

## **Chapter I. Introduction**

### **Background of the study**

The healthcare industry has long faced challenges in scheduling and managing medical appointments, which often leads to inefficiencies such as long wait times, patient dissatisfaction, and underutilization of healthcare resources. With the increasing demand for healthcare services and the growing expectation for more patient-centered care, there is a pressing need for a system that simplifies and streamlines the appointment booking process.

The M.A.P.S (Medical Appointment Planning System) is proposed to address these challenges by leveraging digital technology to enhance the accessibility and efficiency of scheduling medical appointments. This system is designed to be user-friendly, accommodating users of all ages and technical skills, and aims to reduce the administrative burden on healthcare providers while improving the patient experience.

After observing the difficulties many patients face in securing timely medical consultations and the administrative strain on healthcare facilities to manage appointments effectively. By introducing a system that automates and optimizes appointment scheduling, M.A.P.S seeks to bridge the gap between healthcare providers and patients, ensuring a smoother, more efficient service that benefits all stakeholders involved.

### **Statement of the problem**

There is significant inefficiency in scheduling and managing medical appointments, leading to patient dissatisfaction and resource underutilization. The current system is often cumbersome, relying on outdated methods that do not meet the needs of a modern healthcare environment. This inefficiency manifests in long wait times for patients, a confusing appointment booking process, and the poor allocation of medical resources. These issues not only frustrate patients but also place unnecessary stress on healthcare providers and administrative staff, highlighting the urgent need for a more streamlined and effective system.

The current system for scheduling medical appointments is plagued by several issues that compromise its effectiveness and efficiency:

#### **1. Long Wait Time:**

- Patients often experience lengthy delays when trying to book appointments. This is due to a cumbersome and outdated scheduling process that relies heavily on phone calls and manual entry by administrative staff. These delays can lead to prolonged suffering for patients who need timely medical attention and can decrease patient satisfaction and trust in the healthcare system.

## **2. Complex and Inaccessible Scheduling Systems:**

- Many existing appointment systems are not user-friendly, particularly for elderly patients or those who are not tech-savvy. The interfaces are often cluttered and confusing, making it difficult for users to find available slots or the right specialist. This complexity can deter patients from using online systems, pushing them to resort to less efficient telephone bookings.

## **3. Underutilization of Healthcare Resources:**

- Inefficient scheduling can lead to uneven distribution of patient appointments, resulting in some periods of high congestion and other times of underutilization. This not only affects the quality of care provided due to rushed consultations during peak times but also leads to financial losses for healthcare providers.

### **Assumption of the study**

The development of the M.A.P.S is based on several key assumptions that address the problems identified in the statement of the problem. These assumptions underpin the design and functionality of the system, ensuring that it can effectively resolve the current inefficiencies in medical appointment scheduling:

**1. Technological Accessibility and Adoption:** It is assumed that the majority of patients and healthcare providers have access to basic internet technology and are willing to adopt a new digital solution for appointment scheduling. This assumption is crucial for the success of M.A.P.S, as the system relies on online interfaces to streamline the booking process.

**2. User-Friendly Interface:** The system assumes that a simplified, intuitive interface can significantly reduce the complexity and confusion currently associated with medical appointment scheduling. By designing a user-friendly platform, M.A.P.S aims to accommodate users of all ages and technical abilities, thereby increasing the likelihood of widespread use.

**3. Real-Time Data Synchronization:** The proposed system assumes that real-time updates of appointment slots and doctor availability can effectively eliminate long wait times and optimize the distribution of healthcare resources. This feature is expected to facilitate immediate booking confirmations and adjustments, enhancing overall efficiency and patient satisfaction.

**4. Scalability and Customization:** M.A.P.S is designed with the assumption that healthcare facilities of different sizes and specialties can customize the system according to their specific needs. This flexibility is anticipated to encourage adoption across various medical practices, ensuring that the system can address the unique challenges faced by different providers.

**5. Compliance and Security:** The system assumes that all legal and regulatory requirements related to data privacy and security can be met. This compliance is critical to protect patient information and build trust in the system's ability to handle sensitive data securely.

## **Significance of the study**

The proposed M.A.P.S is designed to benefit a range of stakeholders within the healthcare ecosystem. The significance of the study is outlined below, ranking the beneficiaries from highest to lowest based on their influence and direct benefits received from the system:

### **1. Healthcare Administrators**

- Healthcare administrators stand to gain significantly from M.A.P.S as it streamlines the entire appointment management process, reducing administrative burdens and improving operational efficiency. The system's ability to provide real-time data and analytics also aids in better resource allocation and management decisions.

### **2. Doctors and Medical Staff:**

- Doctors and medical staff benefit from M.A.P.S by having a more predictable and balanced appointment schedule, which can lead to reduced workplace stress and increased job satisfaction. The system's efficiency ensures that they can spend more time on patient care rather than administrative tasks, enhancing the quality of healthcare services provided.

### **3. Patients/Users:**

- Patients/Users are direct beneficiaries as M.A.P.S provides a user-friendly platform that makes booking appointments straightforward and less time-consuming. The system's real-time updates and reminders improve access to healthcare and ensure that patients can receive timely medical attention, enhancing patient satisfaction and adherence to treatment plans.

### **4. IT Support Staff:**

- IT support staff benefit from the introduction of M.A.P.S as it incorporates advanced technology solutions that are robust and scalable. This not only provides them with a modern and efficient system to manage but also reduces the frequency and complexity of IT issues related to appointment scheduling.

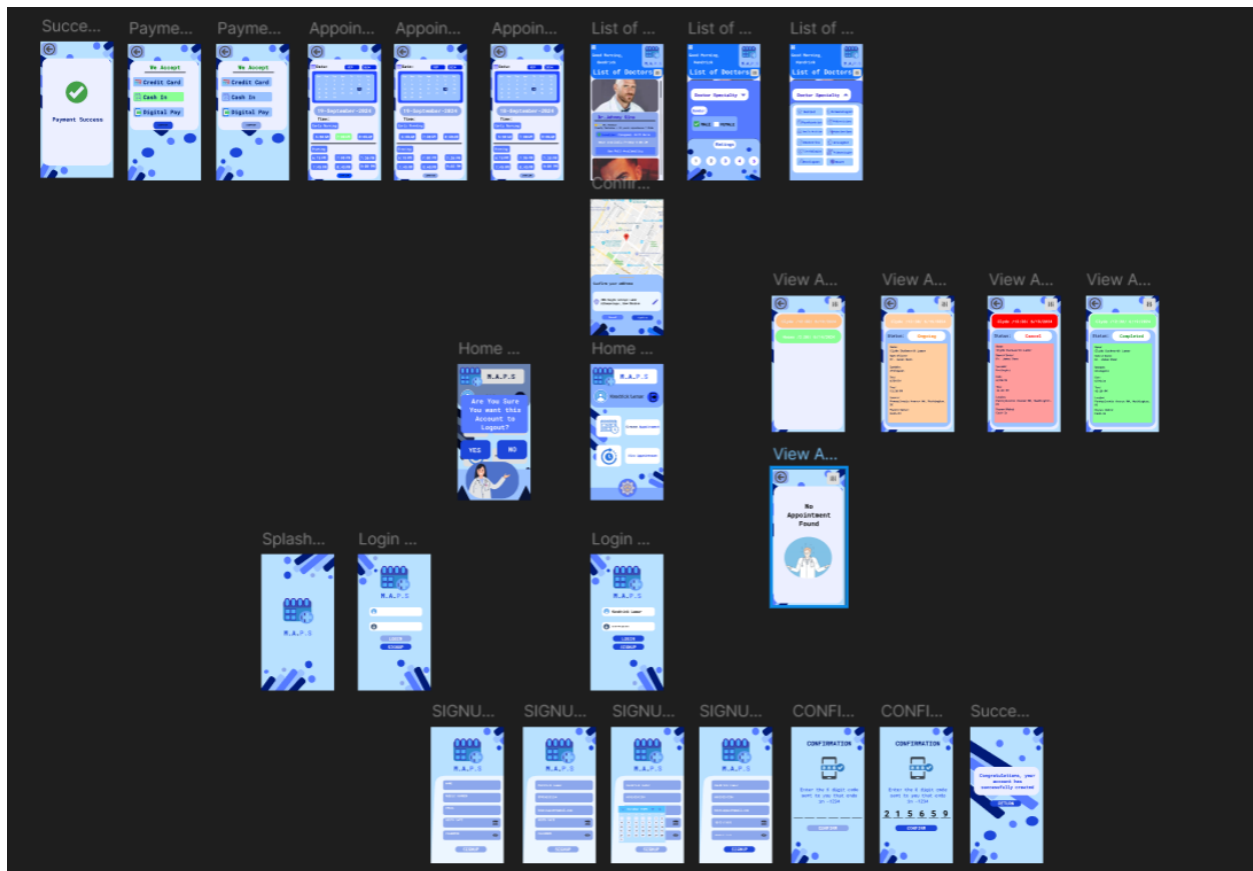
### **5. Insurance Companies:**

- Insurance companies benefit indirectly from M.A.P.S as the system's efficiency can lead to fewer missed appointments and more consistent patient care, which in turn can result in lower healthcare costs and fewer claims for missed treatments or worsening health conditions.

## Chapter II. Research Design

The M.A.P.S (Medical Appointment Planning System) development follows the User-Centered System Design (UCSD) process, which emphasizes continuous user involvement to ensure the system meets their needs and expectations. This process includes several stages: understanding the context of use, specifying user requirements, designing solutions, and evaluating these against requirements. Each stage incorporates feedback loops to refine and improve the system based on user input and testing. Our experience in this project has highlighted the importance of continuous user engagement, as it has directly influenced design decisions, interface simplicity, and overall system functionality. By integrating real user feedback into each phase, we have been able to address specific challenges and enhance the usability and effectiveness of M.A.P.S, ensuring it is both practical and beneficial for all stakeholders involved.

### A. Task Analysis



- I. Creating an Account
  - i. Open the App
  - ii. Select the SIGNUP button

- iii. Enter the details required
- iv. Enter the 6-digit code
- v. Success Message

## II. Login

- i. Open the App
- ii. Enter Name and password

## III. Create an Appointment

- i. Select the Create Appointment
- ii. Confirm Location
- iii. Select a doctor
- iv. Select a time and date
- v. Select payment method

## IV. View Appointment

- i. Select the View Appointment
- ii. Select a previous appointment
- iii. Displays the details

## B. Requirements Gathering

Upon making this app we the team have gathered some information of what time survey we should use we will use participant survey heuristic evaluation and the specification

Technique	Description
Participant Survey	Me and my partner have decided that we should make a survey since its the most efficient way more reliable app its also to know on how the participants like our app do overall like what are the things to improved and what are the things be able to improved for the feature of M.A.P.S and for the app and creating the prototype is we will used Figma
Usability Specification	With this we come up an idea since our participants will be participating in the discord call with that we will be able to see on how they like our app and we can also know about their opinion and what are their thoughts about the app we since our app can run on any android version

Heuristic Evaluation	Having the Heuristic Evaluation is the best since we will know what the users have the highest and lowest evaluation we will also know what they like about the app and the best rating about the app if they really like their style of the app
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Table 1. Evaluation Techniques

Through this process me and my partner have been thinking what the best way will be to gather information about the app since our app is effective and uses a real world with this with the help evaluation we will be able to know what is the highest and lowest rating of our app so that we can improved our app in the future

### User Requirements

**Requirements Summary:**

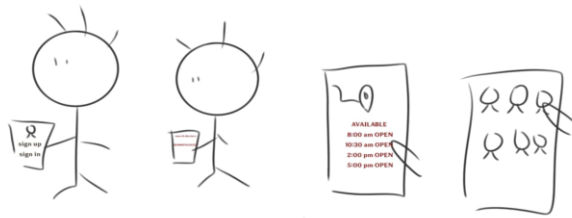
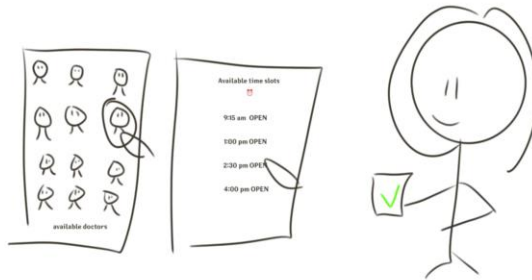
<b>MINIMUM REQUIREMENTS</b>	Processor Cores	Single Core
	OS	Android 2.0.1(Éclair)
	RAM	2 GB
<b>RECOMMENDED REQUIREMENTS</b>	Processor Cores	Quad Core Above
	OS	Android 2.0.1-Version15(Éclair-Vanilla Ice Cream)
	RAM	2 GB
<b>OTHER REQUIREMENTS</b>	Permissions	Notifications, Storage, Locations, Contacts, and Calendar

Table 1. System Requirements

Table 2 Requirements

### C. Storyboarding and Prototyping

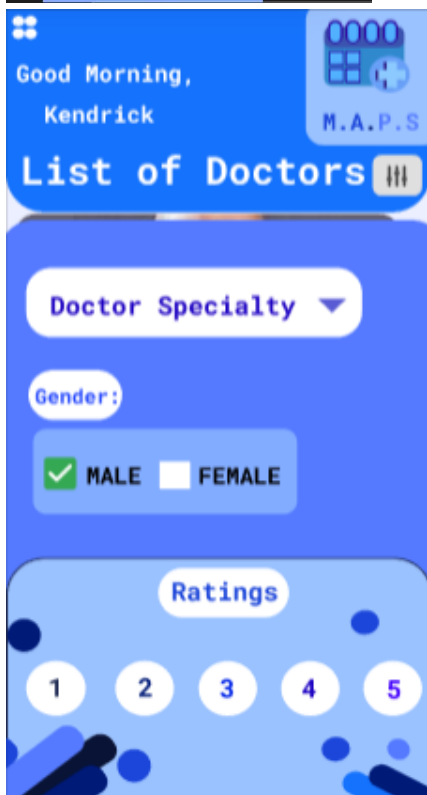
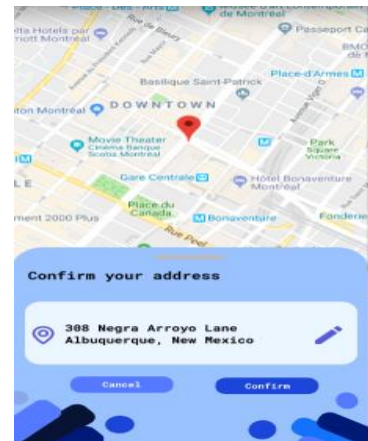
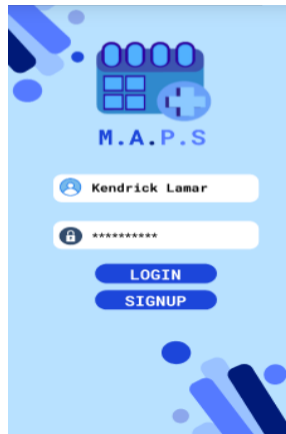
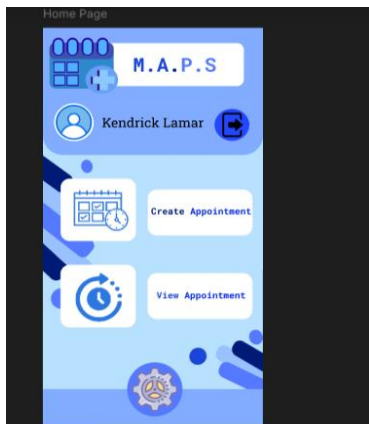
On this part me and my partner we decided come up with a storyboard on our users which will be shown here







## D. Evaluation of prototype



Area of Evaluation	5	4	3	2	1
<b>A. Visibility of System Status</b> <ul style="list-style-type: none"> <li>- The system design provides appropriate feedback like message prompts in response to user actions.</li> <li>- The message prompts are clear, visible and understandable.</li> </ul>	✓	✓			

<b>B. Match between the system and the real world</b> - Used words, phrases and concepts according to users' language rather than system oriented words and computer jargons.	✓				
<b>C. User control and freedom</b> - The system design provides ways of allowing users to easily "get in" and "get out" if they find themselves in unfamiliar parts of the system.	✓				
<b>D. Consistency and Standards</b> - The colors, text, labels, buttons and other elements in the design are uniform from start to finish. - Text and icons are not too small or too big. - Menus and other features of the system are arranged and positioned in a consistent way. (For ex. If your website has navigation buttons on the top under the page title on one page, the users will automatically look there for the same features on other pages.		✓			
			✓		
			✓		
<b>E. Error Prevention</b> - The system design provides an automatic detection of errors and preventing them to occur in the first place. - Idiot proofing mechanisms are applied			✓		
				✓	
<b>F. Help users recognize, diagnose and recover from errors</b> - Error messages and the terms used are recognizable, familiar and understandable for the users.		✓			
<b>G. Recognition rather than recall</b> - Objects, icons, actions and options are visible for the user. - Objects are labeled well with text and icons that can immediately be spotted by the user and matched with what they want to do.			✓		
<b>H. Flexibility and efficiency of use</b> - The system design provides easy to navigate menus. - the system does not make wasteful time of system resources.			✓		
<b>I. Aesthetic and minimalist design</b> - Graphics and animations used are not difficult to look at and does not clutter (mess) up the screen. - Information provided is relevant and needed for the system design.	✓				
<b>J. Help and Documentation</b> -the system design provides information that can be easily searched and provides help in a set of concrete steps that can easily be followed.			✓		

### Chapter III. Conclusion and Recommendation

Overall our app was really fun and more excitement news and new features for the app me and my partner have deeply discuss and thoughts about the app and with this we come up with the solution to save a patient without ever going through the hospital