



# Clinic Management System

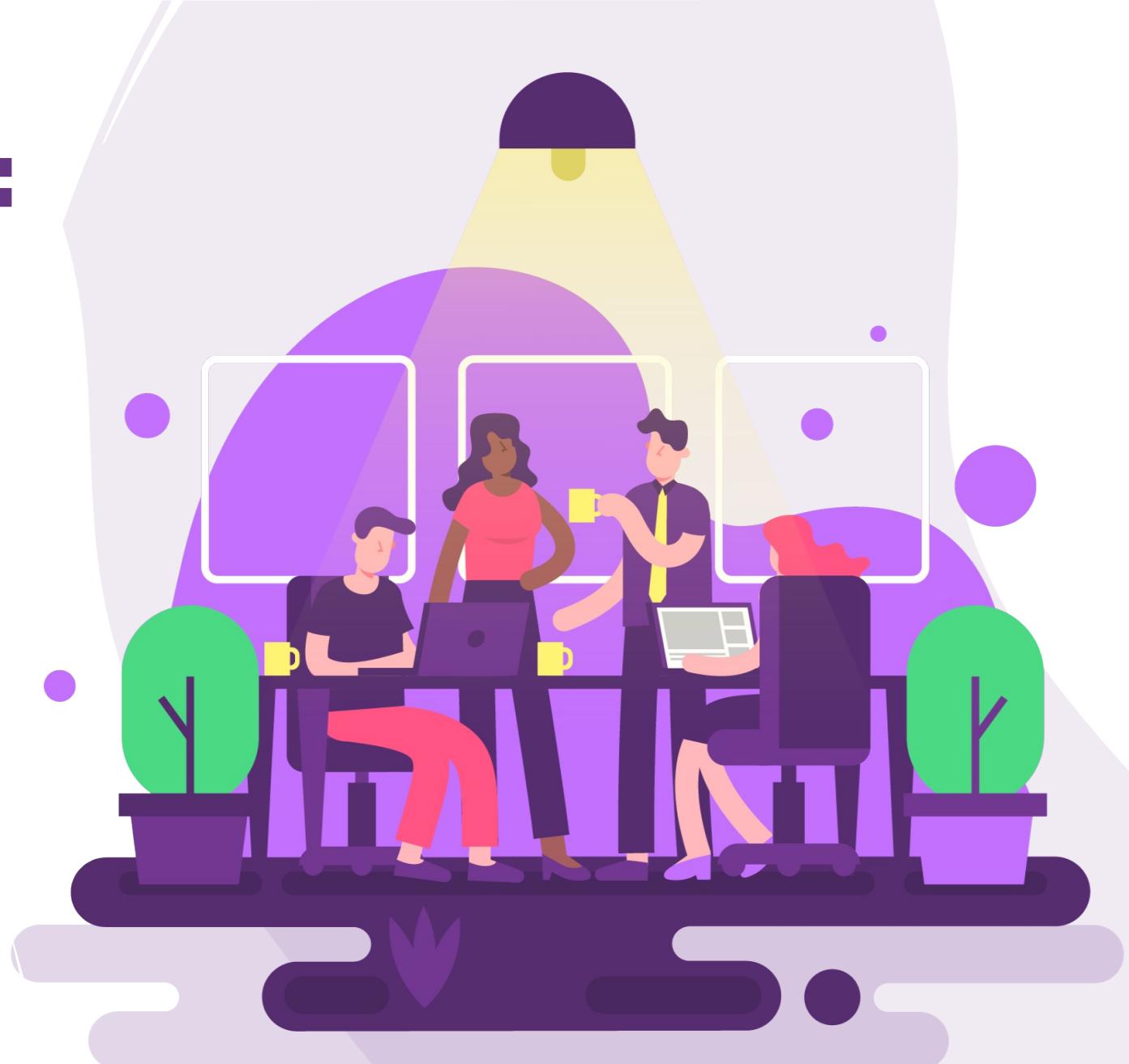
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# Team



# Team members:

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# Problem statement

The Medical Center problem facing uses a hands-on procedure to deliver health services, by using cards, and files to track progressive patient records, and the establishment of new patient records in the clinic. The system is intended to assist clinicians in entering and viewing patient information. When necessary, the doctor can access this data by searching for the patient's id, and he can also regulate his appointments in the clinic. reveals all of his medical conditions and prescription information from previous visits. The patient can upload and select his doctor and an appropriate appointment time.





# Problem Analysis

Elements	Description
The problem of	Loss of patients past records
Affects	Doctors Patient
The result of which is	1. Difficulty of keeping track of patients past history 2. Time wasted for doctors to know patient past data 3. Complexity of organizing patient record
Benefits of a new system	1. Reduction of wasted time and resources 2. Tracking of historical data easier 3. Make sessions faster

Elements	Description
<b>The problem of</b>	Difficulty of communication
<b>Affects</b>	Doctors Patients
<b>The result of which is</b>	<ol style="list-style-type: none"><li>1. Decreased Doctor satisfaction with patients.</li><li>2. Conflict between patients appointments.</li><li>3. Time wasted on scheduling new appointments</li></ol>
<b>Benefits of a new system</b>	<ol style="list-style-type: none"><li>1. Increase patients and doctors satisfaction</li><li>2. Increase revenues</li><li>3. Doctor time table is more organized</li></ol>

Elements	Description
<b>The problem of</b>	Difficulty of appointment reservation
<b>Affects</b>	Patients
<b>The result of which is</b>	<ol style="list-style-type: none"><li data-bbox="1044 688 2102 735">1. Harder for patients to make appointments</li></ol>
<b>Benefits of a new system</b>	<ol style="list-style-type: none"><li data-bbox="1044 908 1787 956">1. Increase number of patients</li><li data-bbox="1044 966 1659 1013">2. Increase clinic revenue</li><li data-bbox="1044 1023 1992 1071">3. Simplicity of making an appointment</li></ol>

Elements	Description
<b>The problem of</b>	Long waiting time to enter
<b>Affects</b>	Patients Nurse Doctors
<b>The result of which is</b>	1. Crowded clinic 2. Waste of patient time
<b>Benefits of a new system</b>	1. Decrease patient waiting time 2. Make nurse work more organized 3. Saved doctor time

Elements	Description
The problem of	Loss of patients prescription
Affects	Patients
The result of which is	<ol style="list-style-type: none"><li>1. patient must communicate with doctor</li><li>2. Patient can take wrong medicine</li></ol>
Benefits of a new system	<ol style="list-style-type: none"><li>1. Availability of prescription anytime</li><li>2. Patient can read it more accurately</li></ol>

# Stakeholders

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- Doctor
- Patient
- Nurse
- Admin
- Test results system: Transfer test results from lab system to clinic system to patient's profile.
- Bank System: Secure online payments and transfer money to clinic bank account.



# System boundaries

- Doctors & nurse can either add, edit, update or delete information from their profiles or their patients' profiles
- Patient can add, edit, update or delete information only from his own profile
- Patient can request and cancel appointments online.
- Admin is responsible for any maintenance required to the system
- The system will be used online to connect the users with our servers so they can reserve and change appointments and perform many other functions
- The system will get the users and other information from the connected database.
- The system is not a stand-alone system it will connect with other systems like the bank system when the user pays online or the lab system to get the result of his examinations.

# System constraints

Source	Constraint
Operational	<ul style="list-style-type: none"><li>Information of patients must be transferred accurately from patient's files to the new system.</li><li>Every patient must have a unique Id to prevent any conflict in data.</li></ul>
Technical	<p>Use java language.</p> <p>Use python for security .</p> <p>Available on mobile and website.</p>
Personal	<ul style="list-style-type: none"><li>Fixed staffing resources and no outsourcing.</li></ul>
Economic	Total cost 2000000\$ with new servers.
Political	<ul style="list-style-type: none"><li>High security for patient's records that only authorized individuals see the stored data.</li><li>Accuracy of the stored data.</li></ul>
Schedule	<ul style="list-style-type: none"><li>Start at 4/2/2022</li><li>End at 12/3/2023</li></ul>



## Functional Requirements

# Doctor

- Registration as a doctor and Logging in/out of the system
- Specify the number of patients to accept
- Update timetable
- Approve/Decline appointments (provide reason and proof for cancellation)
- See medical history of patient
- Update patients' medical history profile
- Write prescription
- Search on specific patient
- Answer Online medical consultations
- View patients' profile and history
- Limit number of patient
- Message appointment is Added to doctor and nurse
- Message appointment is canceled to doctor and nurse
- Message limit of patient is reached to the doctor and admin

# Patient

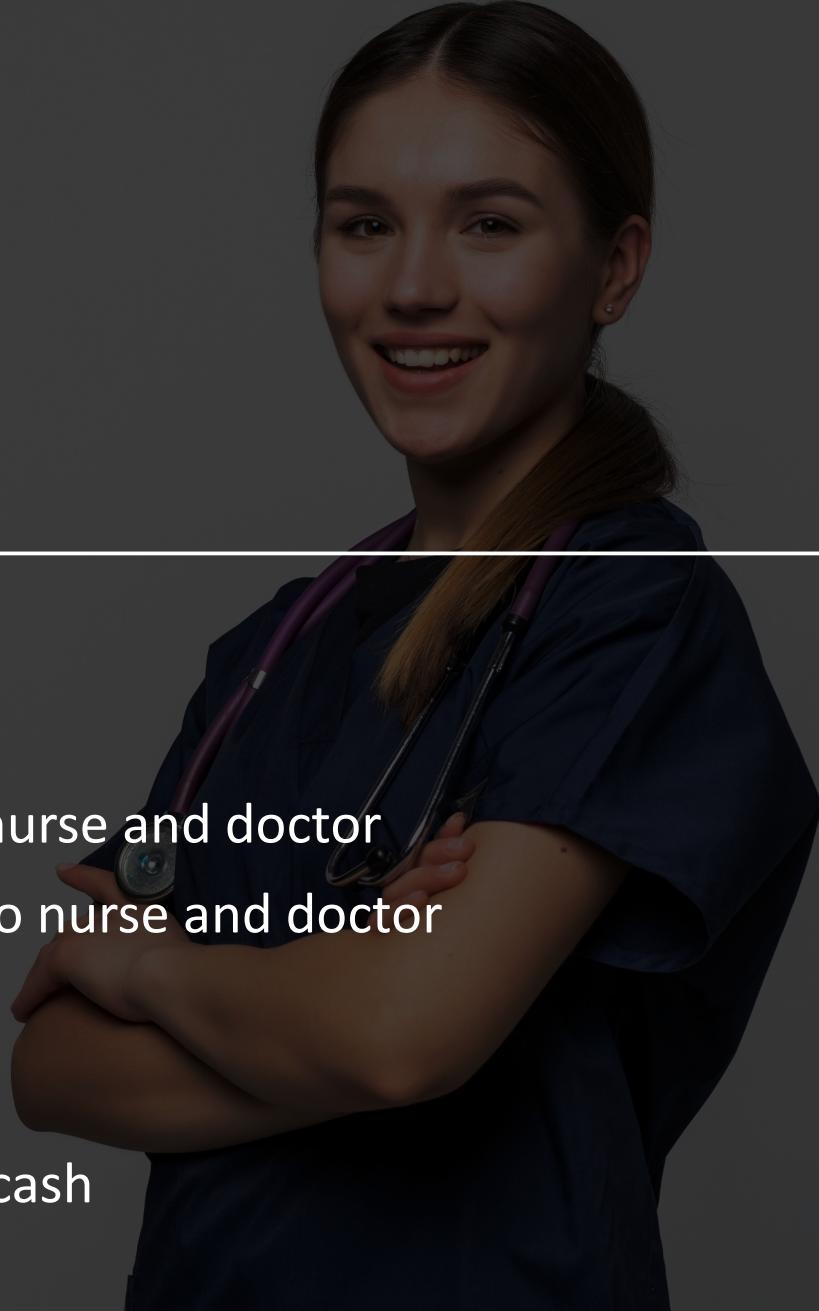
- Registration as a patient and Logging in/out of the system
- Choose appointment
- Cancel the appointment
- Add card for payments
- Choose payment method cash at the clinic or online
- Upload his medical files
- Modify on his medical files
- See his history and past visits
- View doctors' profile
- Choose doctor
- Message to patient request confirmed or canceled or pending



# Nurse

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- Can accept and cancel requests
- View appointments
- Message appointment is added to nurse and doctor
- Message appointment is canceled to nurse and doctor
- Make doctor schedule
- Shift doctor's appointments
- Handle payments if patient pays in cash



# Admin

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- Manage the users involved in the system (patient, doctor or nurse)
- Insert/Delete users on the system
- control the whole system
- Maintain the system
- keeps the system up-to-date

# Non-functional



## **Security and encryption**

- Ensure that password rules are clear (length, special characters, ...)
- Ability to configure number of failed attempts allowed, when this limit reached account should be blocked and should be automatically recovered.
- Ensure that all interactions between system parts are encrypted with TLS standards
- Ensure that password saved using hashing algorithm.
- Ensure that all data inside the database is encrypted (confidentiality and data integrity).
- Ability to configure specific allowed list of IPs' to access system.
- The system needs the patient to recognize herself or himself using the phone.

## **Performance**

- Ensure that the database able to meet the requirements of continuous data growth continuously to ensure fast response of data presentation.
- The system provides acknowledgment in just one second once the 'patient's information is checked.
- The system needs to support at least 1000 people at once.
- The user interface acknowledges within five seconds.

## **Integration with other systems**

- Ability to integrate with other systems such as bank system and test labs.
- Ability to integrate with test labs to retrieve medical test results and update patient medical file.

## **Logs**

- Any modifications like insert, delete, update, etc. for the database.

## **Maintainability**

- The system offers efficiency for data backup.
- The system will track every mistake as well as keep a log of it.
- Maintenance activities can be pre-scheduled in parts considering when the activity is lowest, and it doesn't take long to upgrade.

## **Reliability**

- Highly resilient to any technology disruptions, downtime, or crashes experienced by other technology systems.

## **Recovery**

- The time it takes the system to return to its original shape in 5 minutes or less

## **Interfaces**

- System interfaces must be responsive to multiple screen sizes, including smart and tablet interfaces, by utilizing unique tools from the most recent versions of bootstrap and CSS.
- The colors in the design must be white, blue and green.
- Tool Tips should be enabled to improve the user experience and give valuable instructions that answer any questions that the user may have.
- Design compatibility with Internet browsers (Firefox, Chrome, brave, and Safari).
- Instead of vertical scrolling, utilize paging for displaying extensive material.
- Simplify the design and all of its components to create a simple and pleasant user experience.

## **Archiving**

- Ensure that all system documents are archived on a regular basis and are easy to obtain and maintain at any time.

## **Languages**

- Ensure that the system interface supports (Arabic/English) languages by default,

## **Hardware**

- Ability to integrate with Colposcopes ,A pulse oximeter, Blood test kits, A blood pressure monitor.

## **System structure:**

- Ensure that system consist of more than one level (web\ app – database), web\ app for all user interactions and database to store all these data and interactions .

System interfaces for example:

- Doctor interface.
- Admin panel.
- Patient interface.
- Nurse interface.

# Use case

