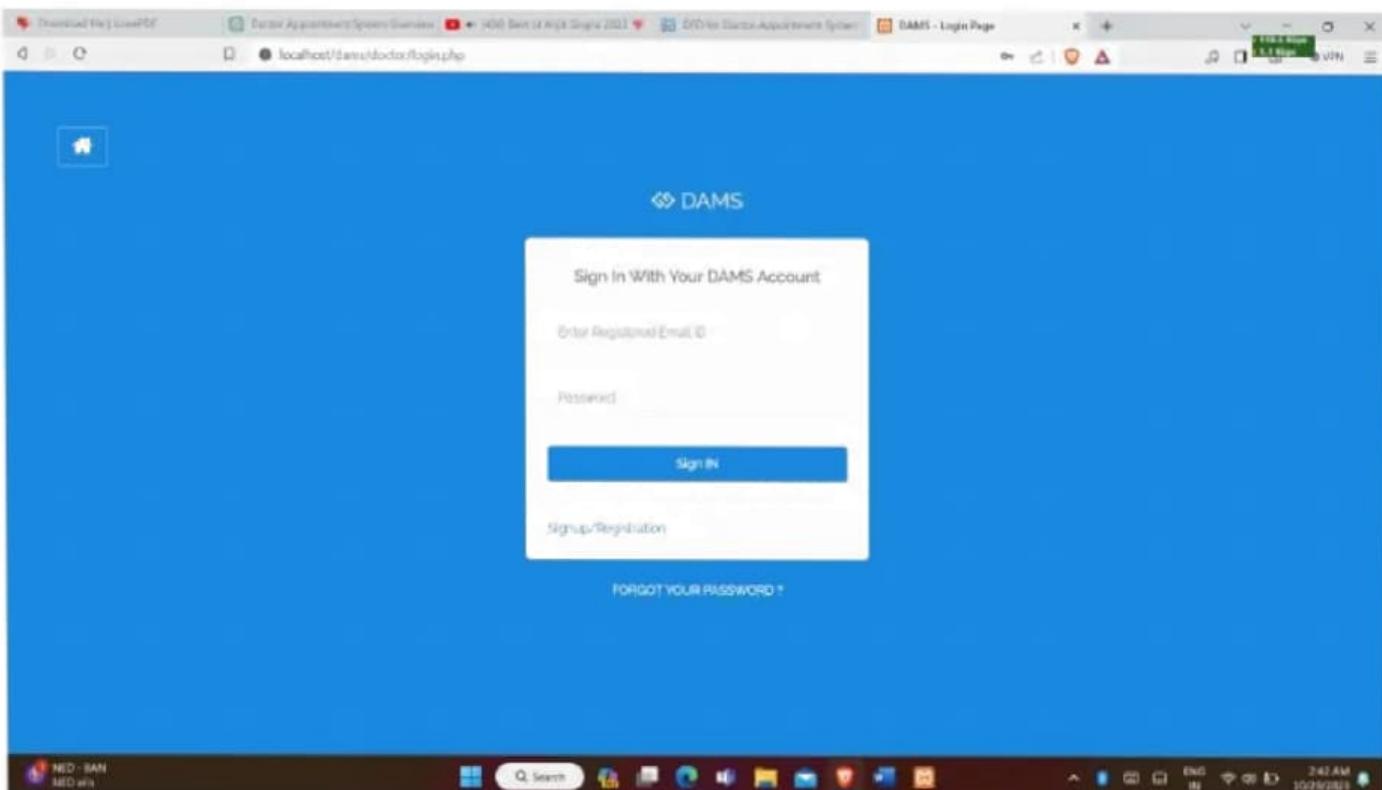
The screenshot shows a web browser window with the title 'Doctor Appointment Management System'. The main content area is titled 'Book an appointment'. It contains several input fields: 'Full name' (text), 'Email address' (text), 'Enter Phone Number' (text), 'mmddyyyy' (text), 'Select specialization' (dropdown menu), 'Select Doctor' (dropdown menu), and 'Additional Message' (text area). At the bottom right is a large black button labeled 'BOOK NOW'.

➤ CHEAK APPOINTMENT

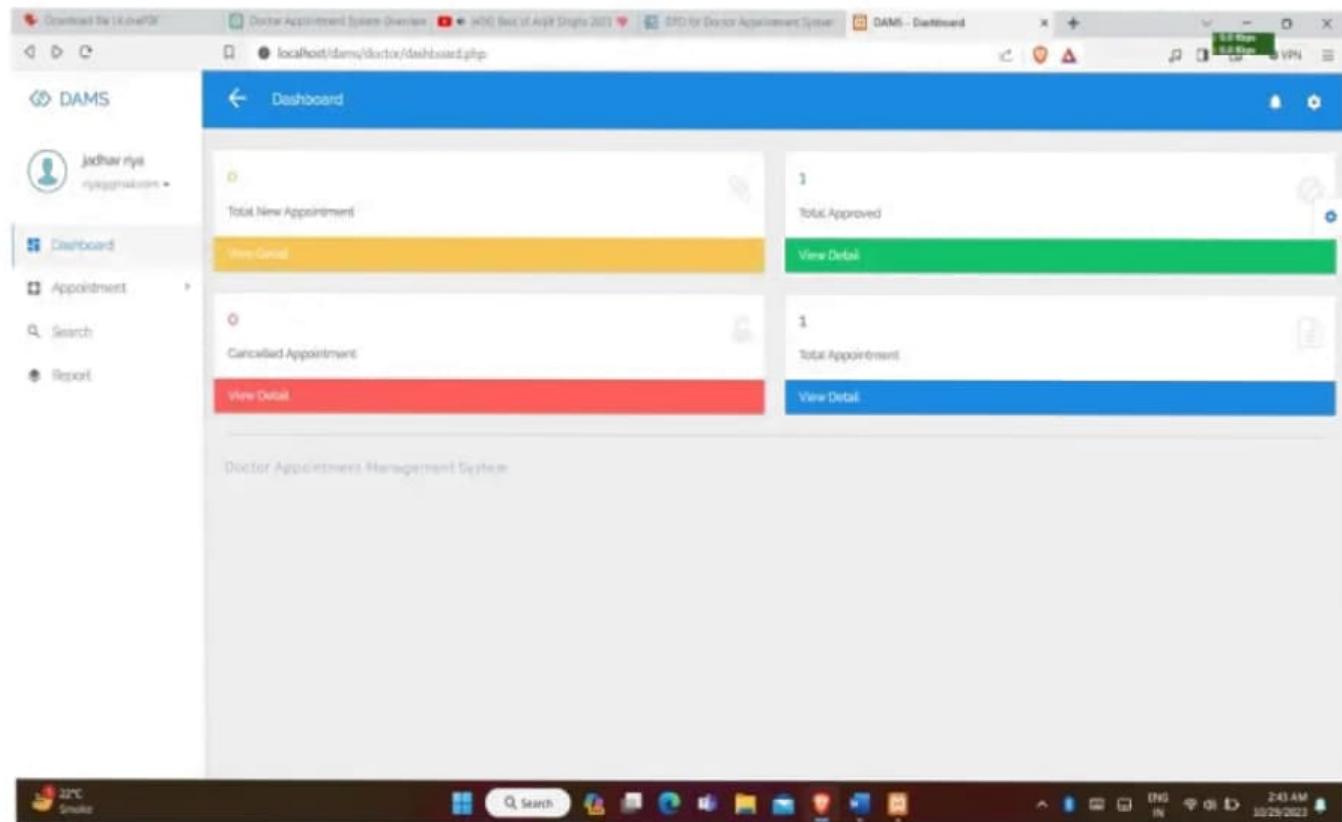
The screenshot shows a web browser window with the title 'Doctor Appointment Management System'. The main content area is titled 'Search Appointment History by Appointment Number/Name/Mobile No.' It features a search bar with the placeholder 'Appointment No./Name/Mobile No.' and a large black 'CHECK' button. Below the button, the text 'Result against "9325841838" keyword' is displayed. A table follows, showing a single row of appointment history:

S.No	Appointment Number	Patient Name	Mobile Number	Email	Status	Remark
1	933471516	Rohit Madhav Sebale	9325841838	rohitalse.93r@gmail.com	Not Updated Yet	Not Updated Yet

➤ DOCTOR LOG-IN PAGE



➤ DOCTOR HOME PAGE



➤ ABOUT CLINIC

The screenshot shows a Windows desktop environment with a taskbar at the bottom. The taskbar includes icons for File Explorer, Task View, Start, Search, and several pinned applications. The system tray shows battery level, signal strength, and the date/time (24/7 AM, 28/2/2021).

The main window is titled "Doctor Appointment Management System" and displays the "About" page. The page has a header with the title and a sub-header "Management System". Below the header, there are three columns of information:

- Timing**: 10:30 am to 7:30 pm
- Email**: indala@gmail.com
- Contact Number**: 9325841838

The middle column contains the text "Our Clinic":
Opposite, murbad kalyan
road, thane.

The right column contains the heading "Socials" followed by four social media icons: Facebook, Twitter, LinkedIn, and YouTube.

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.