EXAMPLE PROJECT

Product Requirements & Specifications

Digis

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Project concept brief description

The Hospital Appointments System is an innovative platform aimed at streamlining and digitizing the appointment management process in healthcare facilities. This system caters to three user roles: Patients, Doctors, and Administrators, providing them with specific functionalities to enhance their experience and optimize hospital operations.

Patients can easily book appointments and make payments through the Hospital Appointments System. By accessing the userfriendly web application, patients can view available time slots, select their preferred doctor, and book appointments according to their convenience. The system also allows patients to securely make payments online, ensuring a seamless and hassle-free experience.

Doctors have access to a comprehensive interface within the system, enabling them to efficiently manage their appointments and patient information. Upon logging in to the system, doctors can view their appointment schedule, including details such as patient names, appointment dates, and time slots. They can access individual patient profiles to review medical history, previous visits, and any relevant notes. After each visit, doctors can add a summary of the visit, capturing important information, diagnosis, and prescribed treatments or medications.

Administrators play a vital role in managing and overseeing the entire platform. With the admin panel, administrators have access to a range of tools and functionalities that allow them to effectively manage the system. They can add and remove doctors, ensuring an up-to-date roster of healthcare providers. Administrators can also handle appointment scheduling, allocate time slots, and manage any necessary modifications or cancellations.

The project aims to revolutionize the appointment management process in healthcare facilities, making it more convenient for patients, efficient for doctors, and easy to administer for hospitals. By leveraging technology, this system streamlines the booking, payment, and management of appointments, ultimately enhancing the overall healthcare experience for all stakeholders involved.

Risks Table

Risk Title	Probability	Severity
Twilio API may go down	1	2

Risk 1: Twilio API may go down

Description

If Twilio API experience downtime, connectivity issues, or latency problems, it may affect the overall performance and reliability of the project. It could impact communication, notification, and authentication capabilities.

Mitigation Strategy

Implement redundancy and failover mechanisms to minimize the impact of Twilio API downtime. This can involve setting up backup communication channels or alternative service providers to ensure continuous communication and notification capabilities. By having multiple communication options available, the system can seamlessly switch to an alternative provider in case of Twilio API issues.

For authentication purposes it is recommended to integrate Google Authenticator as a back-up method for 2FA at least for doctors and admins.



User Persona: Patient

Personal Profile

The user persona for the patient role is Maria. She is a 35-year-old working professional residing in the US. Maria is not a tech-savvy but seeks digital solutions to simplify her daily life. She values convenience, efficiency, and access to quality healthcare services. Maria has a moderate level of technical proficiency and is comfortable using digital tools and applications.

Background and Experience

Maria has a bachelor's degree in business administration and works in a corporate setting. While her expertise lies in the business field, she is knowledgeable about healthcare systems and understands the importance of streamlined processes. She has had previous experiences with booking medical appointments, but she often finds the process time-consuming and inefficient. Maria is eager to utilize technology to simplify and expedite the appointment booking process.

Pain Points

Maria's main pain point is the difficulty and inefficiency of booking medical appointments. She finds it frustrating to navigate through complex appointment systems, wait on hold for phone bookings, or experience long waiting times at the clinic. Maria is also concerned about missing important notifications or updates regarding her appointments. She desires a solution that provides a seamless and user-friendly experience.

User Persona: Patient

Expectations

Maria expects the Hospital Appointments System to offer a user-friendly web application that allows her to easily schedule appointments with doctors. She wants to view available time slots, select her preferred doctor, and receive immediate confirmation of her appointment. Maria values secure online payment options, as well as the ability to reschedule or cancel appointments effortlessly. She also expects to receive timely notifications and reminders about her upcoming appointments through the platform.

Summary

In summary, Maria, the patient user persona, is seeking a convenient and efficient way to book medical appointments. She values a user-friendly interface, seamless appointment scheduling, secure online payment options, and timely notifications. The Hospital Appointments System should cater to her needs by providing a hassle-free experience and ensuring her healthcare journey is simplified and streamlined.



User Persona: Doctor

Personal Profile

The user persona for the doctor role is Dr. Mark Collins. Dr. Collins is a 45-year-old experienced physician working in a busy hospital in the US. He is dedicated to providing high-quality healthcare services to his patients and staying updated with the latest medical advancements. Dr. Collins has a strong background in medicine and possesses excellent clinical skills.

Background and Experience

Dr. Collins has a medical degree and several years of experience in his specialized field. He has a deep understanding of patient care, diagnosis, and treatment planning. Dr. Collins has worked in various healthcare settings and has encountered different appointment management systems throughout his career. He recognizes the importance of efficient appointment management to ensure optimal patient care and workflow efficiency.

Pain Points

Dr. Collins faces several pain points related to appointment management in his daily work. He finds it challenging to manage a large number of patient appointments, especially when there are frequent rescheduling or cancellations. He often needs quick access to patient information, including medical history and previous visit summaries, to provide effective and personalized care. Dr. Collins is also interested in tools that can assist him in capturing detailed visit summaries, diagnoses, and prescribed treatments efficiently.

User Persona: Doctor

Expectations

Dr. Collins expects the Hospital Appointments System to provide a comprehensive and intuitive interface for managing his appointments and patient information. He values a system that enables him to view and update his appointment schedule easily, including patient names, appointment dates, and time slots. Dr. Collins also expects quick access to patient profiles, medical history, and previous visit summaries to provide informed and efficient care. He desires a user-friendly interface for capturing visit summaries, diagnoses, and treatment plans accurately.

Summary

In summary, Dr. Mark Collins, the doctor user persona, seeks an efficient appointment management system that enables him to provide high-quality care to his patients. He values a user-friendly interface, quick access to patient information, and features that assist him in capturing detailed visit summaries and treatment plans. The Hospital Appointments System should cater to his needs by streamlining appointment management, enhancing patient data accessibility, and facilitating effective communication among healthcare providers.



User Persona: Admin

Personal Profile

The user persona for the administrator role is Sarah Johnson. Sarah is a 38-year-old professional with a background in healthcare administration. She works in a hospital or healthcare facility in the US and is responsible for overseeing the management and operations of the Hospital Appointments System. Sarah is detail-oriented, organized, and possesses excellent problem-solving skills.

Background and Experience

Sarah has several years of experience in healthcare administration, specifically in managing systems and processes related to appointment scheduling and patient management. She is familiar with the complexities and challenges of coordinating appointments, handling modifications or cancellations, and ensuring smooth operations within the healthcare facility. Sarah is well-versed in using digital tools and technologies to streamline administrative processes.

Pain Points

Sarah faces several pain points in her role as an administrator. She finds it challenging to efficiently manage a large volume of appointments, particularly when dealing with changes, cancellations, or conflicts. Sarah also struggles with ensuring accurate and up-to-date information within the system, as patient and doctor details frequently change.

User Persona: Admin

Expectations

Sarah expects the Hospital Appointments System to provide a robust and user-friendly admin panel that allows her to manage the platform effectively. She values features that enable her to easily handle appointment scheduling, including allocating time slots, managing modifications or cancellations, and ensuring a balanced workload for doctors. Sarah also expects the system to support the management of doctors' information, including adding or removing doctors, updating their profiles, and maintaining an accurate roster.

Summary

In summary, Sarah Johnson, the administrator user persona, seeks an efficient admin panel within the Hospital Appointments System. She values a user-friendly interface that simplifies appointment management, supports doctor management, and provides robust reporting and analytics capabilities. The admin panel should cater to her needs by streamlining administrative processes and facilitating accurate data management

Mind map

Here you can see a mind map for the project

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Doctor: Authentication Use Cases

Log in to the application

Goal: To access personalized content, view account information, and use features that require the doctor to be logged in **Preconditions**: The doctor has a valid account

Steps:

- 1. The doctor navigates to the login page
- 2. The system displays the login form
- 3. The doctor enters their email and password or phone and one-time password
- 4. The system validates the login credentials and authenticates the doctor
- 5. The system redirects the doctor to their personalized dashboard

Log out of the application

Goal: To prevent unauthorized access to the doctor's account information

Preconditions: The doctor is logged in to the application

- 1. The doctor clicks on the profile image at the top-right corner
- 2. The doctor clicks the "log out" button
- 3. The system logs the doctor out of their account
- 4. The system redirects the doctor to the login page

Doctor: Authentication Use Cases

Reset password

Goal: To reset password in case the doctor forgets it

Preconditions: The doctor has a valid account

- 1. The doctor navigates to the login page
- 2. The doctor clicks the "forgot password" link
- 3. The system prompts the doctor to enter their email
- 4. The system sends a password reset link to the doctor's email
- 5. The doctor opens the password reset link
- 6. The system prompts the doctor to enter a new password
- 7. The doctor enters a new password and confirms it
- 8. The system updates the doctor's password and redirects them to the login page

Doctor: Settings Use Cases

Update Personal Information

Goal: To update personal information on the doctor's account

Preconditions: The doctor is logged in to the application

- 1. The doctor navigates to their account settings page
- 2. The system displays the doctor's current personal information such as name, profile image, email, phone number, and password.
- 3. The doctor can edit any of the displayed personal information fields.
- 4. The doctor saves the changes or cancels the edit.
- 5. The system validates the edited information, updates the doctor's personal information, and displays a success message to the doctor.



Doctor: Settings Use Cases

Delete Account

Goal: To delete the doctor's account and permanently remove personal information from the platform

Preconditions: The doctor is logged in to the application

- 1. The doctor navigates to their account settings page
- 2. The system displays the option to delete the account
- 3. The doctor clicks the option to delete the account
- 4. The system displays a confirmation message asking the doctor to confirm the account deletion
- 5. The doctor confirms the account deletion
- 6. The system permanently removes the doctor's account and all associated personal information from the platform
- 7. The data that has to stay in the database in order to prevent system malfunctioning should be anonymyzed (e.g. the email will be changed to "deleted@example.com".
- 8. Scheduled appointments are canceled
- 9. Notification about canceled appointments is sent to patients
- 10. Patients receive full refund including platform fee

User Stories

Patient

Features	User Stories
Authentication	• As a patient, I want to be able to log in to the application so that I can access my personalized content, view my account information, and use any features that require me to be logged in.
	• As a patient, I want to be able to enter my email and password to log in quickly and easily, so that I don't have to spend too much time logging in.
	• As a patient, I want to use social accounts (Apple/Facebook/Google) for a quick authentication.
	• As a patient, I want to be able to reset my password in case I forget it, so that I can regain access to my account.
	• As a patient, I want to be able to log out of my account when I'm done using the application, so that nobody else can access my account information.
Appointments Screen	• As a patient, I want to see a list of appointments, so that I can manage my schedule effectively.
	• As a patient, I want to see details of an appointment, so that I can be prepared for the appointment or to review old appointments information including summary and treatment plan
	• As a patient, I want to be able to easily navigate to the hospital by clicking on the "Navigate" button, and the third-party maps app will open and build a route to the hospital, so that I can quickly get to the appointment location.
	• As a patient, I want to be able to easily cancel an appointment and receive a refund according to a cancellation policy.
Single Appointment Screen	• As a patient, I want to see appointment details (date, time, status) so that I have easy access to it.
	• As a patient, I want to see treatment plan so that I will not miss any important medical information.
	• As a patient, I want to see my anamnesis so that I can use it for future medical services.
	• As a patient, I want to be able to easily call my doctor by clicking on the "Phone" button, so that I can call the doctor if it is required.
	• As a patient, I want to be able to easily send an email to my doctor by clicking on the "Envelope" button, so that I can communicate with the doctor via email.
	• As a patient, I want to be able to easily cancel an appointment and receive a refund according to a cancellation policy.
Search Screen	• As a patient, I want to see a list of hospitals with filters by services and locations so that I can find the closest hospital.
	• As a patient, I want to switch from list view to map view so that it will be easier for me to choose the hospital location.
Hospital Screen	As a patient, I want to review services provided by the hospital.
	As a patient, I want to schedule new appointment and proceed to checkout.

User Stories

Patient

Features	User Stories
Checkout	As a patient, I want to review available dates and time of the future appointment.
	• As a patient, I want to book an appointment for the best suitable date & time if the slot is available.
	• As a patient, I want to select a specific doctor so that I will feel confident about the quality of my treatment.
	As a patient, I want to not select a specific doctor since I don't have preferences
	• As a patient, I want to pay with wallet pay (Apple Pay/Google Pay) so that I don't have to enter my credit card details.
	As a patient, I want to add new credit card to my payment methods.
	As a patient, I want to select an existing credit card to process payment.
	As a patient, I want to see a confirmation of my appointment.
	• As a patient, I want to see a comprehensive error message in case if the transaction failed so that I know what went wrong.
Settings	• As a patient, I want to delete my account so that I can permanently remove my personal information from the platform.
	• As a patient, I want to have additional confirmation on account deletion so that I cannot accidentally delete my account.
	• As a patient, I want my scheduled appointments to be canceled in case of my account deletion with a refund of costs according to a cancellation policy.
	• As a patient, I want to adjust my notification settings so that only I will get only information that is important for me.
	 As a patient, I want to change my name, profile image, password, email, and phone number so that I can keep my personal information up-to-date and secure.
	• As a patient, I want to request the personal data that the platform collected so that I can know what information is being stored about me and ensure its accuracy.
Notifications	• As a patient, I want to get a push notification & text message I day before the appointment so that I will not forget about it and I can change my schedule or cancel the appointment if needed.
	• As a patient, I want to get a push notification & text message 2 hrs before the appointment so that I will not forget about it and I can change my schedule or cancel the appointment if needed.
	• As a patient, I want to get a push notification & text message in case of appointment cancellation.

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User Stories

Patient

Features	User Stories	
Notifications	• As a patient, I want to get a push notification & text message about booking new appointment.	
	As a patient, I want to get an email about booking new appointment with order details.	



Competitors review

Competitors	Pros	Cons
Zocdoc	 Large user base and extensive provider network User-friendly interface for appointment booking Patient reviews and ratings for healthcare providers Integration with patient electronic health records (EHR) 	 Primarily focused on the US market, limited international coverage Some users report occasional difficulty finding specific specialists or appointment slots
Doctolib	 Comprehensive appointment management features Seamless integration with doctors' calendars and online booking Patient reminder and notification system 	 Available in selected European countries, not accessible worldwide Limited coverage in certain rural areas or smaller medical practices Some features may require additional subscription plans
Practo	 Telemedicine features for remote consultations Extensive network of doctors and healthcare providers Patient reviews and ratings to aid in provider selection 	 Limited availability in certain regions, not globally accessible Limited appointment slots during peak hours and with highly sought-after doctors
HealthEngine	 Offers a wide range of healthcare services and providers Patient reviews and ratings for healthcare providers 	 Primarily serves the Australian healthcare market Some users report occasional glitches in the appointment booking process
<u>DocPlanner</u>	 Global reach with a wide range of healthcare services Provides appointment booking for various medical specialties Patient reviews and ratings to help users make informed decisions 	- Limited provider coverage
<u>MyChart</u>	 Access to electronic medical records and patient information Allows secure communication with healthcare providers Integration with health systems and medical facilities 	 May not offer appointment scheduling for external providers Limited appointment management features May not have patient reviews and ratings like other dedicated appointment platforms

Competitors review

Competitors	Pros	Cons
Kareo	 Integrated billing and practice management capabilities Customizable appointment scheduling and patient reminders Reporting and analytics features for practice performance evaluation 	- More suited for medical practices rather than large healthcare facilities
AppointmentPlus	 Flexible scheduling options Customizable appointment booking solutions for diverse needs Reporting and analytics for appointment and resource management 	 Primarily serves multiple industries, not just healthcare May not have specialized healthcare-specific features like other platforms Limited focus on patient reviews and provider ratings

Branding and design concepts

Here you can see a sample page and design concepts which help to visualize the end product.



Colors

Primary Palette

С0 М0 Y0 K100	HEX #000000	С48 М45 Ү0 КЗ	HEX #7C84F7
C19 M27 Y0 K73	HEX #140044	C0 M39 Y85 K1	HEX #FC9822
С 0 М0 Ү7 К20	HEX #00CDBB		

Secondary Palette

C0 M2 Y6 K3	HEX #F7F1E8	СО МО ҮО К14	HEX #DBDBDB

Typography

Primary Version

Poppins

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

123457890,.!?:;""@#\$%^&*()-+

Secondary Version

General sans

ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 123457890,.!?:;""@#\$%^&*()-+

Sofia Pro

ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 123457890,.!?:;"" @#\$%^&*()-+

Recommended Technologies

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Recommended Technologies

Frontend		
React	https://reactjs.org/	
Redux	https://redux.js.org/	
React Native	https://reactnative.dev/	
	Backend	
Node.js	https://nodejs.org/en/	
Express	https://expressjs.com/	
PostgreSQL	https://www.postgresql.org/	
Docker	https://www.docker.com/	
	QA Tools	
Qase	https://qase.io/	
	DevOps	
Gitlab	https://about.gitlab.com/	
CI/CD	https://docs.gitlab.com/ee/ci/	
Google Cloud Platform	https://cloud.google.com/	
Kubernetes	https://kubernetes.io/	

Recommended Technologies

Third-party services	
Twilio	https://www.twilio.com/
Sendgrid	https://sendgrid.com/
Stripe	https://stripe.com/
Google Places API	https://developers.google.com/maps/documentation/places/web-service

Initiate Project	Description
Project architecture	Project structure development
	Project setup
Server architecture / infrastructure	Scheme of the server modules
	Environments preparation
	Cloud storage integration
Database development	Planning database structure and relations
	Database infrastructure management
	Database table rolling out
Integrations	Description
Stripe API	Payment Processing API. https://stripe.com/
Analytics	Google Analytics for Doctor Side
	Firebase for Patient Mobile App
Twilio API	https://www.ayrshare.com/
Email Service API	https://sendgrid.com/
Google Autocomplete	Google Places API. https://developers.google.com/maps/documentation/places/web-service

Admin Side	Description
Authentication	 Login 2FA (Phase 2) Logout
Calendar View	 Day view Week view Filters Appointment CRUD
Admins Management (Phase 2)	 Admins list with search and filters (Phase 2) Admin CRUD (Phase 2) Admin block/activate admin (Phase 2) Admin permissions management (Phase 2)
Patients Management	 Patients list with search and filters Patients CRUD Export patient's data
Doctors Management	Doctors list with search and filters Doctor CRUD
Services Management	Services list with search and filters Service CRUD
Locations Management	 Locations List with search and filters Location CRUD including Room CRUD

Settings Page	 Update personal info Update password Delete account (Phase 2)
Doctor Side	Description
Authentication	 Login Restore password flow Logout
Calendar	 Week view Search and filter appointments Appointments CRUD
Appointment Page	 Display relevant data Sections CRUD Export to PDF (Phase 2)
Settings	 Update personal info Update password Delete account
Patient Mobile App	Description
Authentication	 Animated splash screen when user opens the app Login: Email flow Login: Social accounts flow (Phase 2) Restore password flow Handle deep link visit Logout Sign-up: Email flow

Authentication	 Handle policies actions (accept/decline) Open Privacy policy and Terms & Conditions in child browser Phone verification for Sign-up: Email flow Sign-up: Social accounts flow (Phase 2)
Search Screen	 Map view List view Search and filter locations Get permission to use geolocation App navigation bar
Location Screen	Display relevant information Search services
Checkout	 Get available date & time based on doctors' availability Book timeslot Add payment methods Pay with card Wallet pay: Apple Pay for iOS app (Phase 2) Wallet pay: Google Pay for Android app (Phase 2) Appointment confirmation modal
Appointments Screen	 Display relevant appointments Search and filter appointments Cancel appointment Navigate to location (open device maps app and build route)
Single Appointment Screen	 Display relevant information Pay for appointment scheduled by a doctor or an admin with confirmation modal Cancel appointment Navigate to location (open device maps app and build route) Handle phone and email links

Settings	 Create screen for navigation between other settings screens Manage personal info settings Ability to change email Ability to change phone number with further phone verification Ability to connect/disconnect social accounts (Phase 2) Handle if the user has no password, but wants to disconnect the last connected social account (Phase 2) Ability to update password Update notification preferences Manage payment methods (make payment method primary, delete existing payment method, add new payment method) Delete account with confirmation Ability to request personal data Display screen with Privacy Policy and Terms & Conditions links Open Privacy Policy and Terms & Conditions links in child browser
Other	Description
Cancellation Policy	 Full refund to patient if the appointment cancelled by a doctor or an admin Partial refund to a patient if the appointment cancelled by the patient Cancel appointment 24 hrs before the booked time in case if the appointment has status "pending payment"
Push Notifications	 Consider patient notification preferences Send push notification to a patient about new appointments (scheduled and pending payment statuses) Send push notification to a patient about updates of appointment Send push notification as a reminder to a patient two days in advance about the upcoming scheduled appointment Send push notification as a reminder to a patient two days in advance about the upcoming not paid appointment Send push notification as a reminder to a patient two hours in advance about the upcoming scheduled appointment Send push notification as a reminder to a patient two hours in advance about the upcoming scheduled appointment Send push notification to a patient about treatment plan updates
SMS Notifications	 Consider patient notification preferences Send text message to a patient phone about new appointments (scheduled and pending payment statuses) Send text message to a patient about updates of appointment Send text message as a reminder to a patient two days in advance about the upcoming scheduled appointment Send text message as a reminder to a patient two days in advance about the upcoming not paid appointment Send text message as a reminder to a patient two hours in advance about the upcoming scheduled appointment Send text message as a reminder to a patient two hours in advance about the upcoming scheduled appointment Send text message to a patient about treatment plan updates

Email Templates & Notifications	 Create email templates Send welcome email to a patient/doctor Send welcome email to an admin (Phase 2) Send email to a patient/doctor/admin about the fact the new password is set Send email to patient/doctor/admin before deleting their account data about the fact of deleting their account Send new email confirmation letter to patient Send email to admin with their account credentials (Phase 2) Send email to admin when their account is blocked (Phase 2) Send email to admin when patient requests their personal data Send email to patient/doctor when their account is blocked Send email to admin with their account credentials Send email to doctor with their account credentials Send email to patient/doctor with unique link to restore password
Informational Pages	 Create landing page for the project Create Privacy Policy page Create Terms & Conditions page
Delete Account & Erase Date	 Delete account of patient/doctor/admin Anonymize required data in the database (e.g. change john.doe@example.com to 19823dhouinjk@deleted.user) Handle deleted users on the frontend
Release Activities	 Multiple cycles of regression testing to achieve appropriate number of low priority bugs and zero bugs of high and middle priorities Deployment to production environment Final testing on production environment UAT on production environment Debugging

Estimation of budget and timeline

Here you can see an estimation for this project

Wireframes & Clickable Prototype

Here you can see wireframes and clickable prototype

