

TABLE OF CONTENTS

I. Overview.....	4
GET THE APP.....	4
Undeployed App – Installing from the Web through Google Drive.....	4
Computer.....	4
Android Phone	5
iOS Phone.....	8
Deployed App – Installing from Play Store and App Store	11
Android Phone	11
iOS Phone.....	11
USING THE APP FOR STUDENTS	12
USING THE APP FOR EMPLOYEE (Faculty Members/Staff)	14
II. SYSTEM REQUIREMENTS.....	16
FOR DEVELOPMENT.....	16
FOR PRODUCTION	17
III. SYSTEM INSTALLATION	20
How to download source code (Web)	20
How to download source code (Mobile)	25
IV. UP AND RUNNING.....	31
AUTHENTICATION SYSTEM	34
Forgot password	34
Resend email verification.....	35

Validate email/account (Faculty/Staff)	36
Validate email/account.....	37
Sign Up (Students).....	38
Sign Up (Faculty/Staff).....	39
Log-in and Log-out.....	40
Update Password.....	41
Protected Routes	42
Queries Restriction	43
CHAT SYSTEM.....	45
Send and Receive Messages in Real-time	45
Physician: Read and Seen.....	46
Chatrooms (Physicians).....	47
Chatrooms for Students and Faculty/Staff	48
Consult and Upload Image	49
Upload Limitation.....	50
Physicians: Create Medical Record and Prescription	51
View Medical Record (Mobile App).....	52
View Prescription Record (Mobile App)	53
Physicians: View Medical Record and Prescriptions (Web).....	54
Download/Export Medical Record (Web).....	55
Export Prescriptions (Mobile App).....	56
Verify Medical Record and Prescriptions	57
Logs/History of Physician Activities	59

CRUD OPERATIONS.....	60
Sorting/Filtering Lists.....	60
Search Active and Archived Users.....	61
Create, Read, Update, Delete	62
Technicals: Creating User Accounts	64
Technicals: Assigning User Accounts.....	65
PRC License for Physicians.....	66
Chatrooms for New Physicians.....	67
V. SYSTEM ARCHITECTURE.....	68
Restful API	68
Project Architecture.....	69
Relational Database Management System	70
Cloud Servers	71
Limitations	72
Performance and Analytics	74

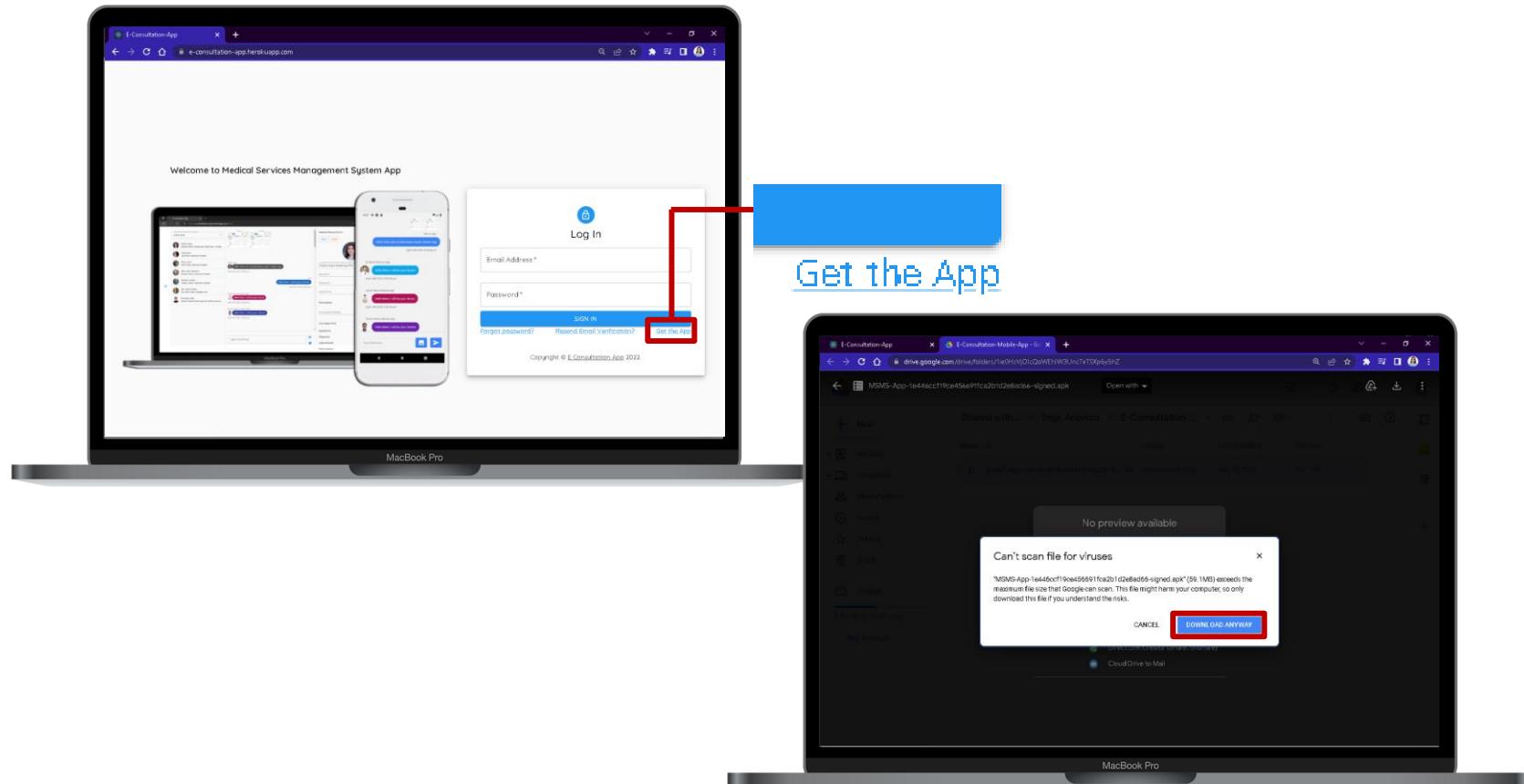
I. Overview

GET THE APP

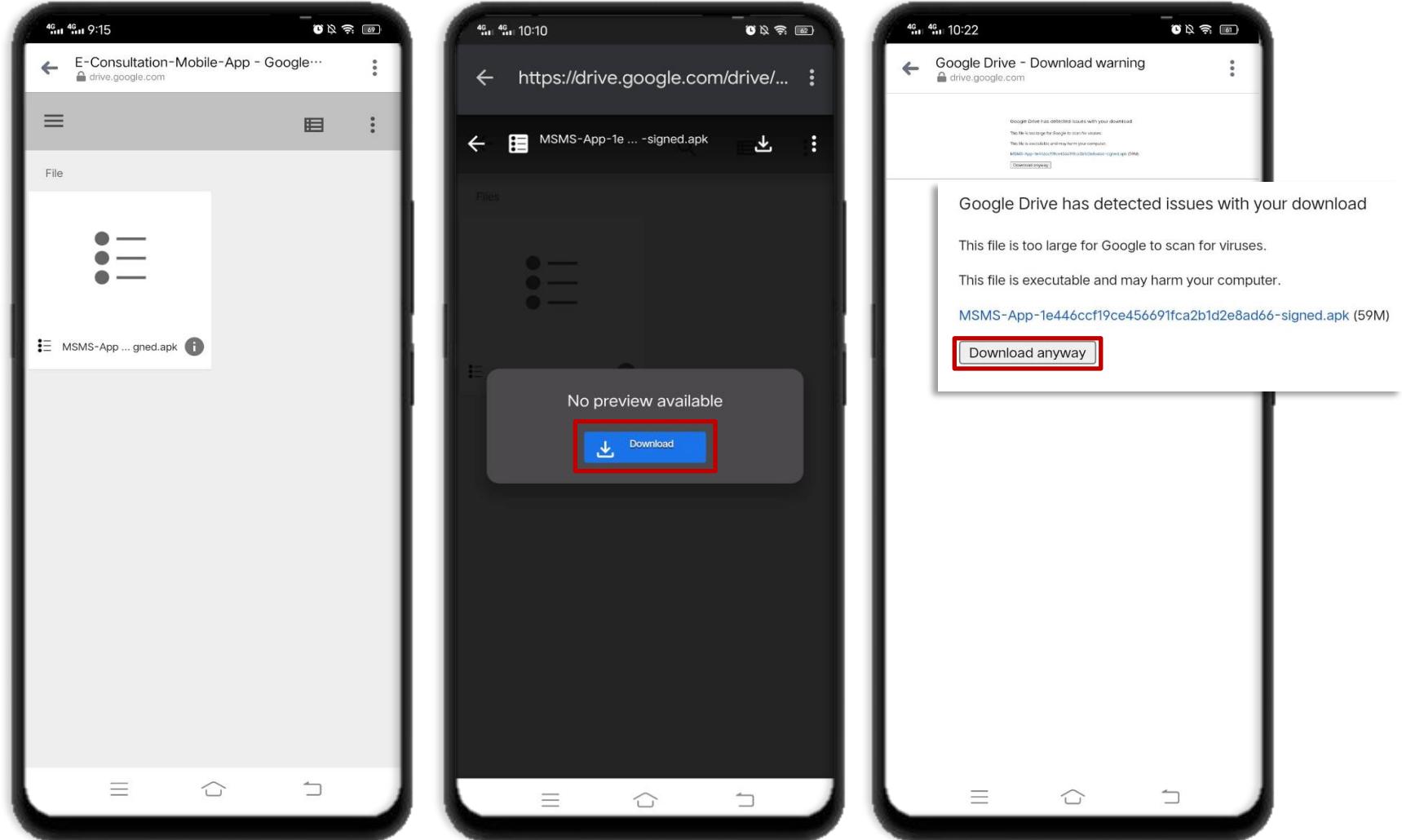
Undeployed App – Installing from the Web through Google Drive

Computer

Web App Link: <https://e-consultation-app.herokuapp.com/>



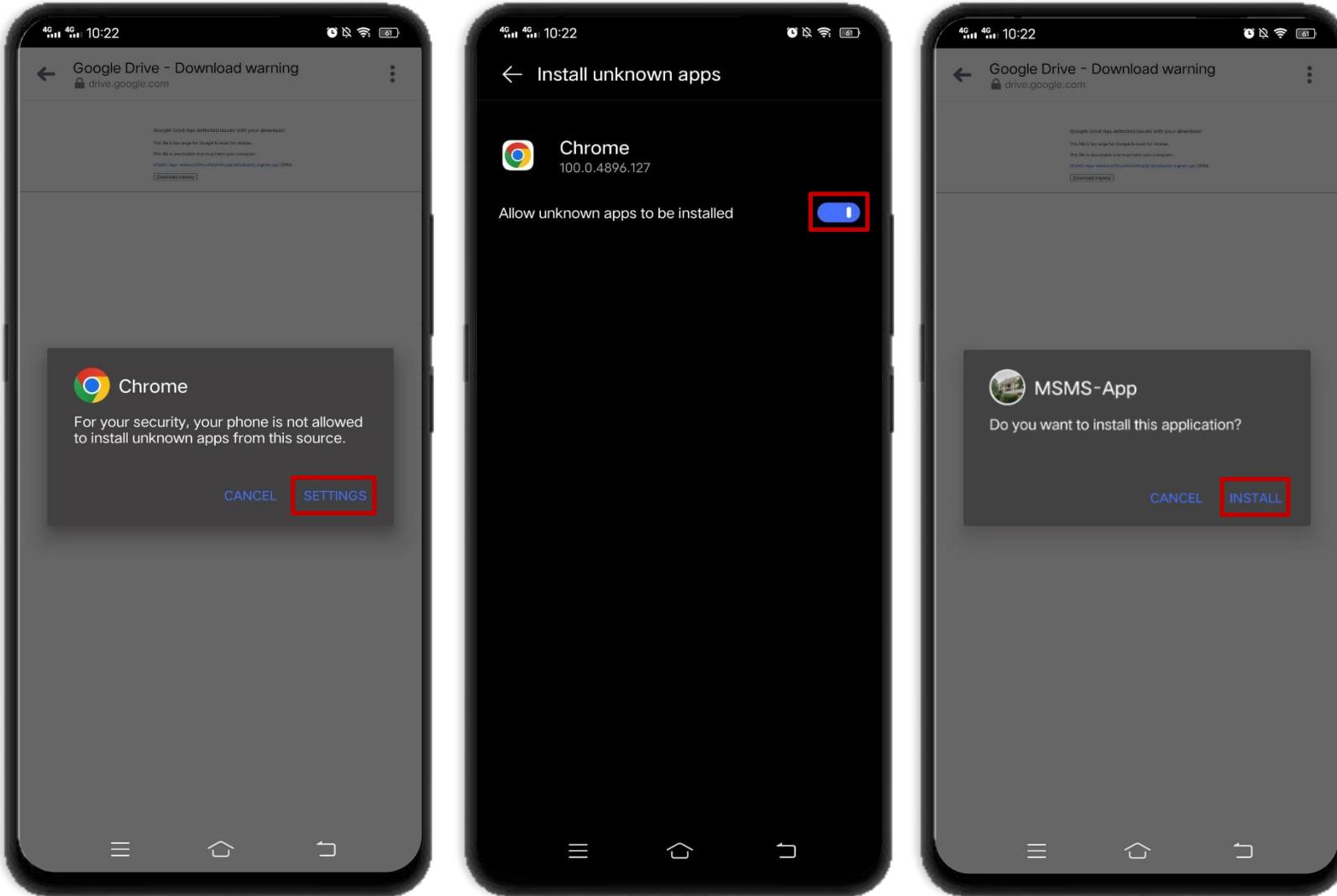
Android Phone



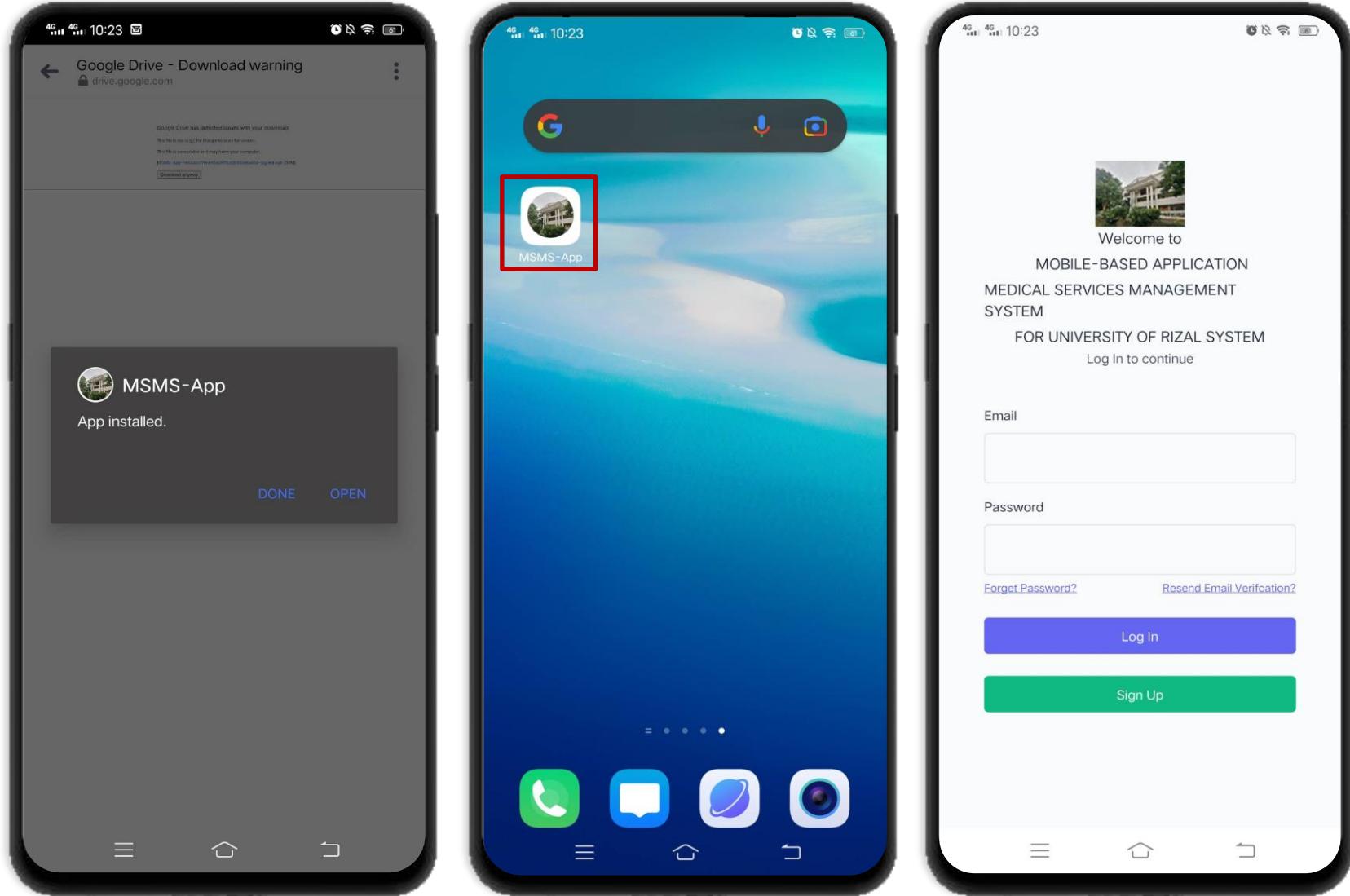
1. Download the **apk** file here by opening it in your **Google Drive**:

<https://drive.google.com/drive/folders/1ie0HsVjOlcQoWEhIW3Unc7eTSXp6y5hZ>

Note: it is necessary that your **default app** in opening the google drive link is the **Google Drive app**



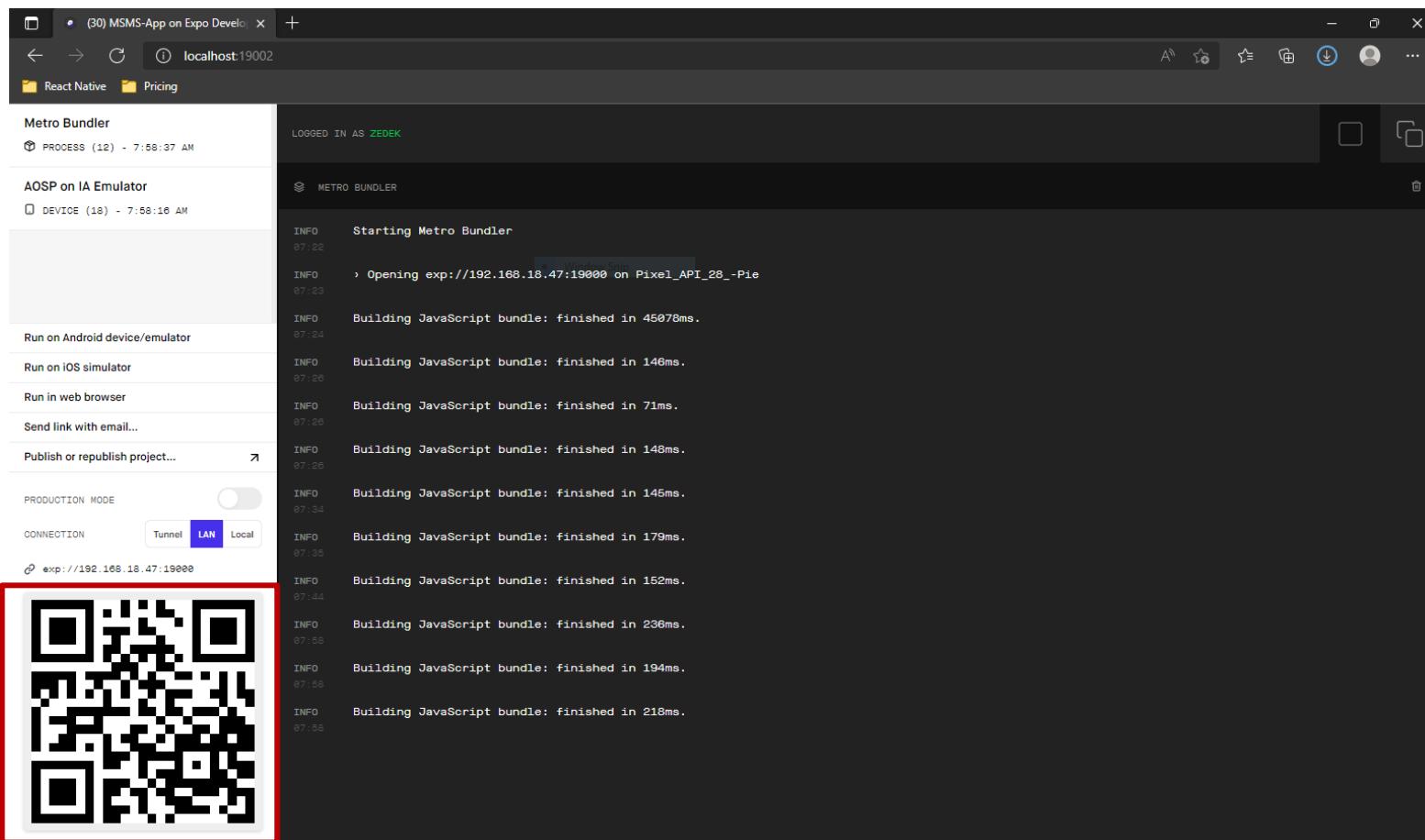
2. Install the apk, android may prompt you to "**Install Unknown Apps**", press install.



3. Open the **MSMS-App** and you're done!

iOS Phone

An **.ipa** file is not yet available in our system in order to install it in iOS. To install, it will require \$99 subscription to export the app on **.ipa**, you can find more information on [page 72 – Limitations](#)
To View our App on iOS we will use the steps on development environment for mobile on [page 25 – How to download source code \(Mobile\)](#). It is assumed that react native server is running and the **connection is tunnel**



1. Tunnel the React Native Server



Expo Go 12+
Nametag

★★★★★ 2.9 • 15 Ratings

Free

2. On your iOS Mobile Download **Expo Go** on the App Store



3. Scan the QR Code using your iOS Camera and **it will prompt you to open it in Expo Go**
4. Wait for the system to load, and you're done!

Note:

1. It is recommended that you have a strong and stable connection
2. the QR Code above changes every time we re-run the server

Deployed App – Installing from Play Store and App Store

Note: The steps mentioned here will only be available only if our application is deployed on Play Store and App Store

Android Phone

1. Open play store
2. Search **MSMS App or E Consultation App**
3. Install and you are done

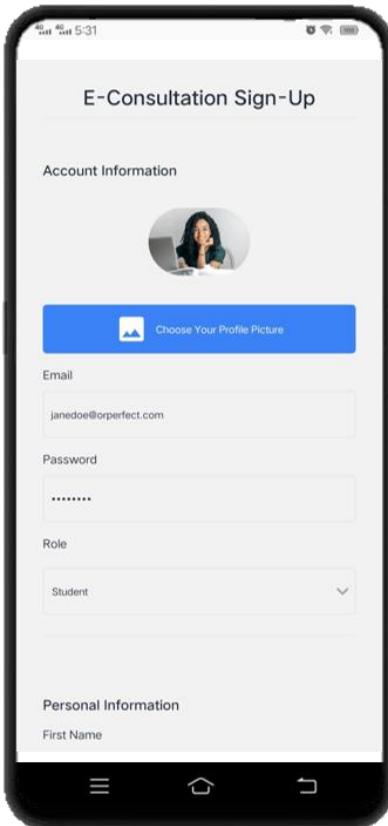
iOS Phone

4. Open App Store
5. Search for **MSMS App or E Consultation App**
6. Install and you are done

USING THE APP FOR STUDENTS

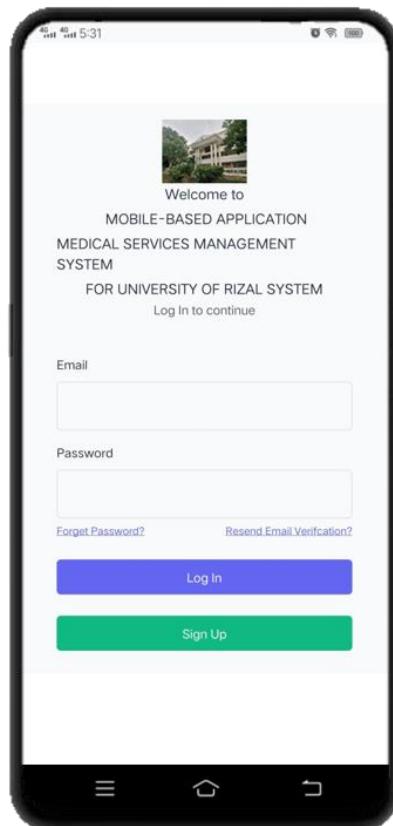
1

Sign Up



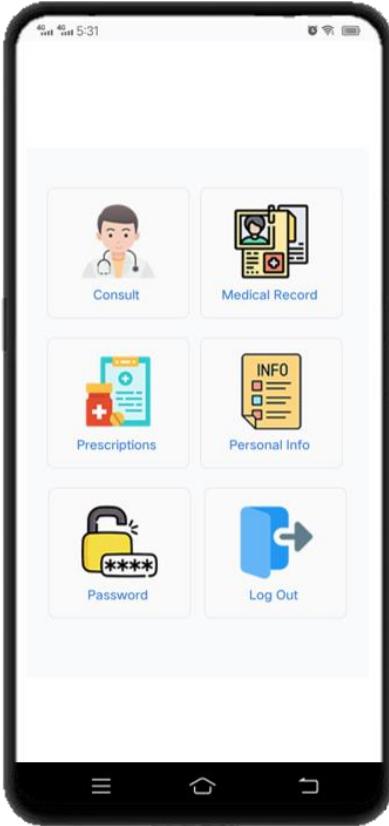
2

Log In



3

Consult



4

Create Chatroom



12 Sign up and create your own account



Log-in to the mobile app client



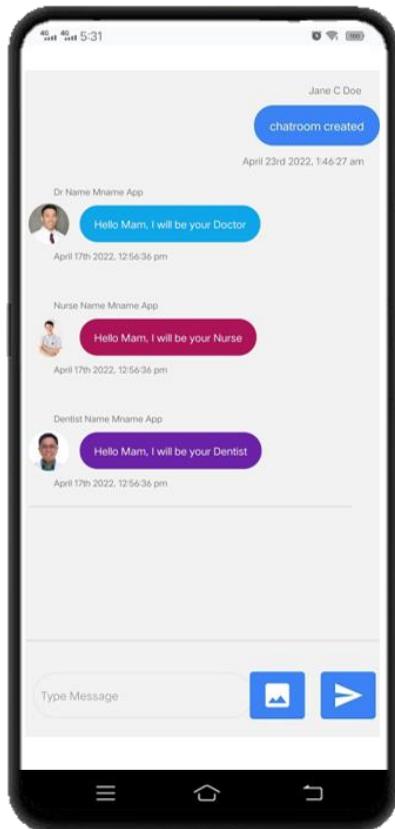
Consult a professional online



Create a chatroom with physicians

5

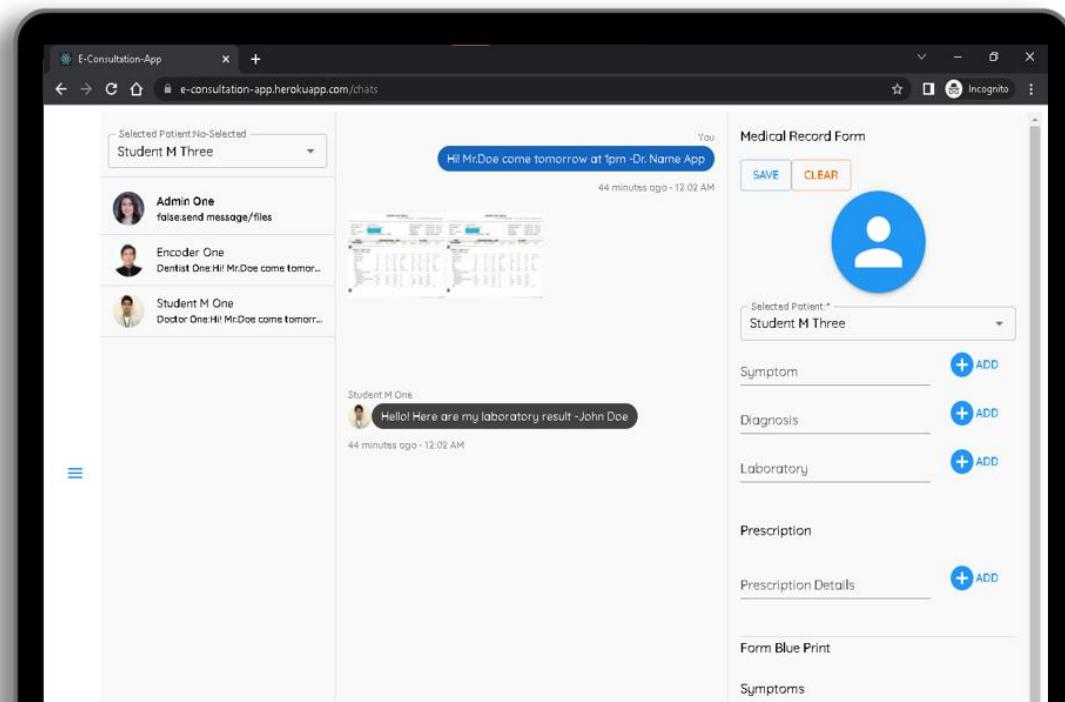
Chat Experts



Talk to the experts
about your symptoms

6

Create Medical Record

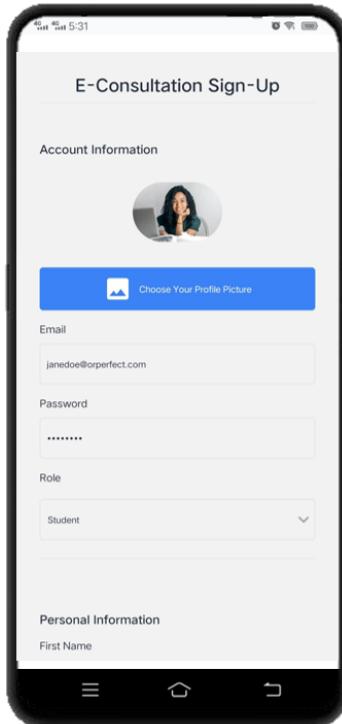


Download medical
records created by
doctors online

USING THE APP FOR EMPLOYEE (Faculty Members/Staff)

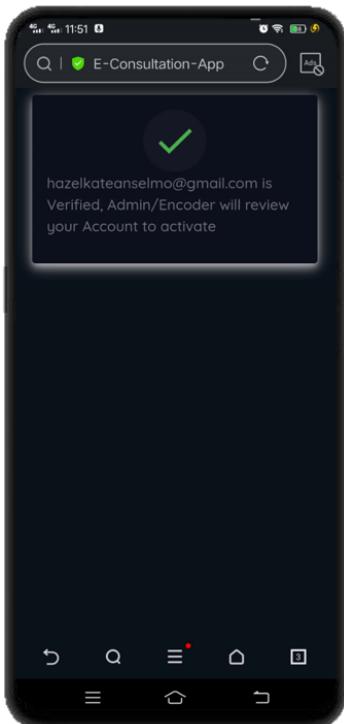
1

Sign Up



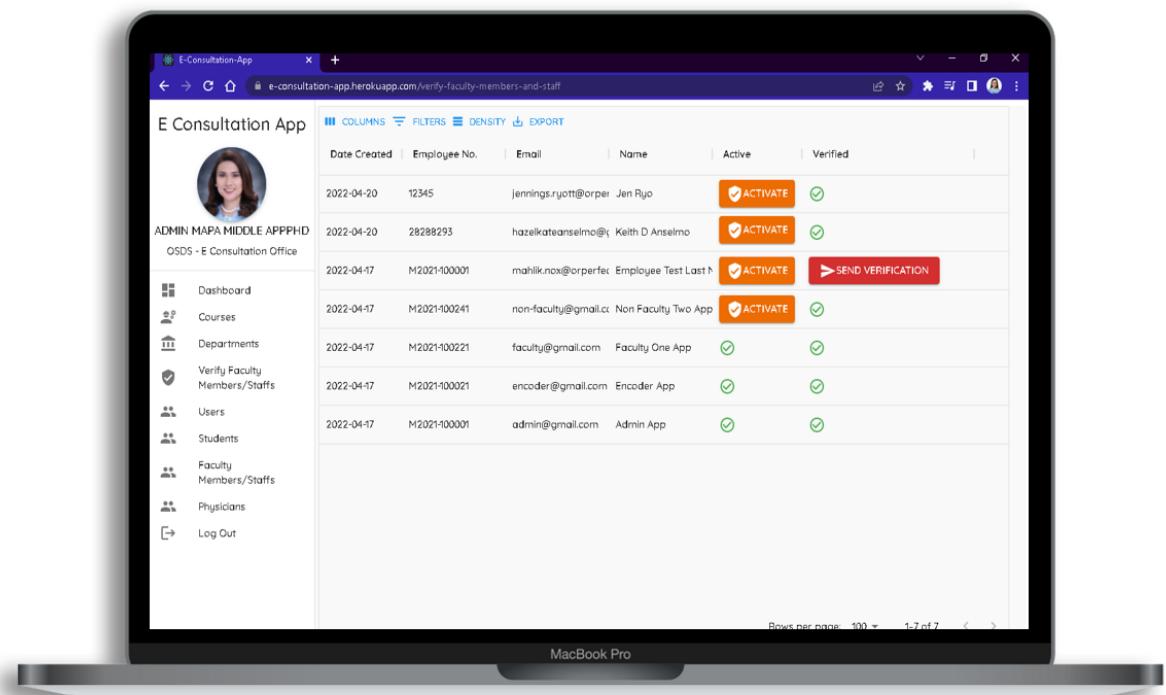
2

Get Verified



3

Review Account



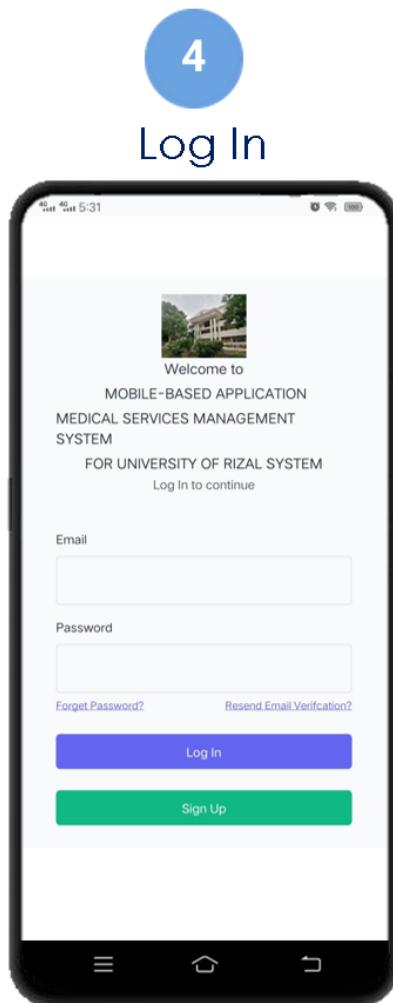
Sign up and create
your own account



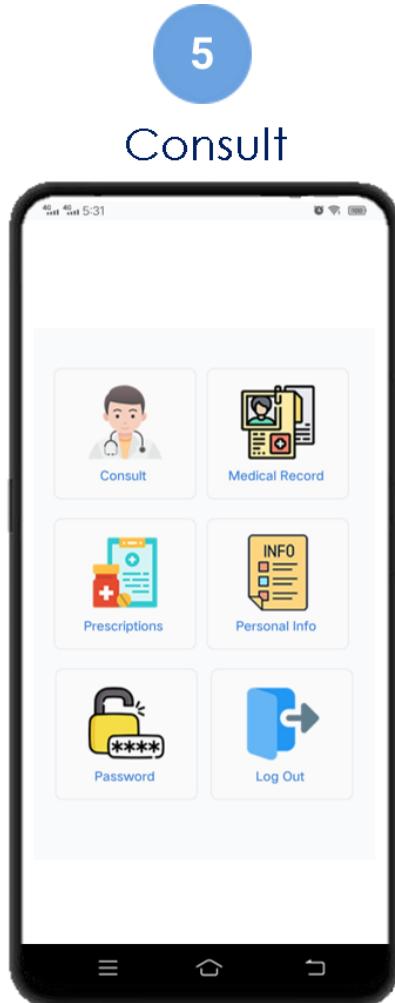
Wait for admin
approved activation



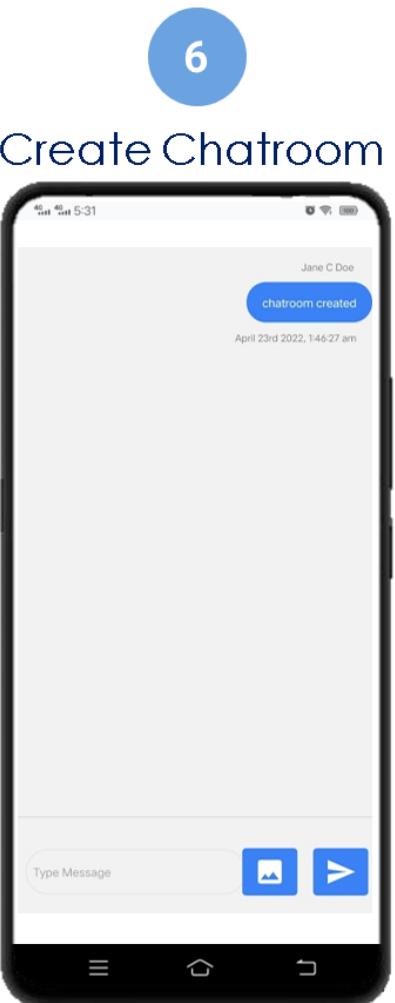
Review Faculty and Staff
Accounts for activation



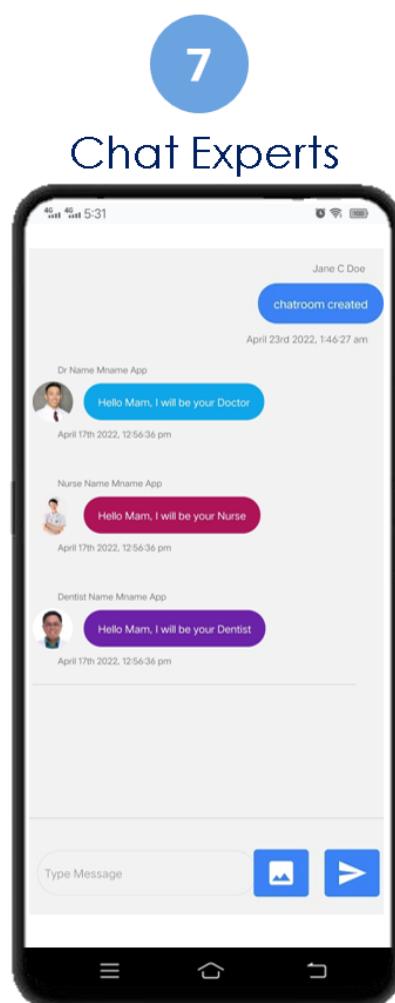
Log-in to the mobile app client



Consult a professional online



Create a chatroom with physicians



Talk to the experts about your symptoms

II. SYSTEM REQUIREMENTS

•For Web •For Mobile

FOR DEVELOPMENT

- a. OS: Windows 10, Ubuntu 18.0 and up, OS X 10 (2.5GHz + is recommended)
Android, iOS
- b. RAM: Minimum of 8GB and up
- c. HDD: 20GB of available disk space
- d. Display: 1280 x 768 screen resolution and up (Tablet-Desktop View)
Max of 400px in width (Mobile View) see mobile resolution graph below
- e. Graphics: No graphic requirements
- f. Browsers: Any updated browsers that enables JavaScript support (Chrome-recommended)
- g. Server: Any of the following cloud server:
Node.js 16.X LTS and up (latest recommended): <https://nodejs.org/en/>
Yarn: <https://classic.yarnpkg.com/lang/en/docs/cli/install/>
AWS: <https://tinyurl.com/2p8n3yf2>
MongoDB: <https://mongodb.com>
- h. Internet Connectivity: 50kbps and up
- i. Code Editor: Visual Studio Code (recommended), Atom, Sublime Text, Notepad ++, Brackets, Text Mate, IDE, and any code editors that reads Web scripts.
Android Studio, Expo Go for Android/iOS

- j. Debugging: Code formatter and ES6 Snippets were used for this project ([In Visual Studio Code](#))
But you can freely install any packages you want for development

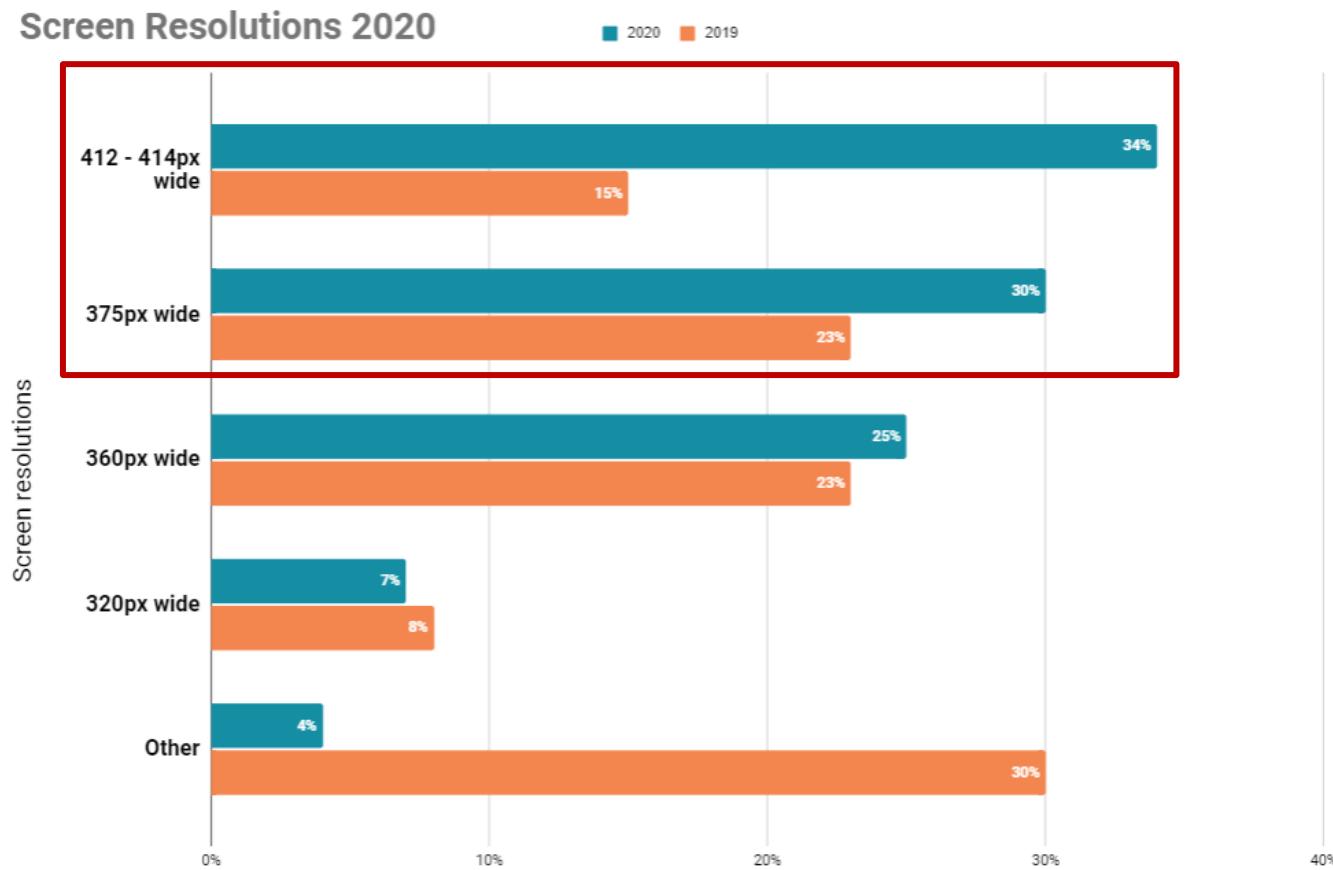
FOR PRODUCTION

- a. Server Owned
Hosting Sites Requirements vary on the number of clients and the type of Server
Manual Configuration may also vary on the type of server
Deployment List:
Heroku (recommended): <https://www.heroku.com/>
AWS: <https://aws.amazon.com>
Netlify: <https://netlify.com>
MERN Stack is required as a web development framework; here is how to deploy it in the aforementioned cloud servers:
AWS:
<https://www.workfall.com/learning/blog/how-to-build-and-deploy-a-mern-stack-application-on-aws/>
Heroku/Netlify:
<https://dev.to/stlnick/how-to-deploy-a-full-stack-mern-app-with-heroku-netlify-ncb>

b. Database

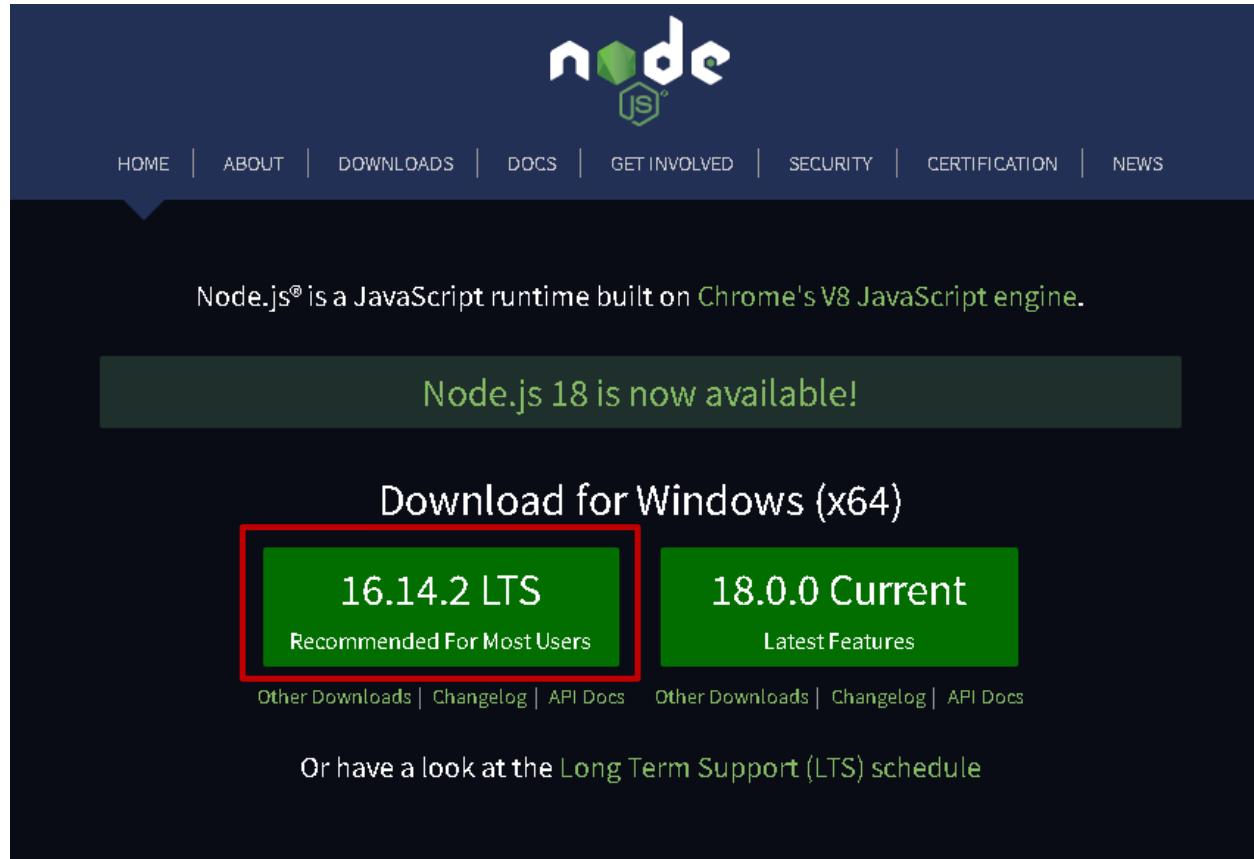
Cloud-based: MongoDB Compass,

Requirement for Mobile Screen Resolution



In this system, the max width for mobile screens is 400px. From the graph above, the most common mobile screen resolution used are between 412 and 414 pixels wide: <https://worship.agency/mobile-screen-sizes-for-2021>

Node.js



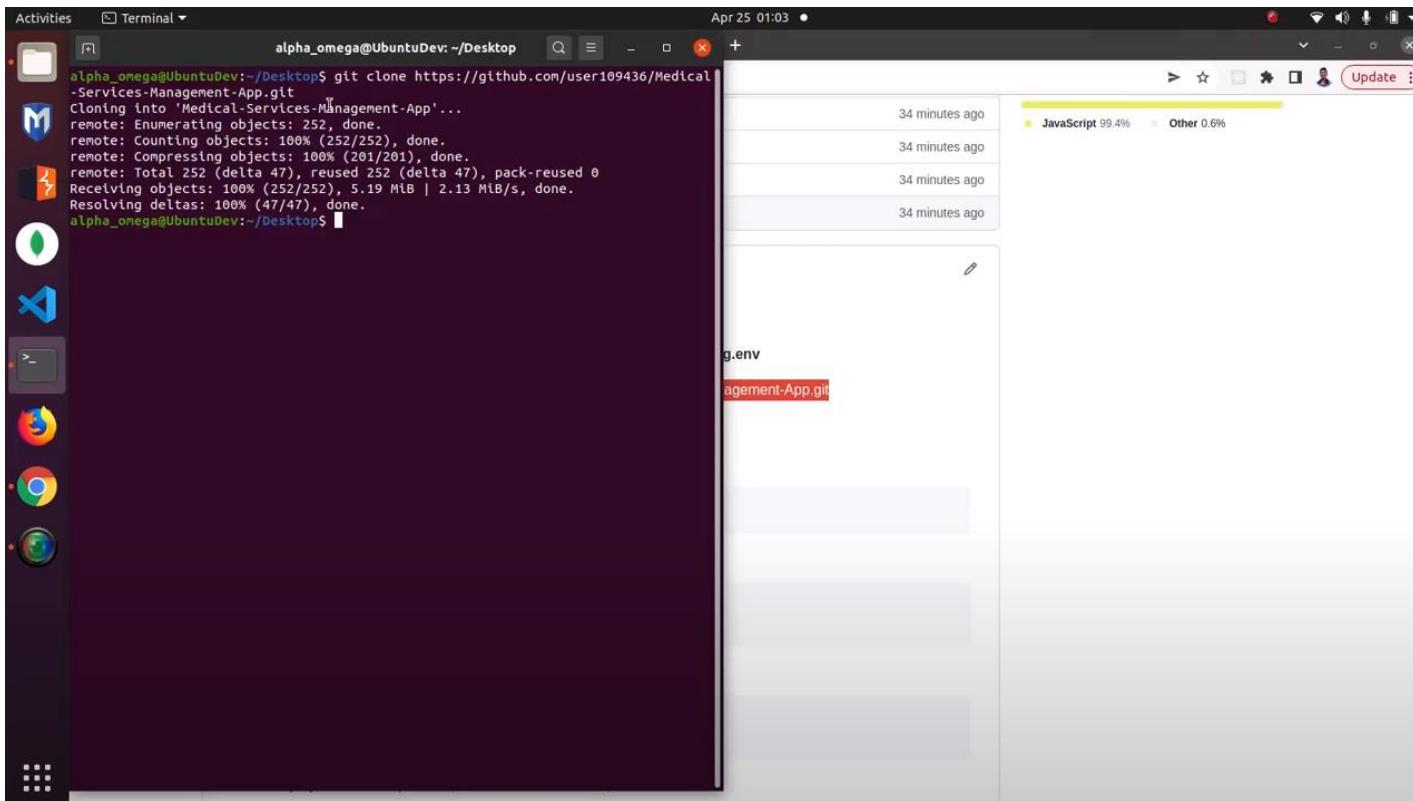
Node.js is designed to build scalable network applications. **LTS stands for Long Term Support** and is the recommended version for development.

III. SYSTEM INSTALLATION

How to download source code (Web)

1. Before following this step, environment variables must be defined in **config.env**
2. Copy files

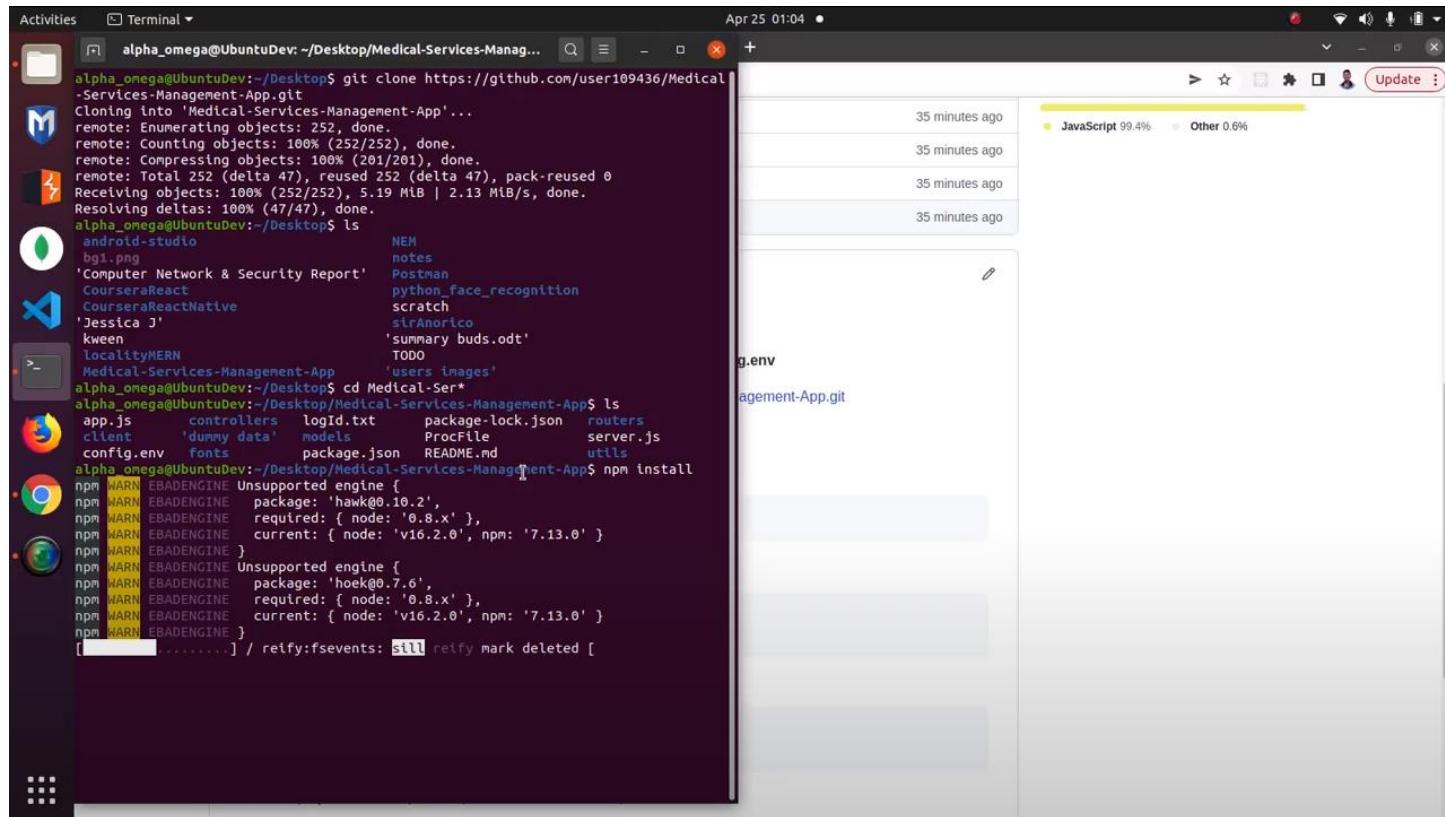
git clone https://github.com/user109436/Medical-Services-Management-App.git



3. Open Directory in VS Code or Any Text Editor

4. Install Packages in Main Directory (Server Level)

npm install



A screenshot of a Linux desktop environment showing a terminal window. The terminal window has a dark background and displays the following command and its output:

```
alpha_omega@UbuntuDev:~/Desktop/Medical-Services-Management-App$ git clone https://github.com/user109436/Medical-Services-Management-App.git
Cloning into 'Medical-Services-Management-App'...
remote: Enumerating objects: 252, done.
remote: Counting objects: 100% (252/252), done.
remote: Compressing objects: 100% (201/201), done.
remote: Total 252 (delta 47), reused 252 (delta 47), pack-reused 0
Receiving objects: 100% (252/252), 5.19 MB | 2.13 MiB/s, done.
Resolving deltas: 100% (47/47), done.
alpha_omega@UbuntuDev:~/Desktop$ ls
NEM
notes
Postman
python_face_recognition
scratch
sirAnorico
summary.buds.odt
TODO
alpha_omega@UbuntuDev:~/Desktop$ cd Medical-Services-Management-App
alpha_omega@UbuntuDev:~/Desktop/Medical-Services-Management-App$ ls
app.js controllers logId.txt package-lock.json routers
client dummy data models ProcFile server.js
config.env fonts package.json README.md utils
alpha_omega@UbuntuDev:~/Desktop/Medical-Services-Management-App$ npm install
npm WARN EBAENGINE Unsupported engine {
  npm WARN EBAENGINE   package: 'hawk@0.10.2',
  npm WARN EBAENGINE   required: { node: '0.8.x' },
  npm WARN EBAENGINE   current: { node: 'v16.2.0', npm: '7.13.0' }
}
npm WARN EBAENGINE }
npm WARN EBAENGINE Unsupported engine {
  npm WARN EBAENGINE   package: 'hoek@0.7.6',
  npm WARN EBAENGINE   required: { node: '0.8.x' },
  npm WARN EBAENGINE   current: { node: 'v16.2.0', npm: '7.13.0' }
}
npm WARN EBAENGINE }
```

The terminal window is titled "Terminal" and shows the user's path as "alpha_omega@UbuntuDev:~/Desktop/Medical-Services-Management-App\$". The output of the "git clone" command shows the repository being cloned from GitHub. The "ls" command lists files and directories in the current directory. The "cd" command changes to the "Medical-Services-Management-App" directory, and the "ls" command lists its contents. Finally, the "npm install" command is run, displaying warnings about unsupported engines.

5. Run Database Seeds or Dummy Data

cd utils

node database

6. Install Packages in Client folder (Client Level)

cd client

npm install

A screenshot of a Linux desktop environment, likely Ubuntu, showing a terminal window. The terminal window title is "Terminal" and the path is "alpha_omega@UbuntuDev: ~/Desktop/Medical-Services-Management-App/client". The terminal output shows the results of running the command "npm install". It includes several "WARN" messages about deprecated packages like "source-map-url", "source-map-resolve", and "svgo", followed by a summary: "added 1511 packages, and audited 1512 packages in 1m". It also lists 182 packages looking for funding and 11 vulnerabilities (6 moderate, 4 high, 1 critical). Instructions for addressing issues are provided, including "npm audit fix" for non-critical issues and "npm audit fix --force" for all issues. A final note says "Run 'npm audit' for details." The desktop interface includes a dock with icons for various applications like a file manager, terminal, and browser, and a right-hand panel titled "Medical Services Management App" which is partially visible.

```
alpha_omega@UbuntuDev:~/Desktop/Medical-Services-Management-App/client$ npm i
npm WARN deprecated source-map-url@0.4.1: See https://github.com/lydell/source-map-url#deprecated
npm WARN deprecated source-map-resolve@0.6.0: See https://github.com/lydell/source-map-resolve#deprecated
npm WARN deprecated svgo@1.3.2: This SVGO version is no longer supported. Upgrade to v2.x.x.

added 1511 packages, and audited 1512 packages in 1m
182 packages are looking for funding
  run `npm fund` for details

  11 vulnerabilities (6 moderate, 4 high, 1 critical)

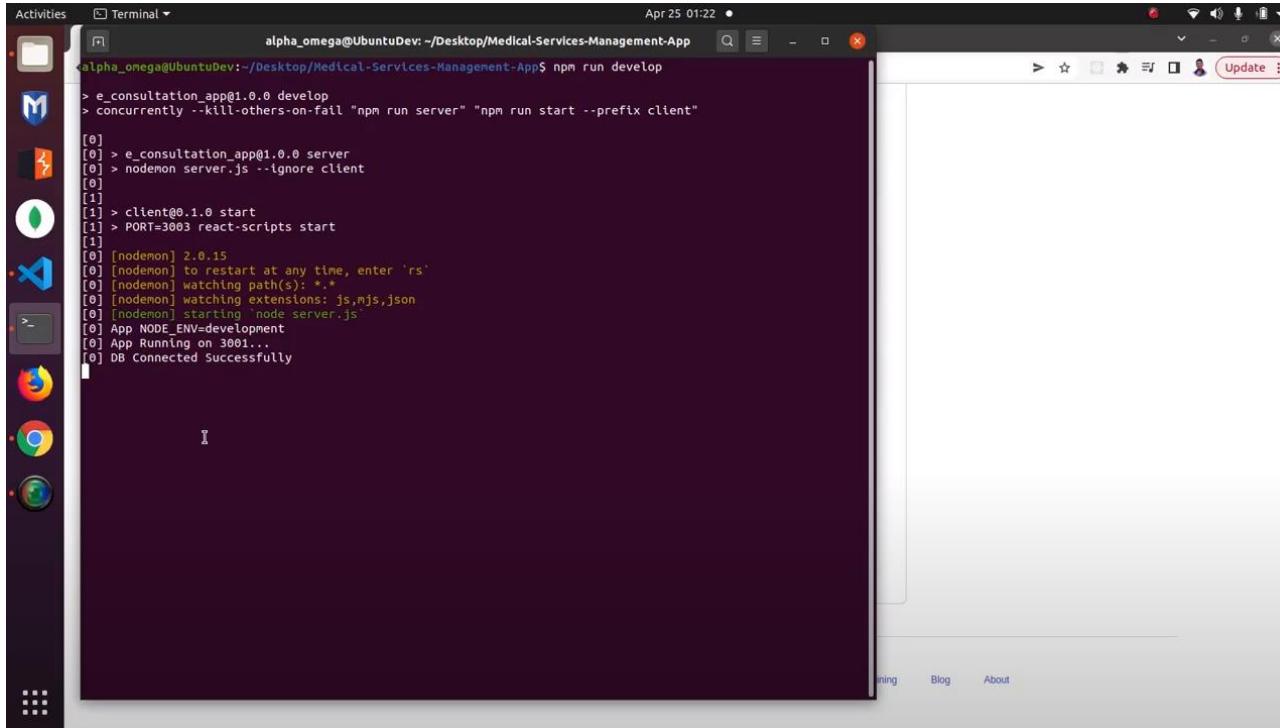
  To address issues that do not require attention, run:
  $ npm audit fix

  To address all issues (including breaking changes), run:
  $ npm audit fix --force

  Run 'npm audit' for details.
alpha_omega@UbuntuDev:~/Desktop/Medical-Services-Management-App/client$
```

7. Run project on Development (will run server and client)

npm run develop



```
alpha_omega@UbuntuDev:~/Desktop/Medical-Services-Management-App$ npm run develop
> e_consultation_app@1.0.0 develop
> concurrently --kill-others-on-fail "npm run server" "npm run start --prefix client"
[0]
[0] > e_consultation_app@1.0.0 server
[0] > nodemon server.js --ignore client
[0]
[1]
[1] > client@0.1.0 start
[1] > PORT=3003 react-scripts start
[1]
[0] [nodemon] 2.0.15
[0] [nodemon] to restart at any time, enter 'rs'
[0] [nodemon] watching path(s): *
[0] [nodemon] watching extensions: js,mjs,json
[0] [nodemon] starting `node server.js`
[0] App NODE_ENV=development
[0] App Running on 3001...
[0] DB Connected Successfully
```

6.1 Run Server Only (Optional)

npm run server

6.2 Run Client Only (Optional)

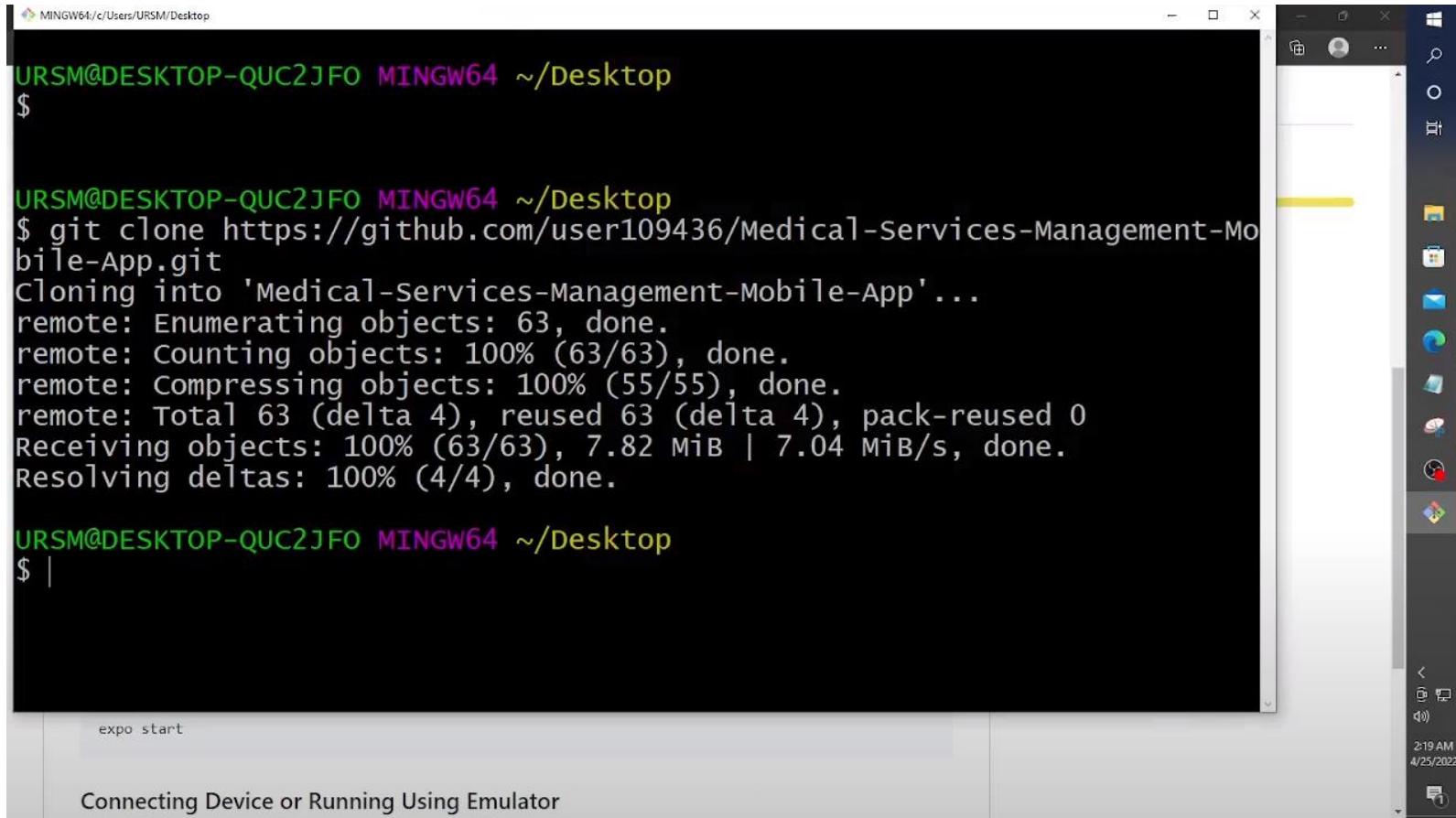
cd client

npm start

How to download source code (Mobile)

1. Copy Files

```
git clone https://github.com/user109436/Medical-Services-Management-Mobile-App.git
```



The screenshot shows a Windows desktop environment. On the left, a terminal window titled 'MINGW64/c/Users/URSM/Desktop' is open, displaying the command 'git clone https://github.com/user109436/Medical-Services-Management-Mobile-App.git' and its execution. The terminal output shows the progress of cloning the repository, including object enumeration, counting, compressing, and receiving objects. On the right, the Windows taskbar is visible, showing various pinned icons and the system tray. The system tray displays the date and time as '2:19 AM 4/25/2022'.

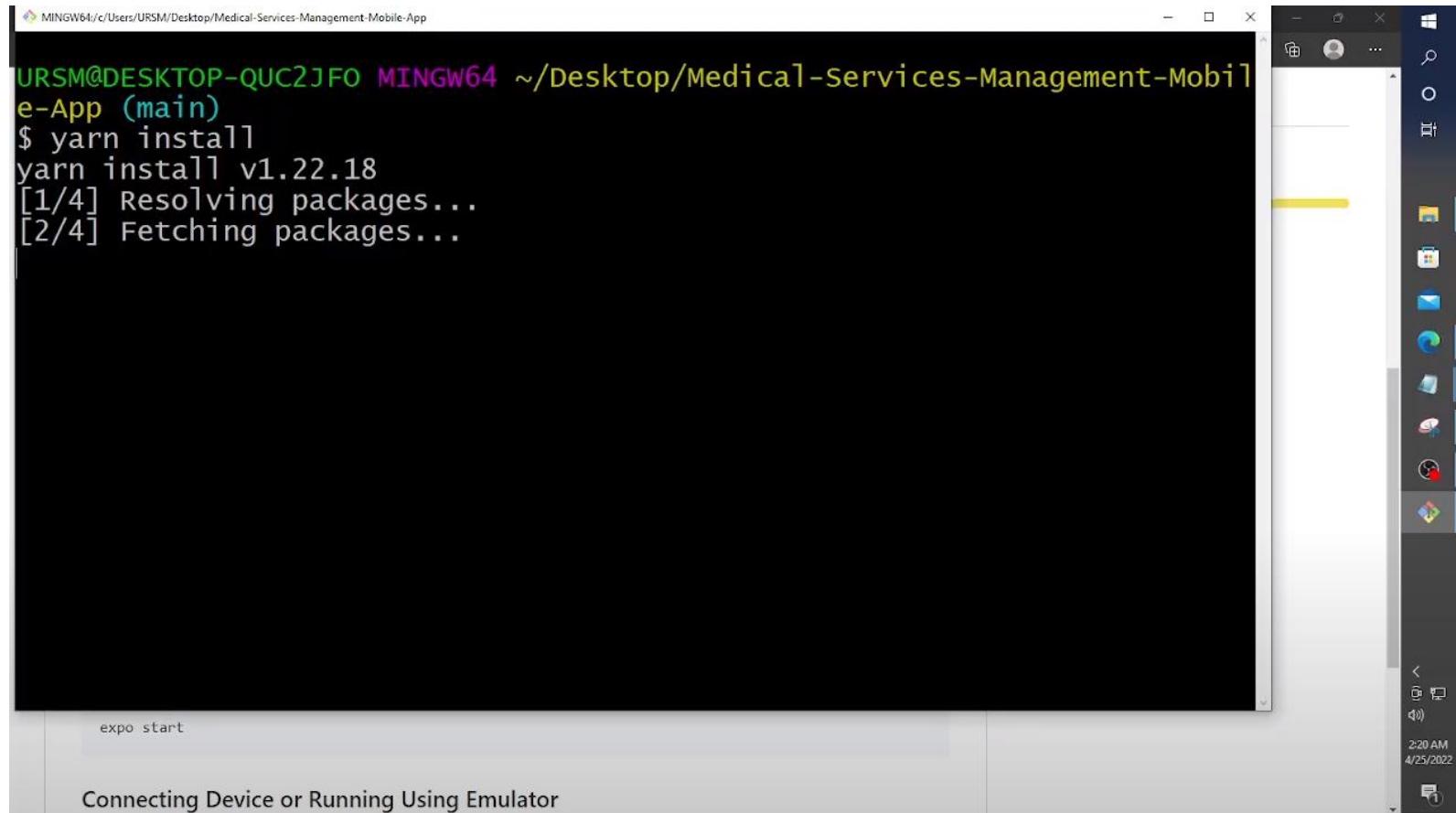
```
URSM@DESKTOP-QUC2JFO MINGW64 ~/Desktop
$ git clone https://github.com/user109436/Medical-Services-Management-Mobile-App.git
Cloning into 'Medical-Services-Management-Mobile-App'...
remote: Enumerating objects: 63, done.
remote: Counting objects: 100% (63/63), done.
remote: Compressing objects: 100% (55/55), done.
remote: Total 63 (delta 4), reused 63 (delta 4), pack-reused 0
Receiving objects: 100% (63/63), 7.82 MiB | 7.04 MiB/s, done.
Resolving deltas: 100% (4/4), done.

URSM@DESKTOP-QUC2JFO MINGW64 ~/Desktop
$ |
```

expo start

Connecting Device or Running Using Emulator

2. Open Directory in VS Code or Any Text Editor



A screenshot of a Windows desktop environment. On the left, a terminal window titled "MINGW64:c/Users/URSM/Desktop/Medical-Services-Management-Mobile-App" is open, showing the command \$ yarn install and its progress: [1/4] Resolving packages... and [2/4] Fetching packages... The terminal window has a dark background and white text. On the right, the Windows taskbar is visible, featuring the Start button, pinned icons for File Explorer, Mail, Edge, and others, and a system tray with a clock showing 2:20 AM and a date of 4/25/2022.

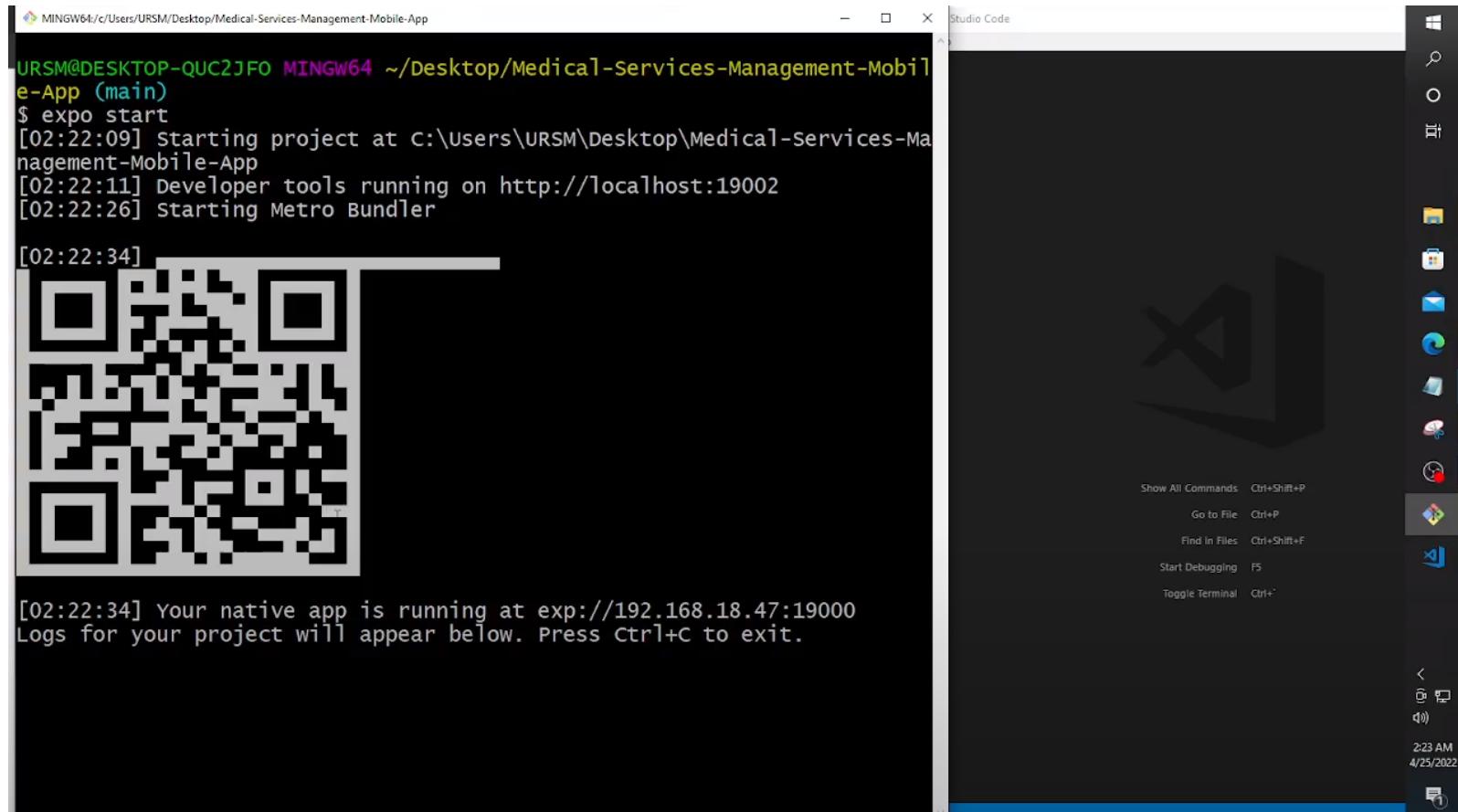
```
MINGW64:c/Users/URSM/Desktop/Medical-Services-Management-Mobile-App
URSM@DESKTOP-QUC2JFO MINGW64 ~/Desktop/Medical-Services-Management-Mobile-App (main)
$ yarn install
yarn install v1.22.18
[1/4] Resolving packages...
[2/4] Fetching packages...
```

expo start

Connecting Device or Running Using Emulator

3. Install Packages

yarn install



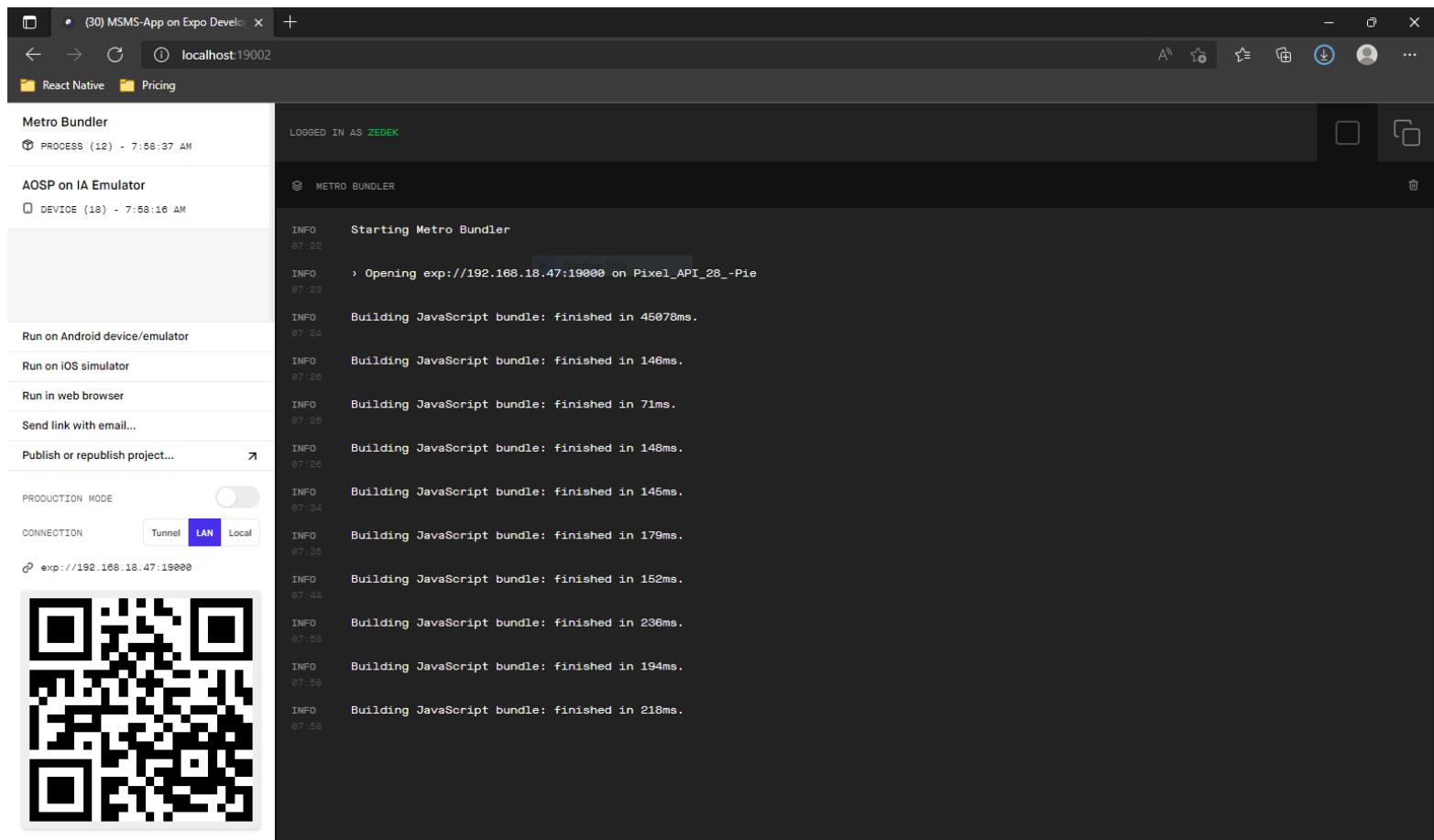
```
MINGW64/c/Users/URSM/Desktop/Medical-Services-Management-Mobile-App
URSM@DESKTOP-QUC2JFO MINGW64 ~/Desktop/Medical-Services-Management-Mobile-App (main)
$ expo start
[02:22:09] Starting project at C:\Users\URSM\Desktop\Medical-services-Management-Mobile-App
[02:22:11] Developer tools running on http://localhost:19002
[02:22:26] Starting Metro Bundler

[02:22:34]
[QR code]

[02:22:34] Your native app is running at exp://192.168.18.47:19000
Logs for your project will appear below. Press Ctrl+C to exit.
```

4. Run project

expo start



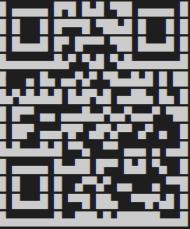
Tunnel – Making the dev environment available world wide

LAN and WAN – Making dev environment available to your current network (Must be connected on same network)

Connecting Device or Running Using Emulator

```
$ expo start

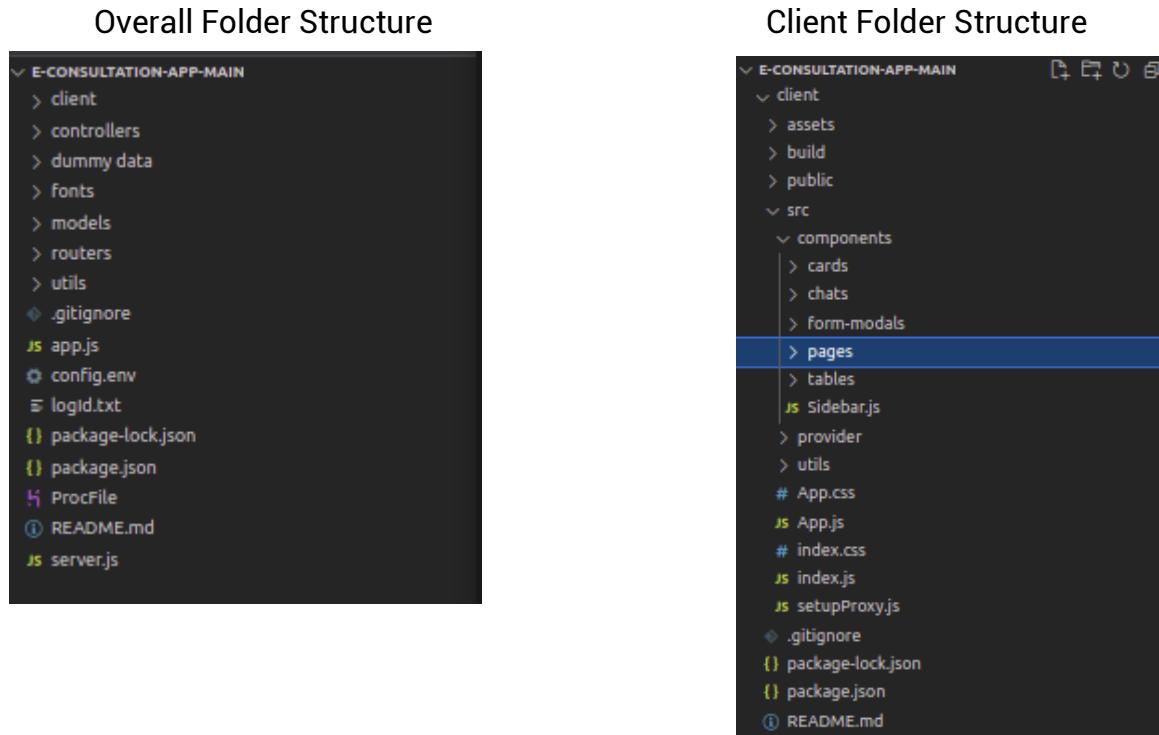
There is a new version of expo-cli available (5.3.1).
You are currently using expo-cli 5.3.0
Install expo-cli globally using the package manager of your
choice;
for example: `npm install -g expo-cli` to get the latest
version

Starting project at C:\Users\URSM\Desktop\sirAnorico\e-consultation-m
obile-app
Developer tools running on http://localhost:19002
Starting Metro Bundler

> Metro waiting on exp://192.168.18.47:19000
> Scan the QR code above with Expo Go (Android) or the Camera app (iO
S)
> Press a | open Android
> Press w | open web
> Press r | reload app
> Press m | toggle menu
> Press d | show developer tools
> shift+d | toggle auto opening developer tools on startup (disabled)
> Press ? | show all commands
Logs for your project will appear below. Press Ctrl+C to exit.
> Opening on Android...
> Opening emulator Pixel_API_28_Pie
```

1. Connect your Android or iOS by using the [Expo Go](#) by scanning the QR Code that appear after you run **expo start** you can download the app here [Android Play Store](#) or [iOS App Store](#)

2. Install at least **Android version 7.x and up** of Android Emulator on Android Studio. Install at least **iOS version 7.x and up** of iOS Emulator on XCode.

Folder Structure Preview:



Link to Web App:

<https://e-consultation-app.herokuapp.com/>

Download the source code:

Web: <https://github.com/user109436/Medical-Services-Management-App>

Mobile: <https://github.com/user109436/Medical-Services-Management-Mobile-App>

IV. UP AND RUNNING

MAIN FEATURES

- a. Authentication System
 - Forgot password
 - Resend email verification
 - Validate email/account
 - Sign up
 - Log-in and log-out
 - Update Password
 - Protected routes
 - Queries restriction
- b. Chat System
 - Sending and receiving messages/images in real time
 - Chatrooms
 - Image processing
- c. Medical Record System
 - Create Medical Record
 - Document Processing
 - Export/Downloadable Medical Record and Prescription
 - Verify Medical Record & Prescription
 - Logs/History of Physicians' Activities
- d. CRUD Operation
 - Create, Read, Update, Delete
 - Users

Courses
Departments
Verification of Employee

- e. Security
 - Brute Force/Dictionary Attacks
 - Parameter Pollution
 - Models
 - Header Expiry
 - HTTPS
 - TLS Sending Email
 - Password Encryption ([Bcrypt Algorithm](#))
 - CSP
 - CORS
 - JSON Web Tokens ([JWT](#))
 - XSS
 - Input Validation
 - Data Sanitize
 - File Extension Validation
 - No SQL Injection
 - Page Restrictions
 - Record Validation

- f. Restful API's
 - Architecture
 - Limitations

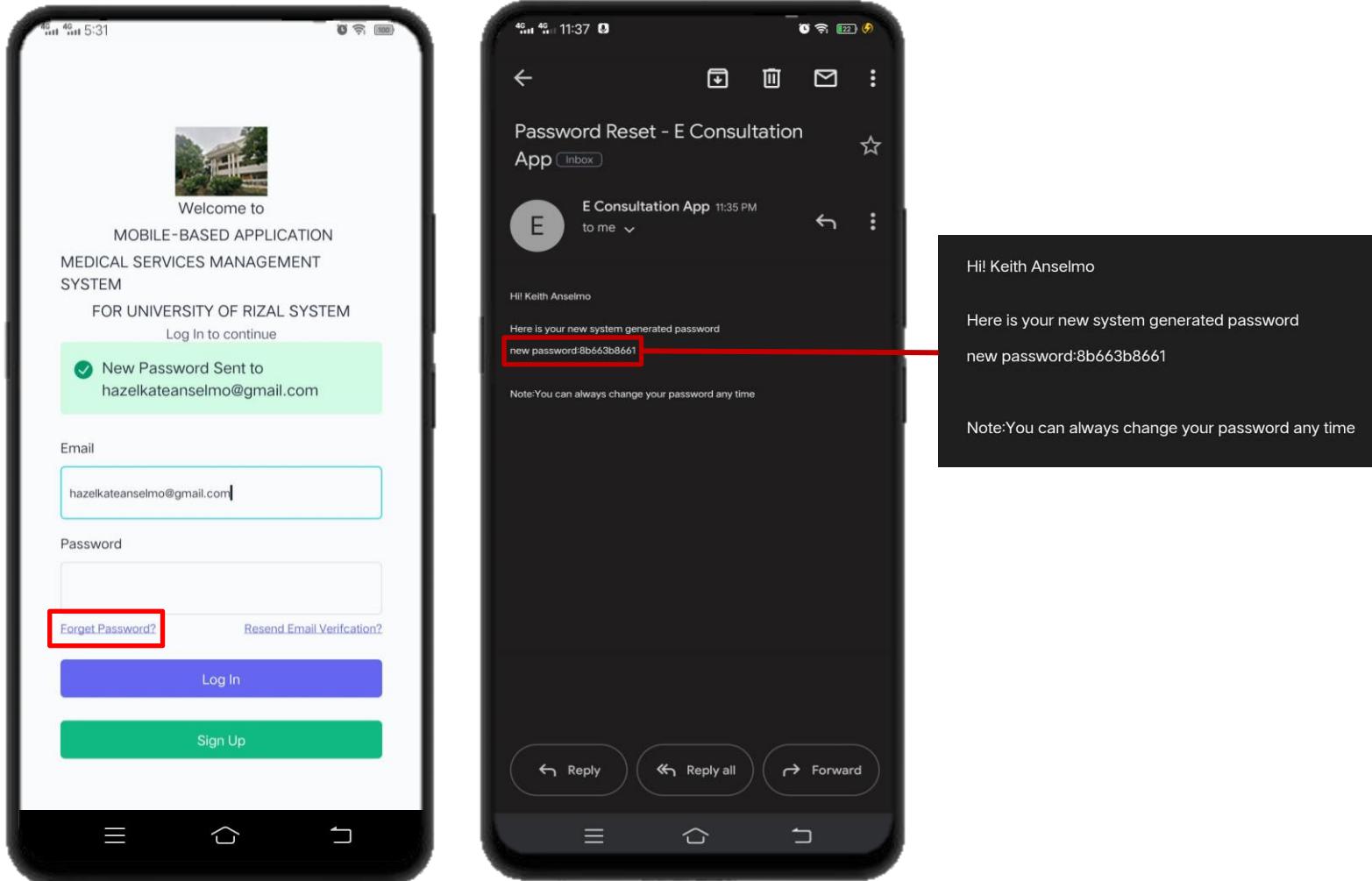
Performance and Analytics

BUILT

- a. Technology MERN Stack
- b. Library Socket.io
 React Native
- c. Front-end Framework Material UI ([MUI](#))

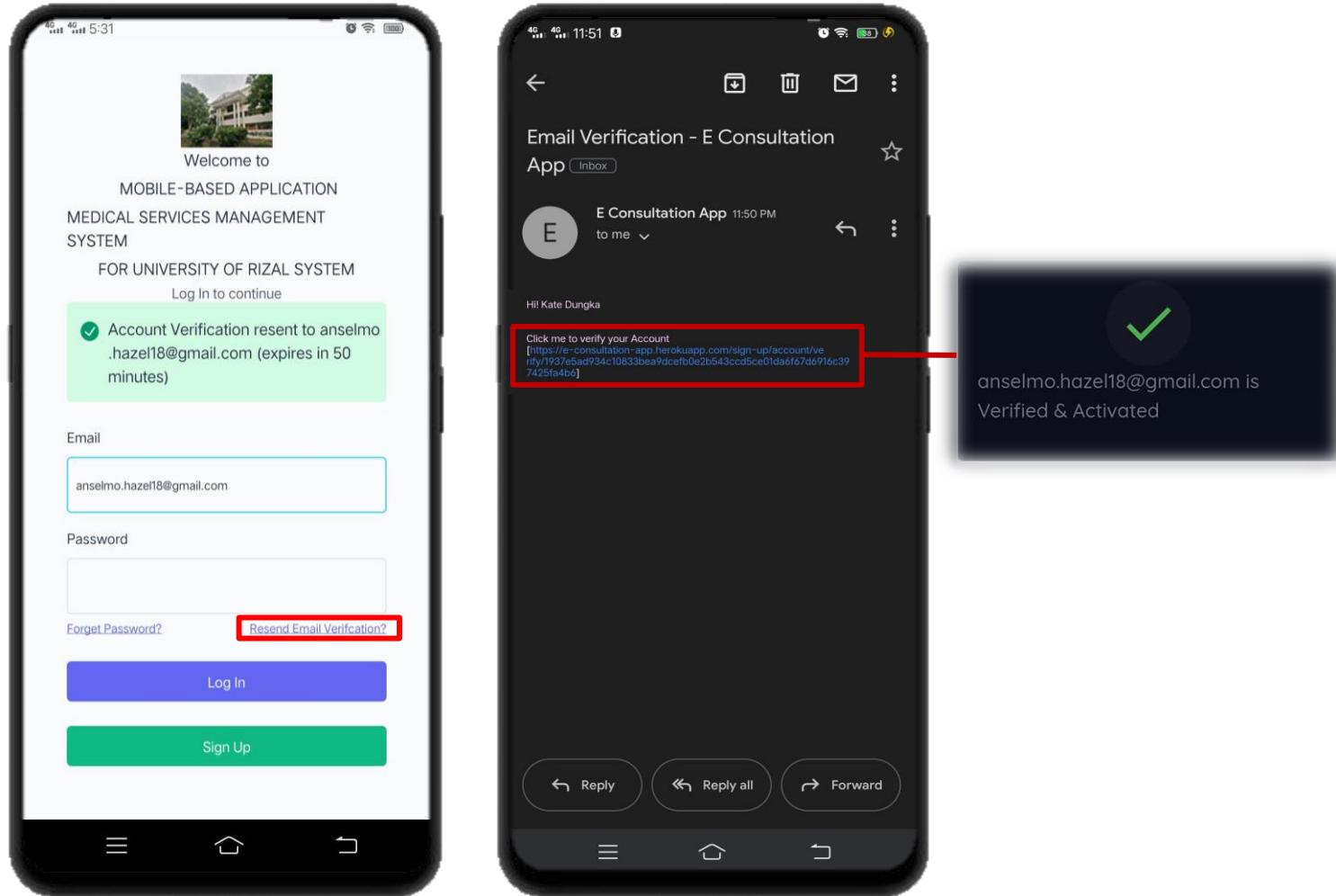
AUTHENTICATION SYSTEM

Forgot password



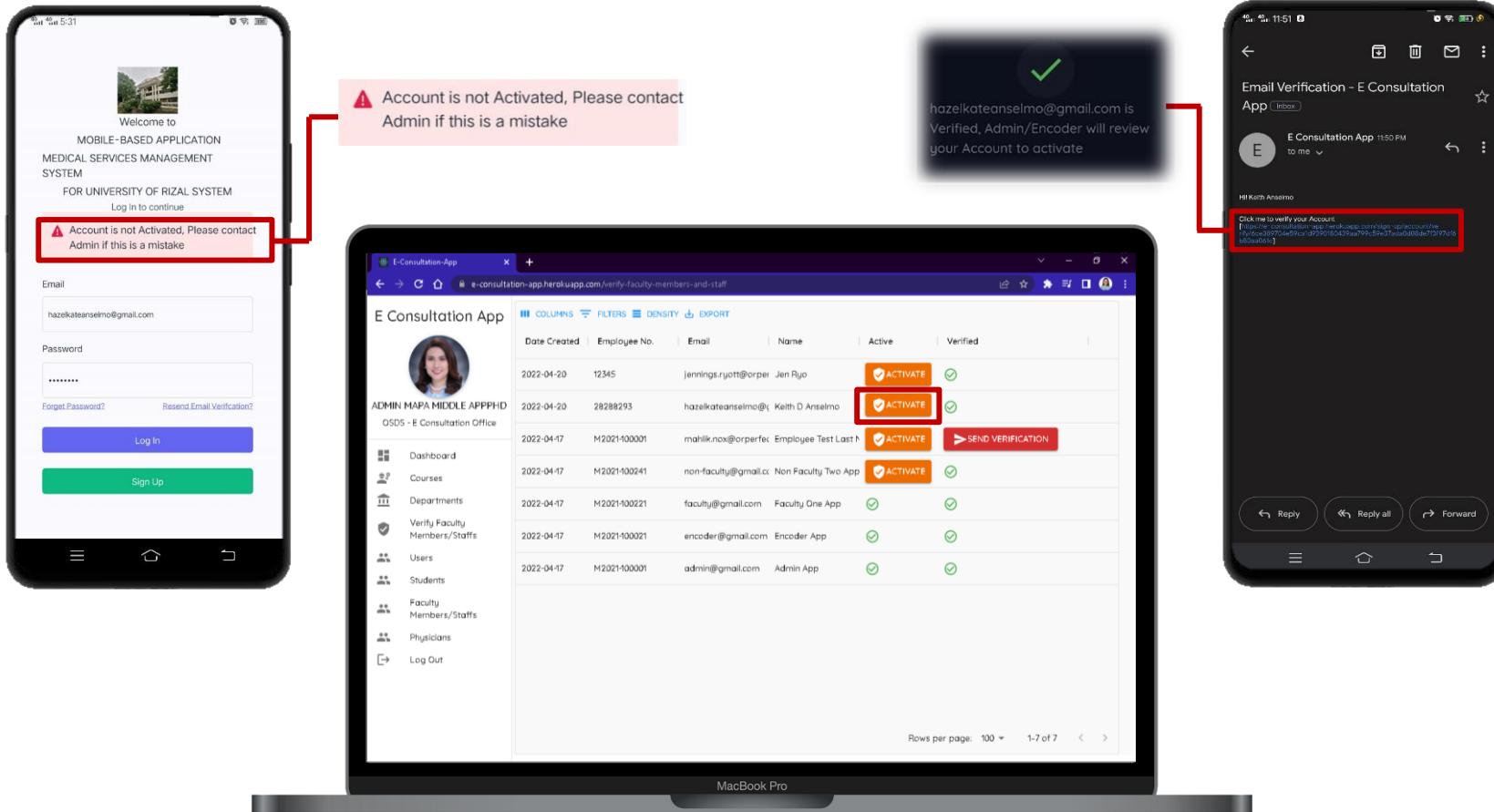
Input your email and tap "Forgot Password?". A new system generated password will be sent to your email inbox.

Resend email verification



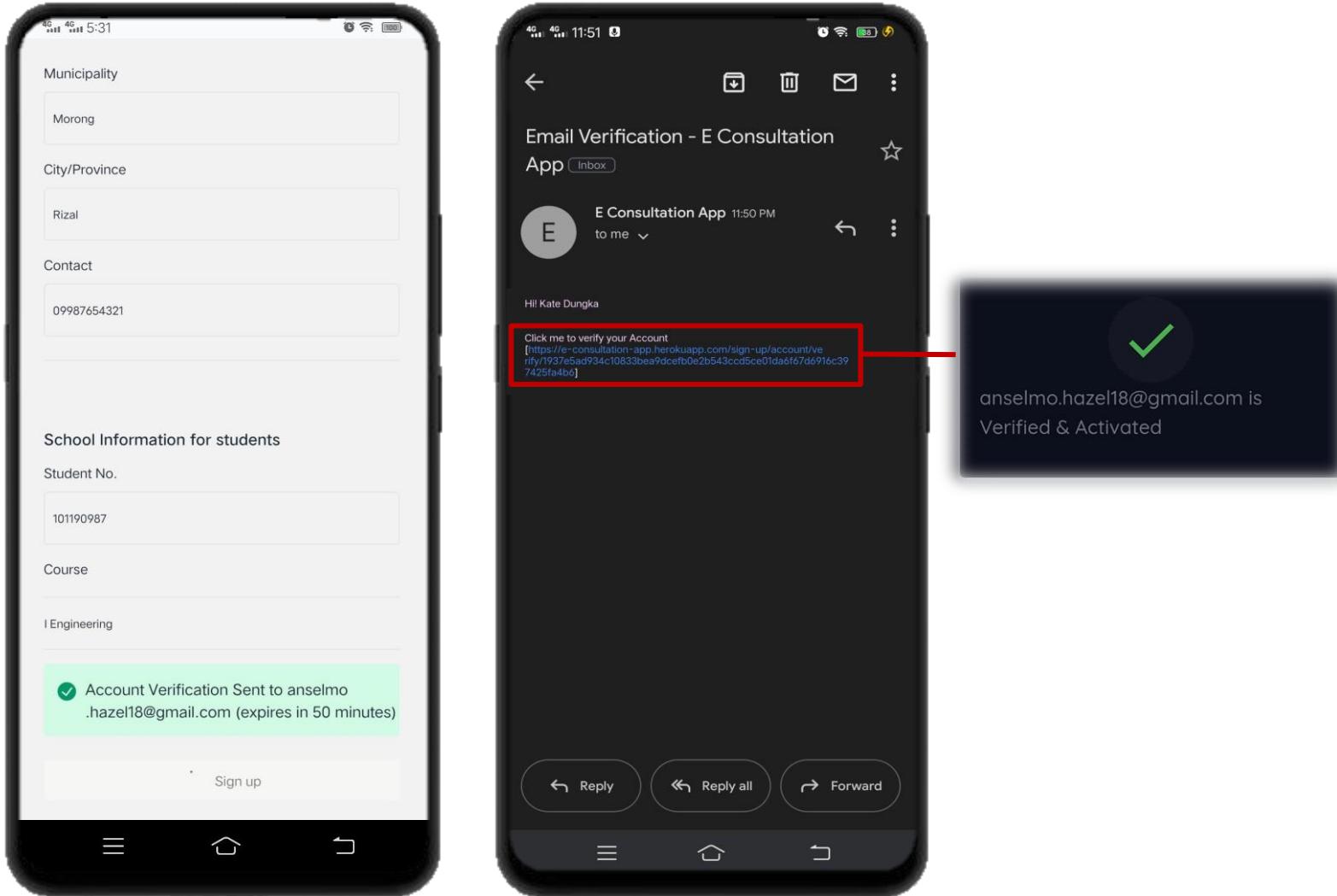
In cases of failure to receive a verification link or an expired verification token, tap the "Resend Email Verification" to receive a new link and verify your account.

Validate email/account (Faculty/Staff)



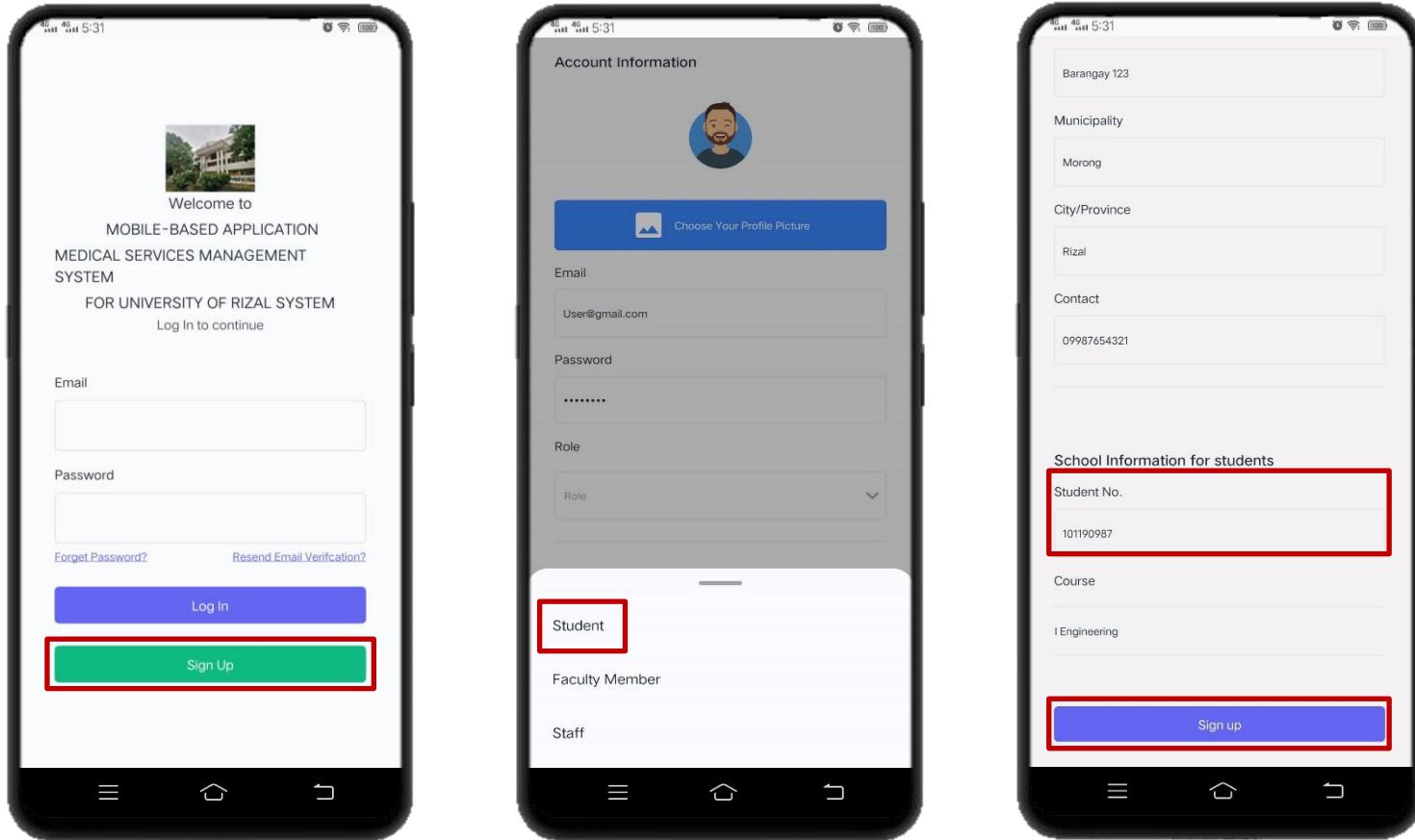
All accounts will be sent a verification link in their email upon signing up. However, account activation is only granted for faculty members and staff. This allows the administrators to review genuine employees and prevent non-URS employees from creating faculty members/staff accounts.

Validate email/account



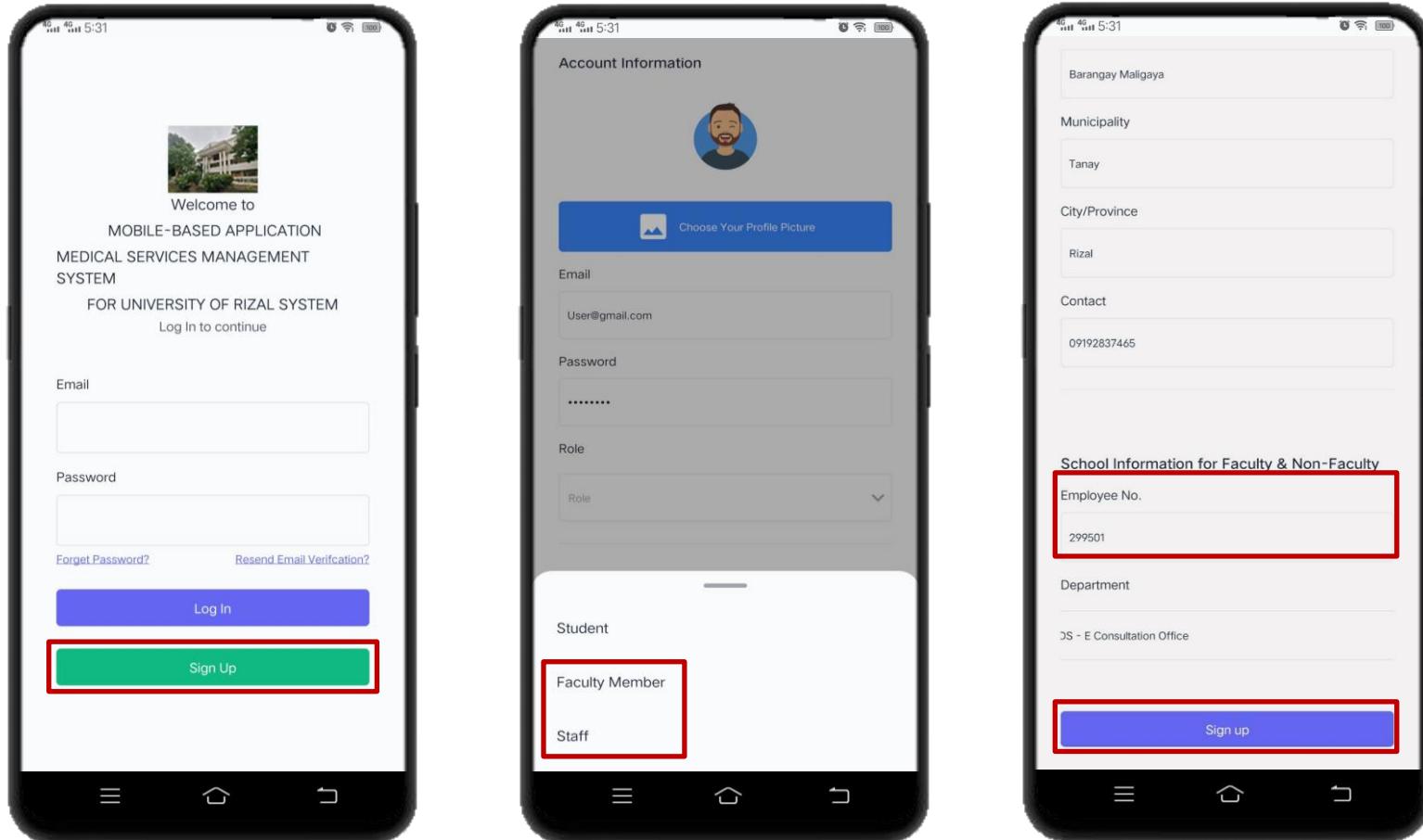
Sign up and click the link provided in your email to activate your account.

Sign Up (Students)



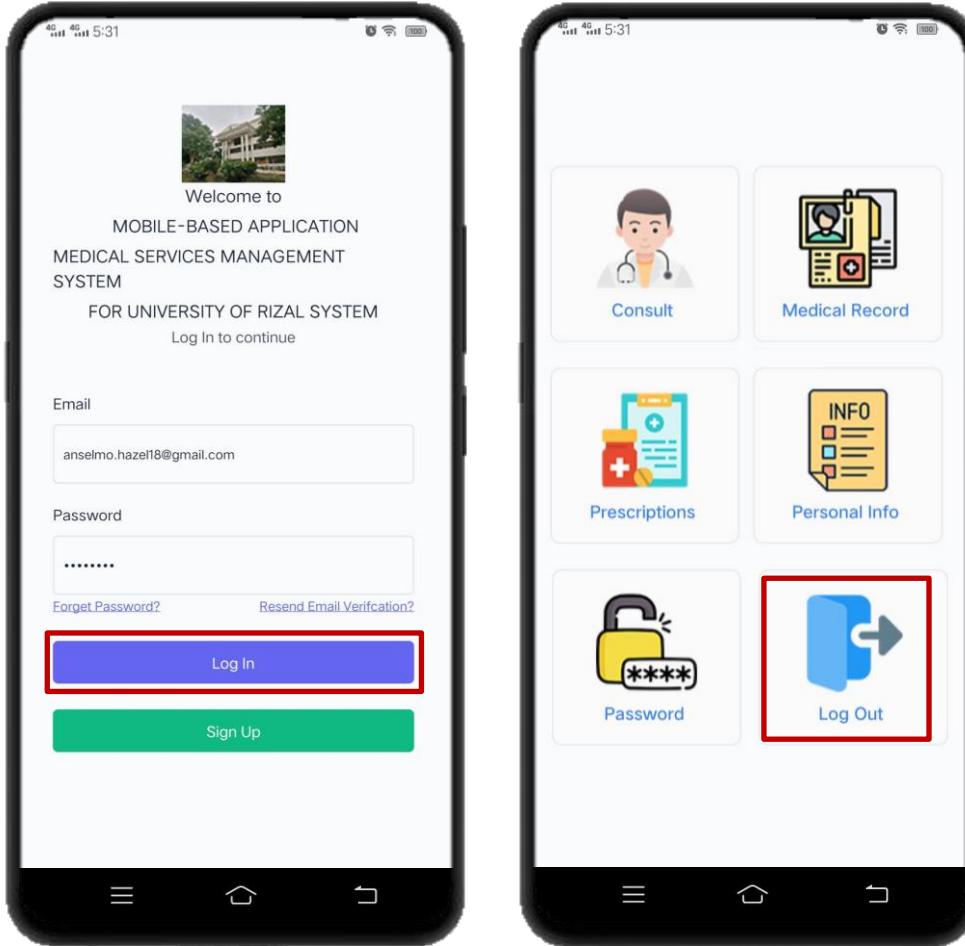
Creating a new account in all roles strictly requires a valid and accessible email for verification. For students, the student ID no. is a required field in signing up.

Sign Up (Faculty/Staff)



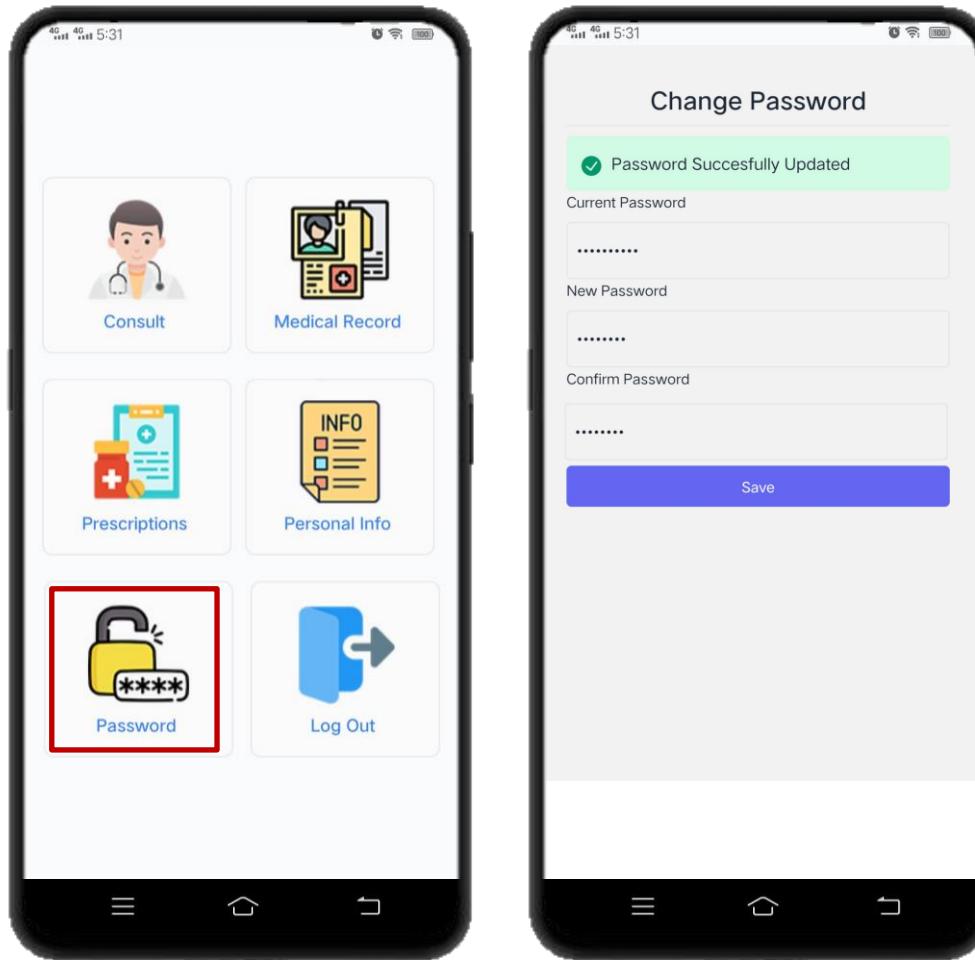
Employee no. is a required field for creating a faculty/staff account. Upon signing up, a verification link is sent to your email to verify your account. However, they are not permitted to log in unless activated by the administrator/encoder.

Log-in and Log-out



Logging in requires you to enter your registered email address and password to access the system. Logging out simply signs out your account. This system uses JWT Authentication as a secure way to authenticate users and share information.

Update Password



To update your account's password, it requires you to enter your old password and replace it with a new passcode with at least 8 characters.

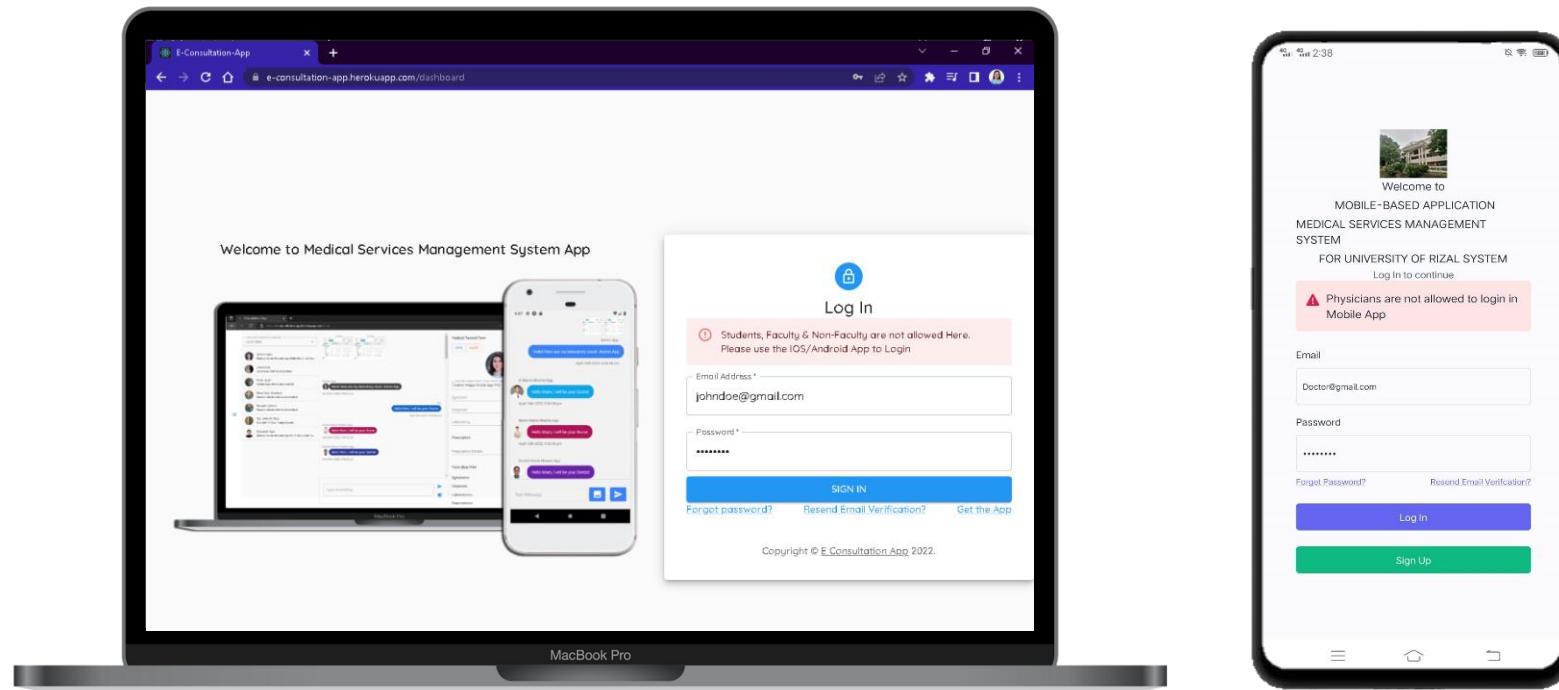
Protected Routes

#	Page	Page Accessibility
1	/	technicals & physicians (public)
2	/view-medical-record/:id	public & private
3	/sign-up/account/verify/:id	public & private
4	/dashboard	technicals & physicians (private)
5	/verify-faculty-members-and-staff	technicals (private)
6	/courses	technicals (private)
7	/departments	technicals (private)
8	/users	technicals (private)
9	/users/students	technicals & physicians (private)
10	/users/students/:id	technicals & physicians (private)
11	/users/staffs	technicals & physicians (private)
12	/users/staffs/:id	technicals & physicians (private)
13	/users/physicians	technicals & physicians (private)
14	/users/physicians/:id	technicals & physicians (private)
15	/chats	physicians (private)
#	Legend	Details
1	technicals	admin, encoder
2	physicians	nurse, dentist, doctor
3	public	available to non-authenticated users
4	private	available only to authenticated users

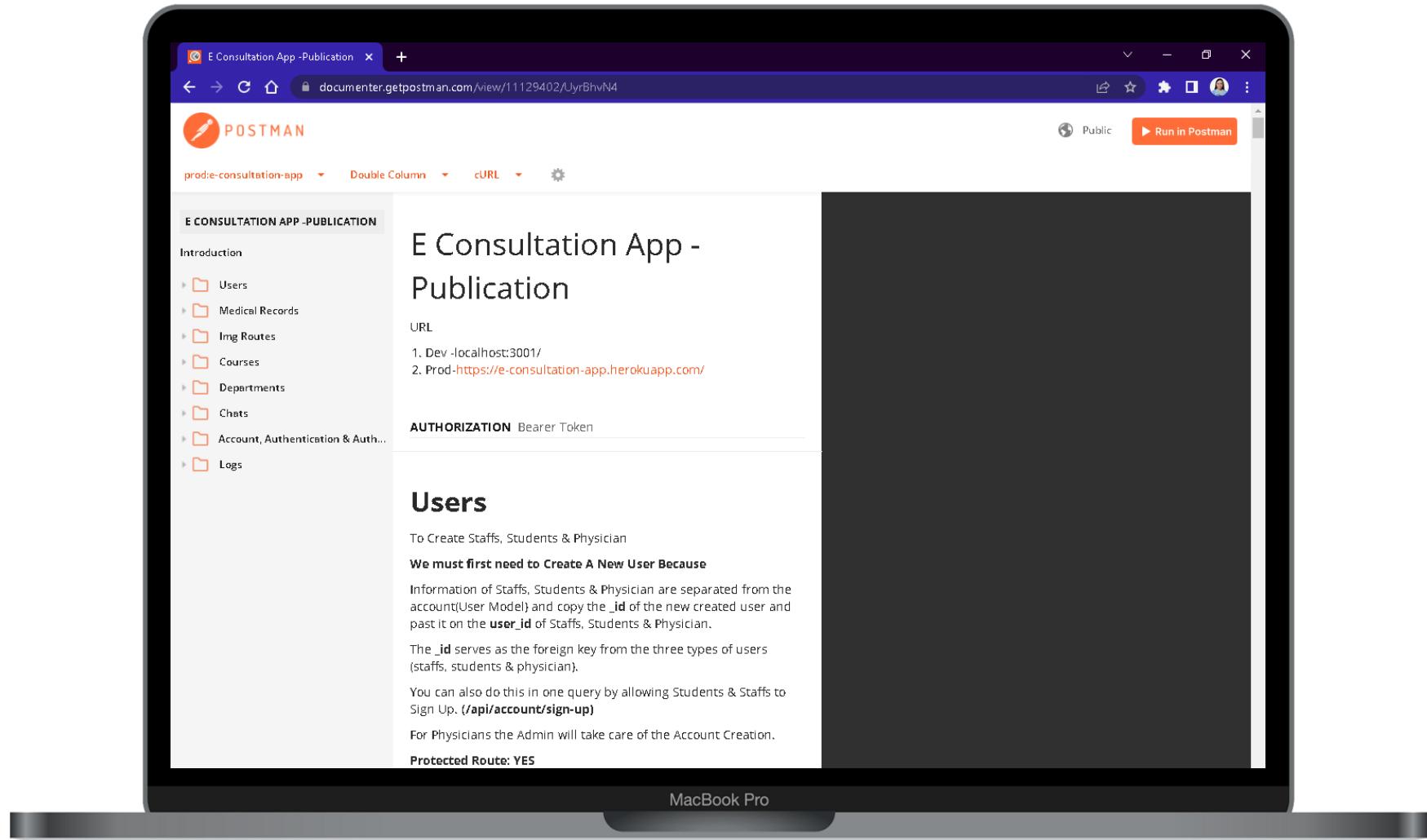
Queries Restriction

! Students, Faculty & Non-Faculty are not allowed Here.
Please use the IOS/Android App to Login

! Physicians are not allowed to login in
Mobile App



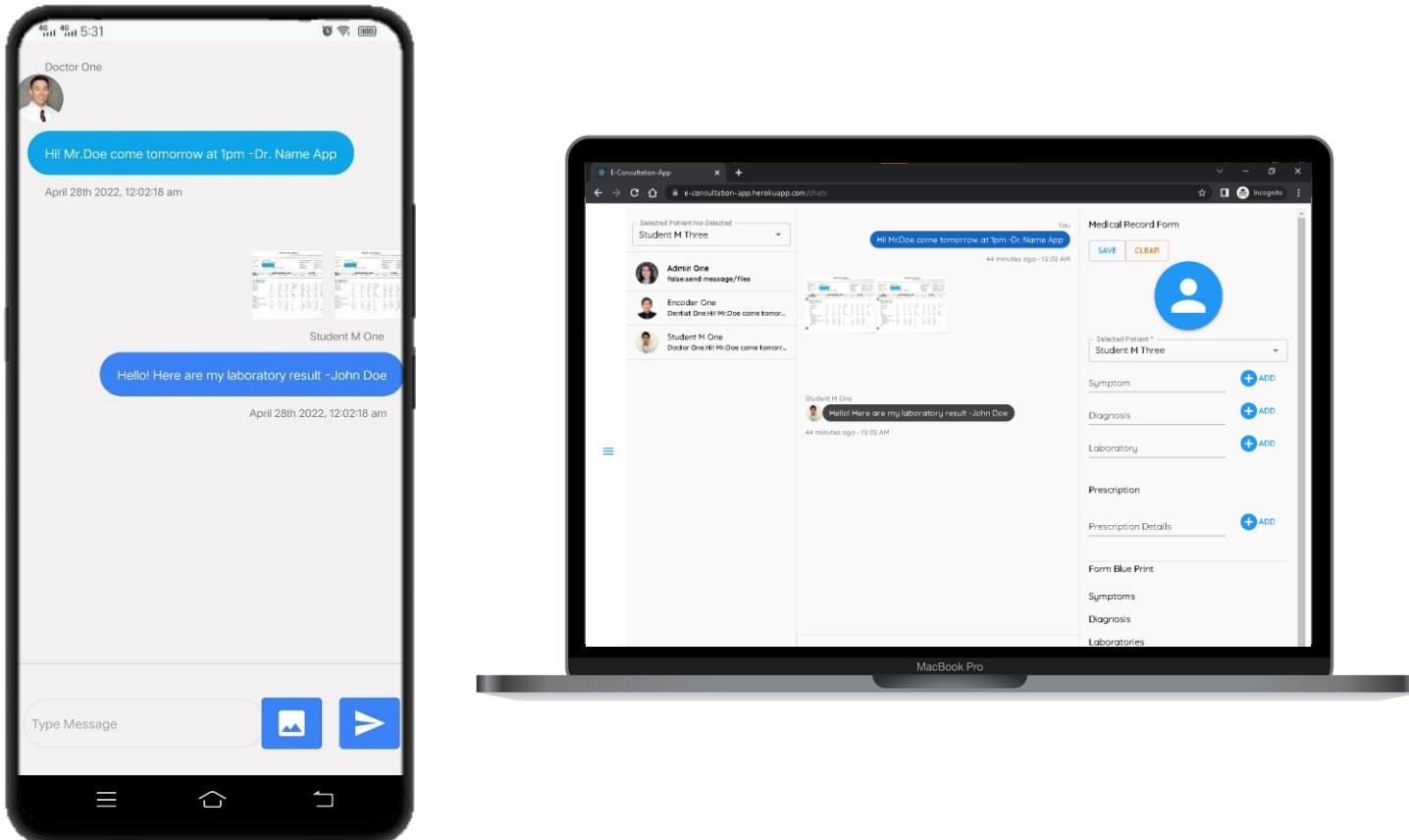
Certain restrictions are provided to manage the system, technical are allowed to use both web and mobile applications while students, faculty and non-faculty members are not permitted to log in using the web app but only by mobile. Physicians, on the other hand, can only use the system through the web app and are restricted from entering via mobile app.



To know more about queries restriction and other details in our system, click the figure above.

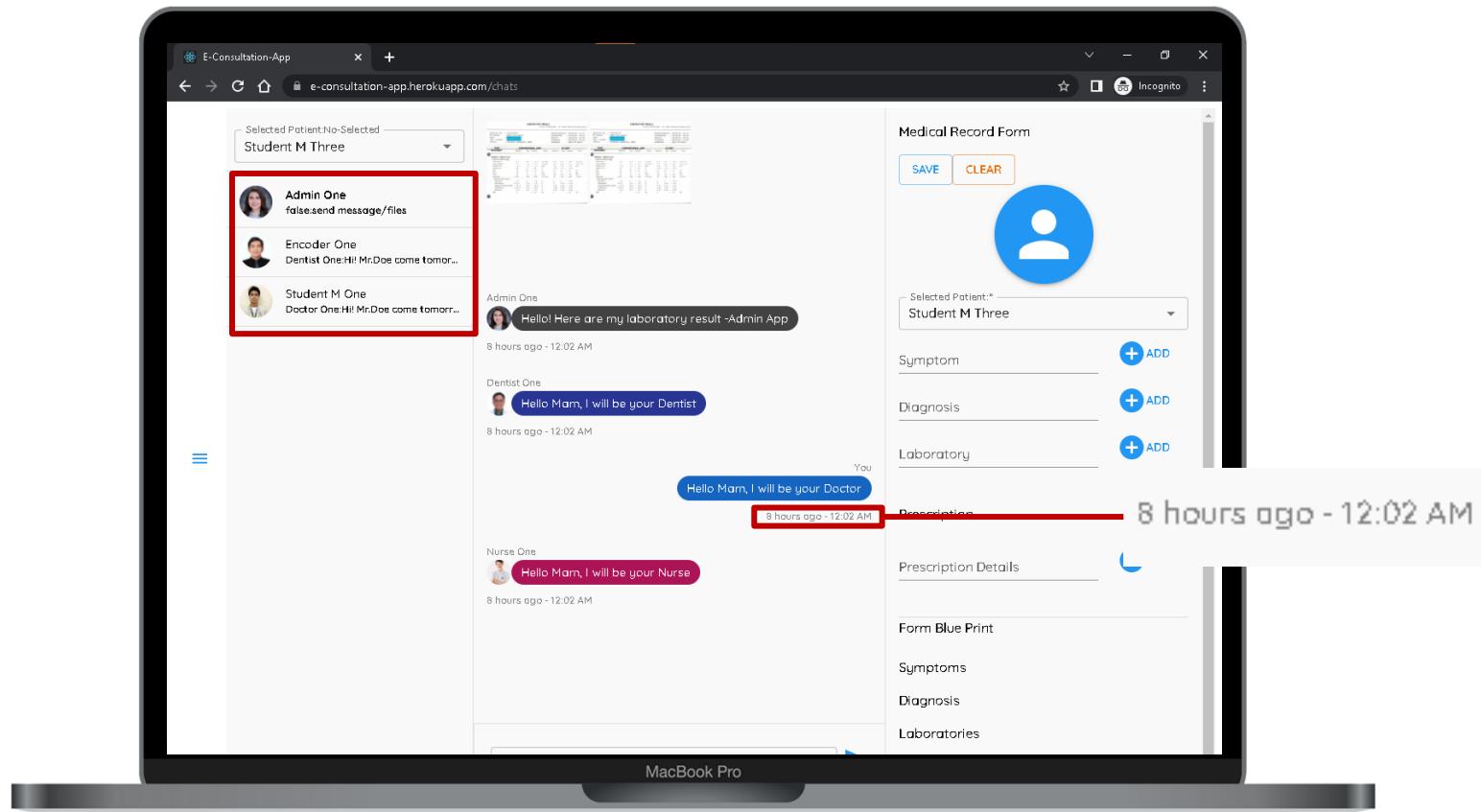
CHAT SYSTEM

Send and Receive Messages in Real-time



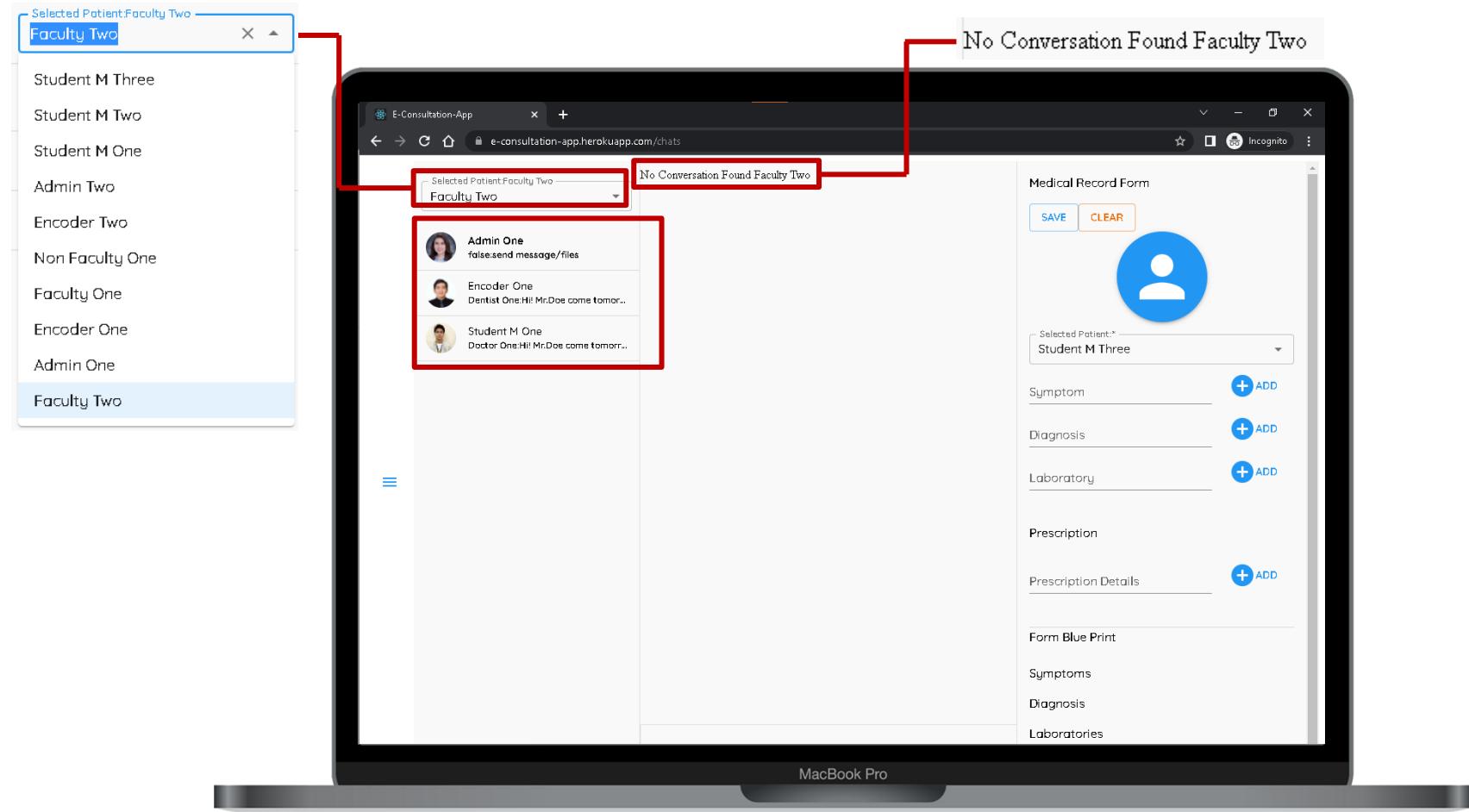
Data is sent directly and instantly from the sender to the receiver to communicate and exchange information rapidly in real-time.

Physician: Read and Seen



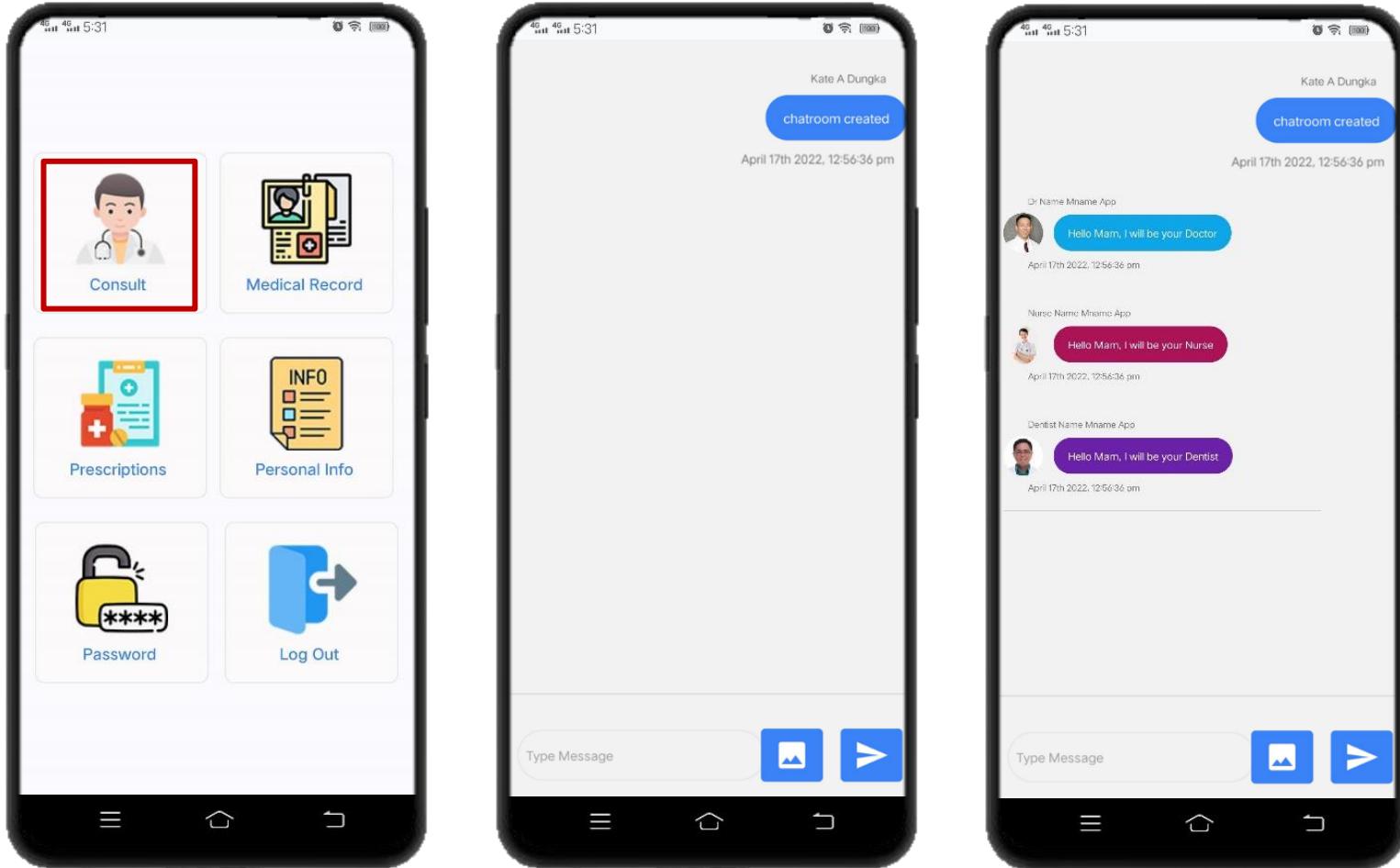
In the website version of the system, the indication of an unread message is the message preview in the sidebar appears in bold text.

Chatrooms (Physicians)



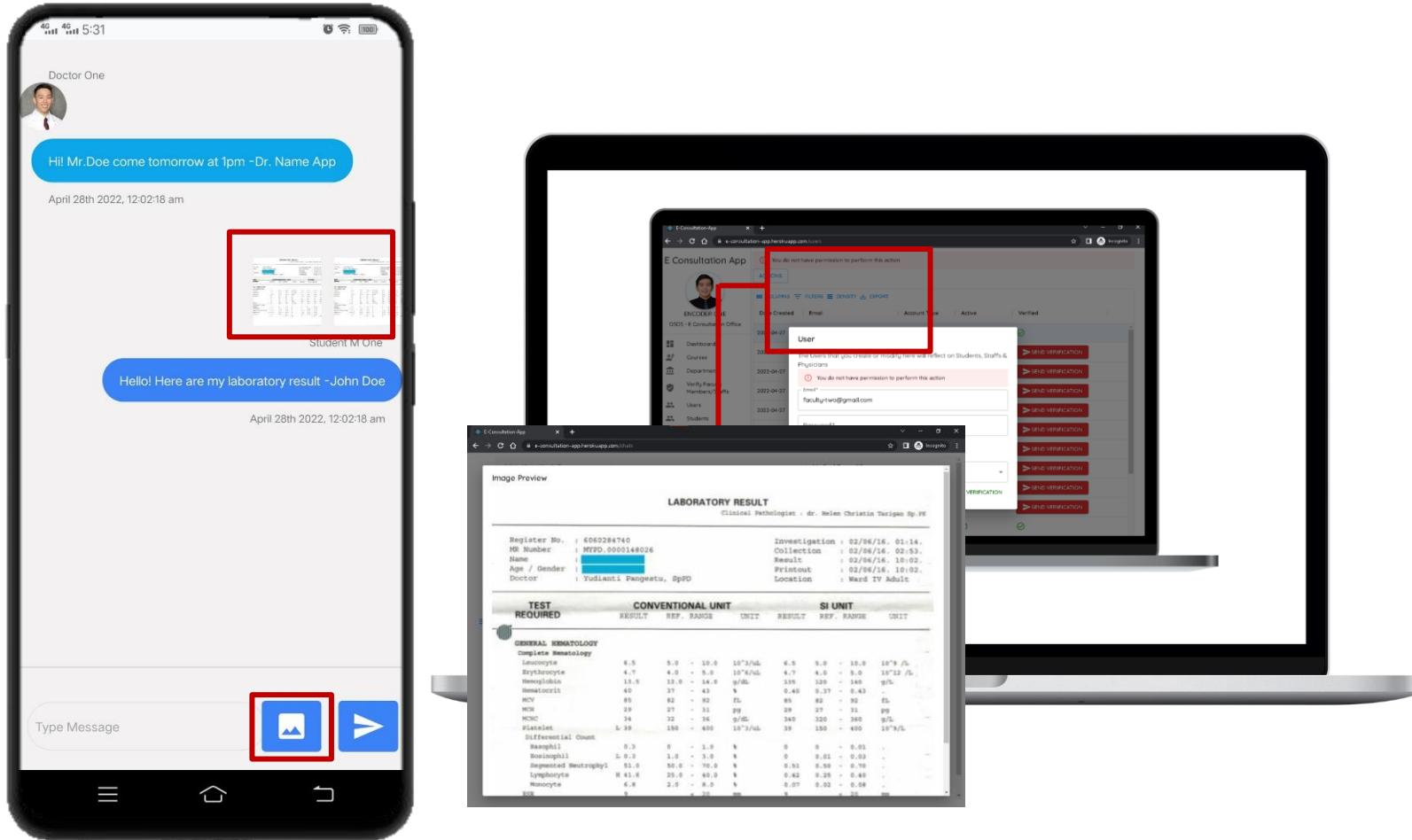
Physicians has access to a list of patients in the system however they are not permitted to message first unless the patient have created a chatroom. Tapping a user who have not consulted yet would lead to a No Conversation Found 'User Name'.

Chatrooms for Students and Faculty/Staff



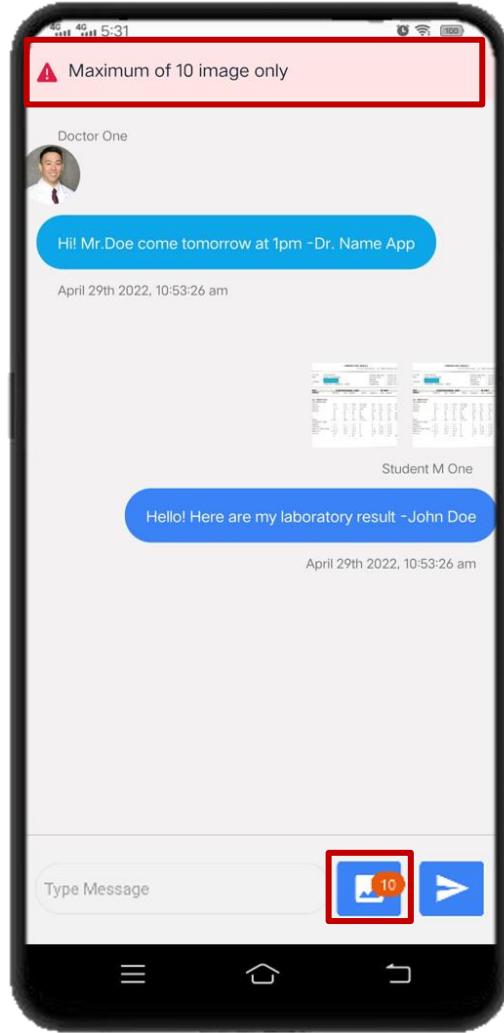
Chatrooms are created once you tap consult. Every physician in the system is included in the chatroom and new physicians are automatically added in it. Note that only the available doctor during your query can respond.

Consult and Upload Images



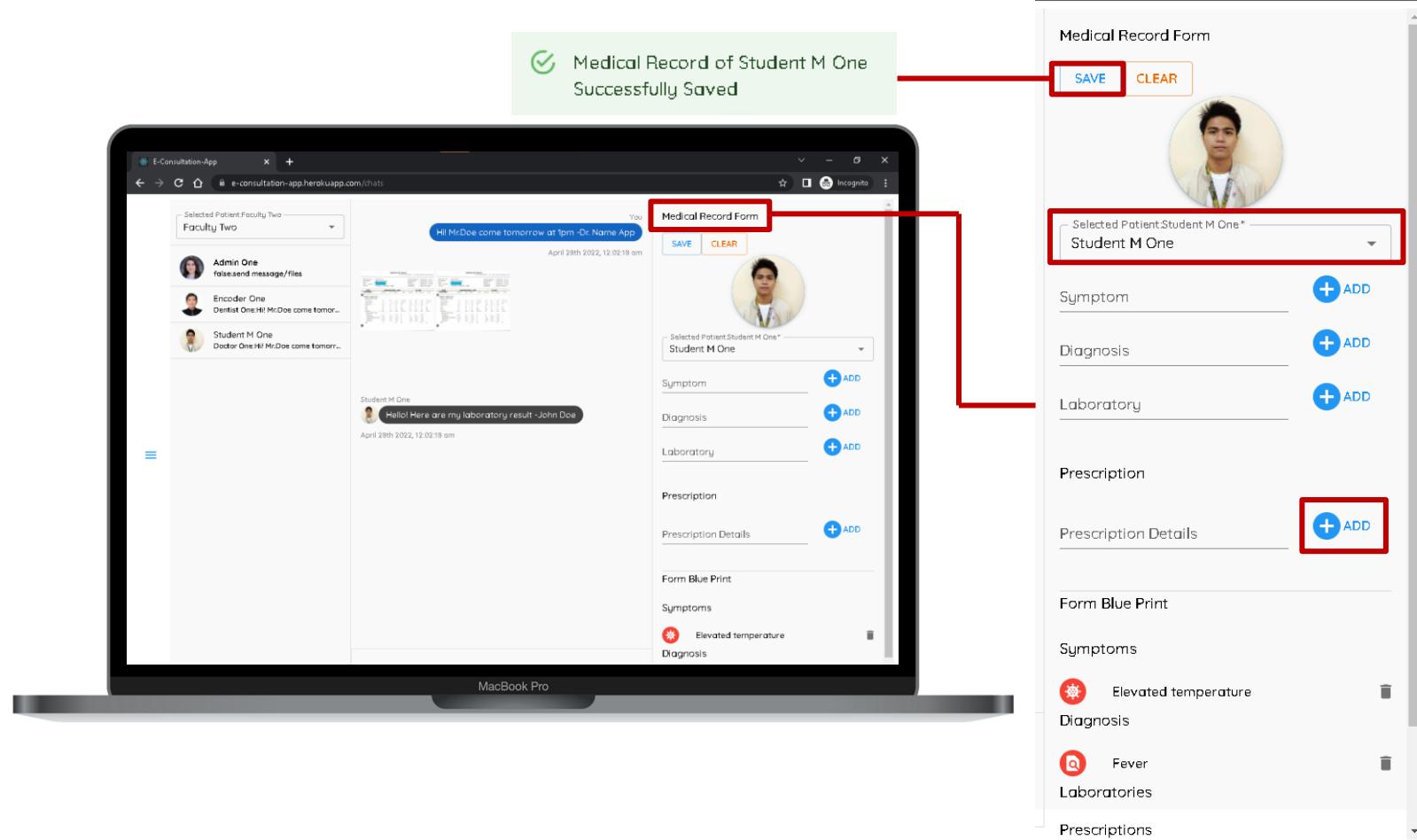
By tapping the icon before the send button, patients can upload images such as laboratory results, x-ray or photos of physical symptoms to help physicians formulate the best diagnosis for the user. Users can only upload each image not higher than 3mb and any file sent gets compressed and retains 90% of the original quality.

Upload limitation



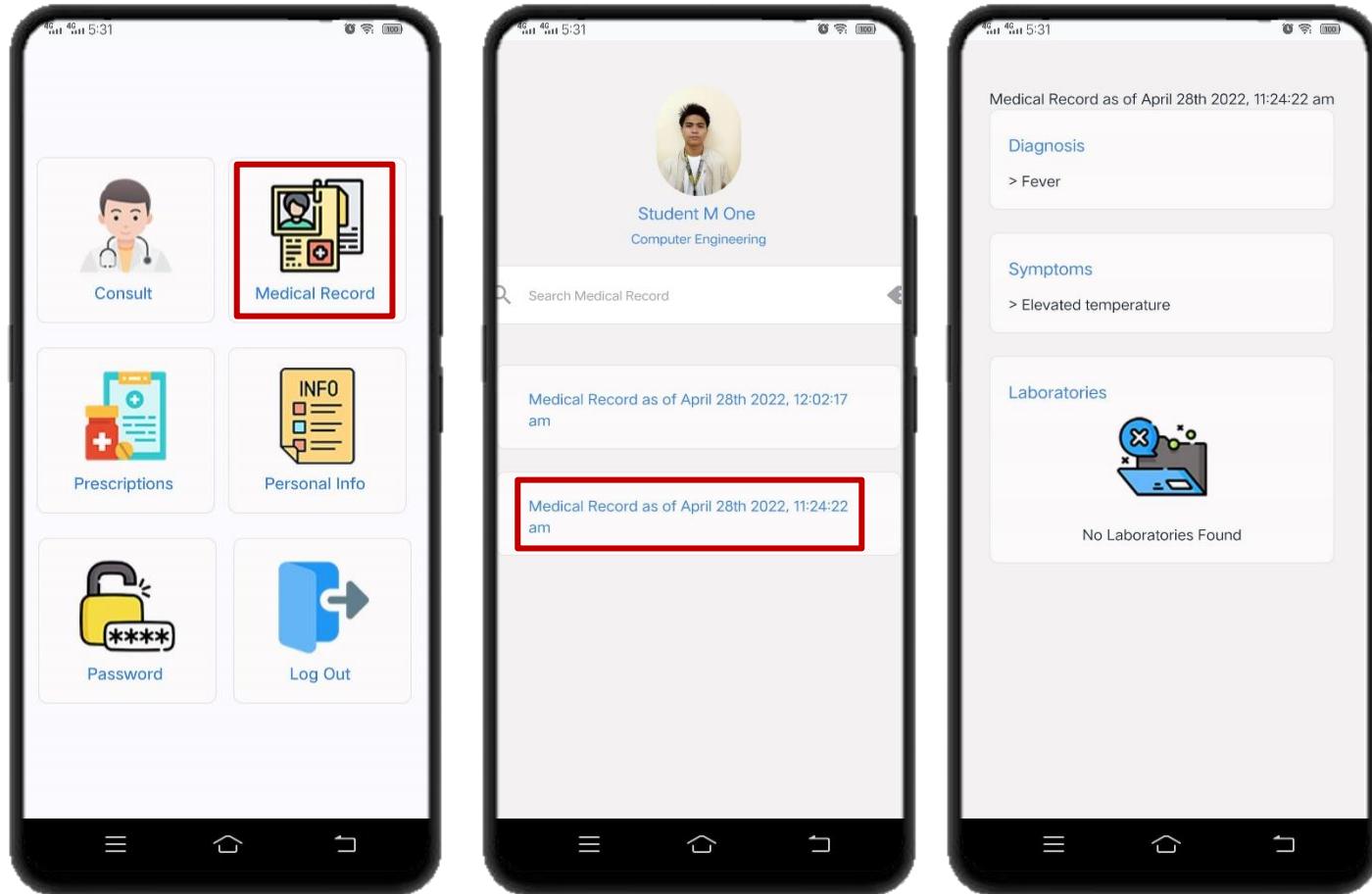
Users can only upload maximum of 10 images. High image sizes might cause the users to wait a while in sending their files and messages.

Physicians: Create Medical Record and Prescription



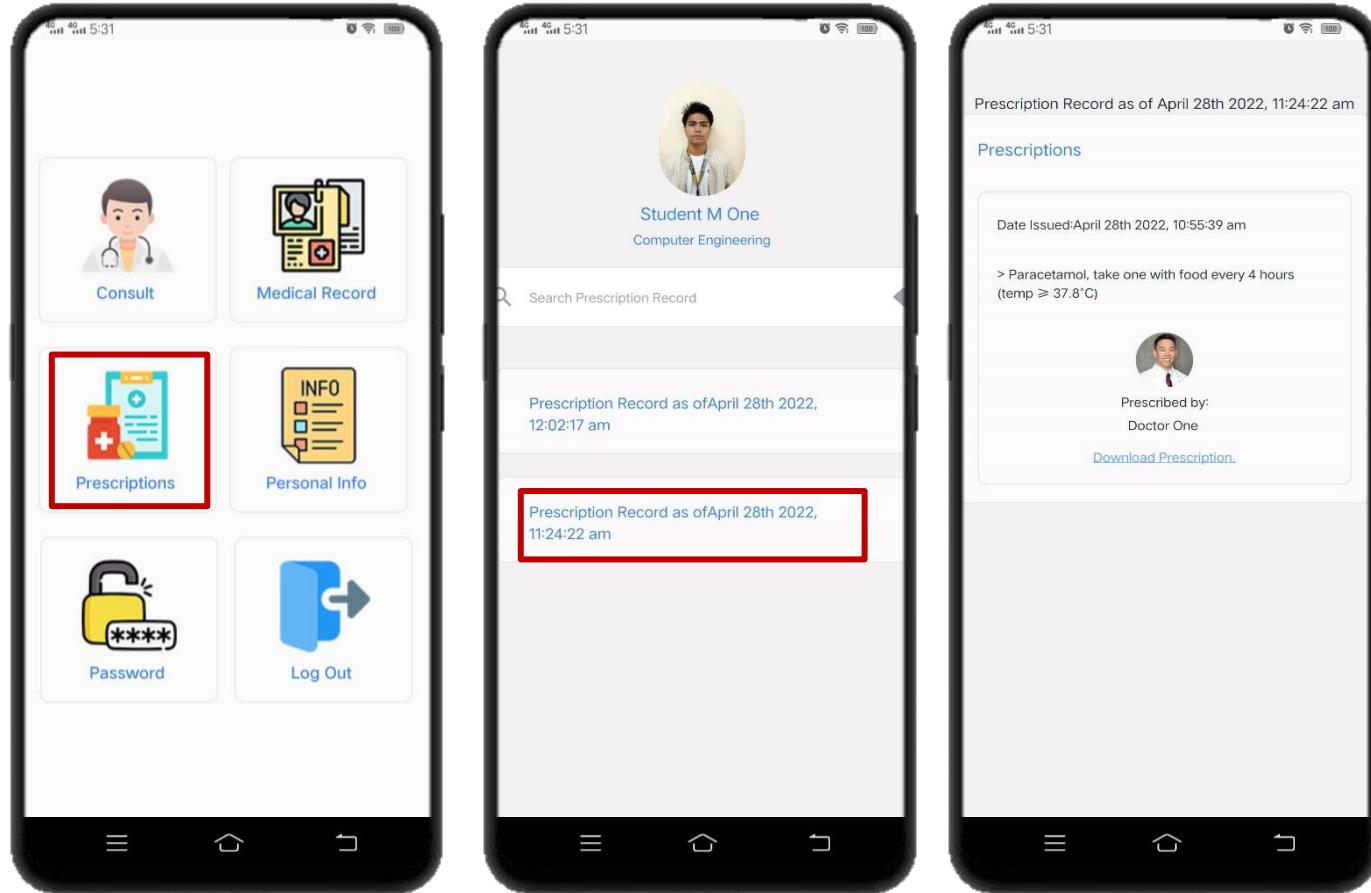
Physicians can create medical records and prescriptions by typing in the details to the sidebar called "Medical Record Form" located in the chatroom. Select a patient, tap the 'add' button to form the blueprint then 'save' to create the medical record.

View Medical Record (Mobile App)



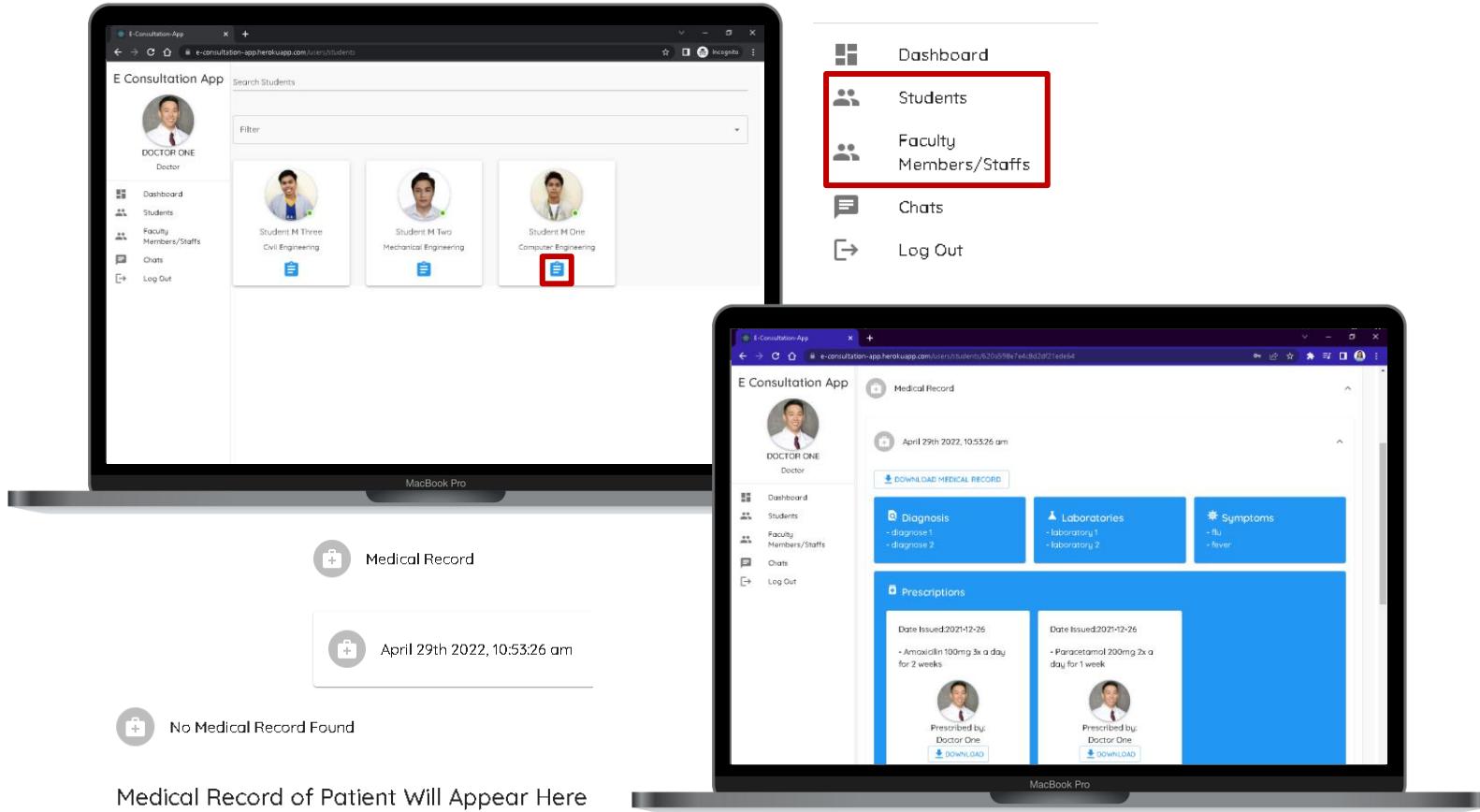
To view medical records in the mobile app, tap the "Medical Record" on your dashboard. Here, you can see all the list of your previous records including the date and time it was created. You can search records then tap on it to view the details of your diagnosis.

View Prescription Record (Mobile App)



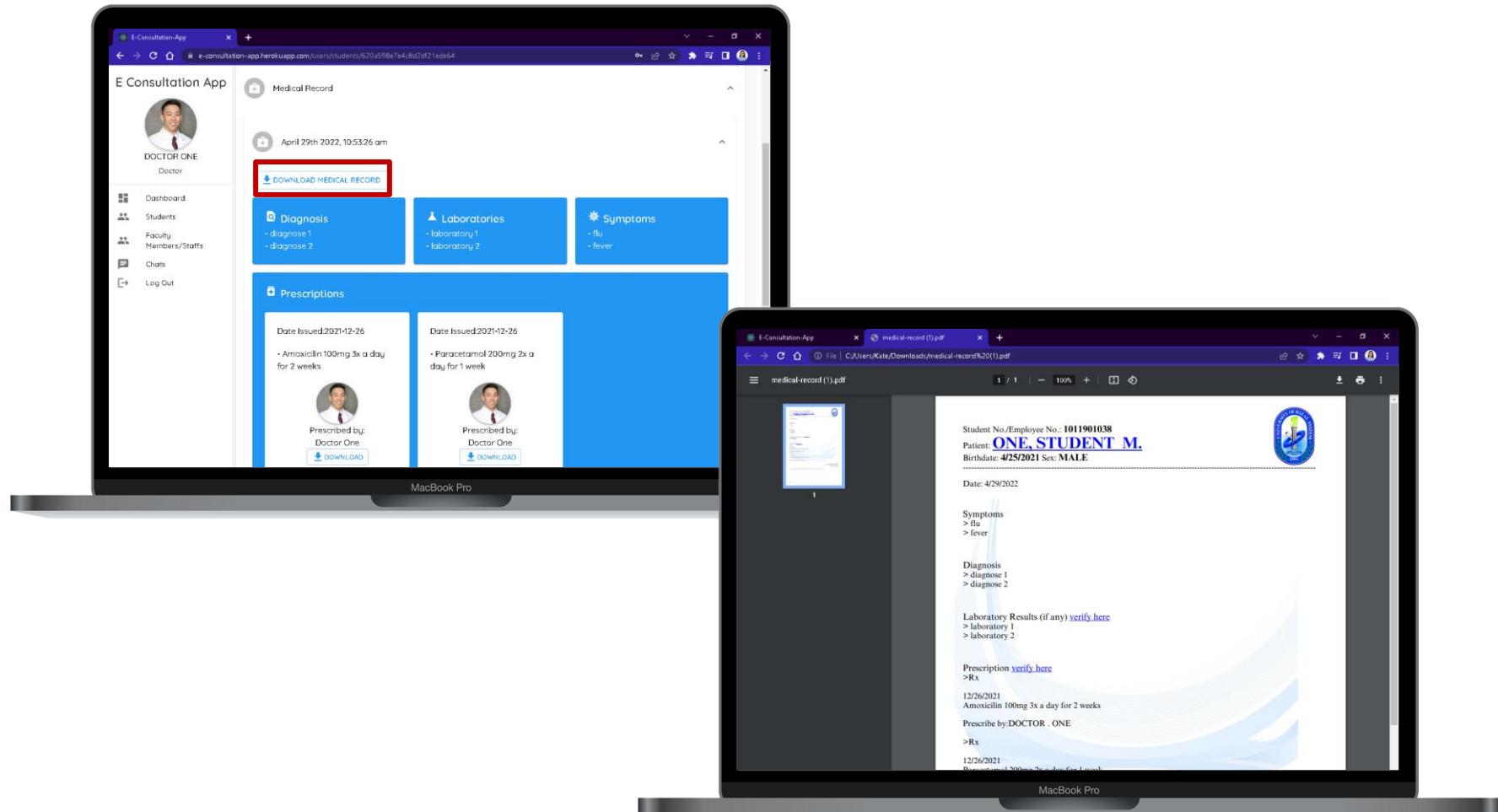
To view prescription records, tap the “Prescription” on your dashboard. Here, you can see all the list of your previous records including the date and time it was created. You can search records then tap on it to view the details of your prescription.

Physicians: View Medical Record and Prescriptions (Web)



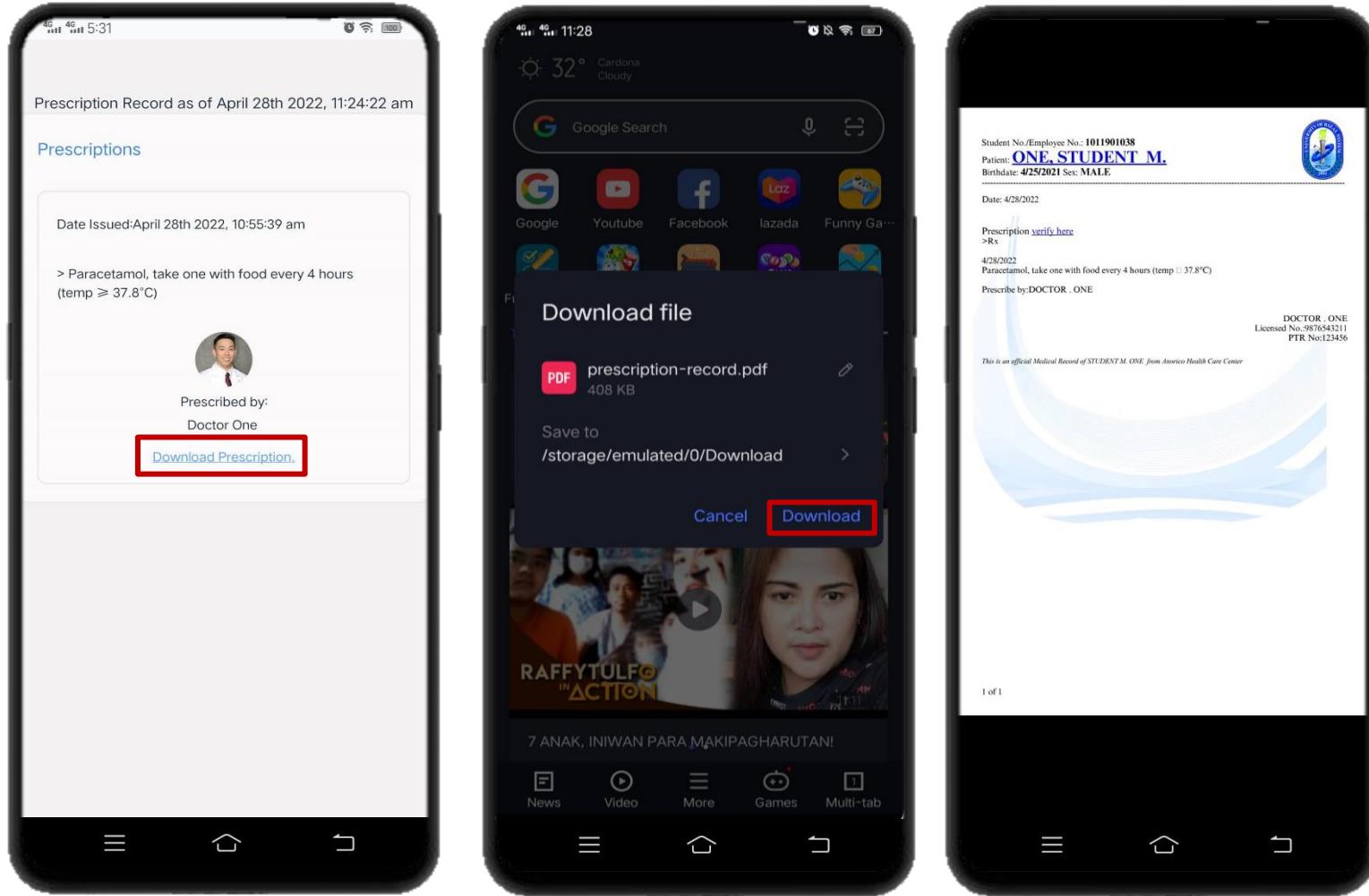
On the Web App, **medical records are only available to physicians and are not accessible by technicals**. To view these records, click on the "Students" or "Faculty Members/Staffs" tab on your sidebar and click the clipboard icon highlighted from the figure above. Users with medical records are denoted by the date and time it was issued.

Download/Export Medical Record (Web)



Following the View Medical Record aforementioned, **physicians such as doctors and dentists can download medical records of their patients**. Nurses are limited to only view records and are not authorized to download these files.

Export Prescriptions (Mobile App)



Following the view prescription record above, it is also possible to export/download it to allow the user to send the prescription to the pharmacy.

Verify Medical Record and Prescriptions



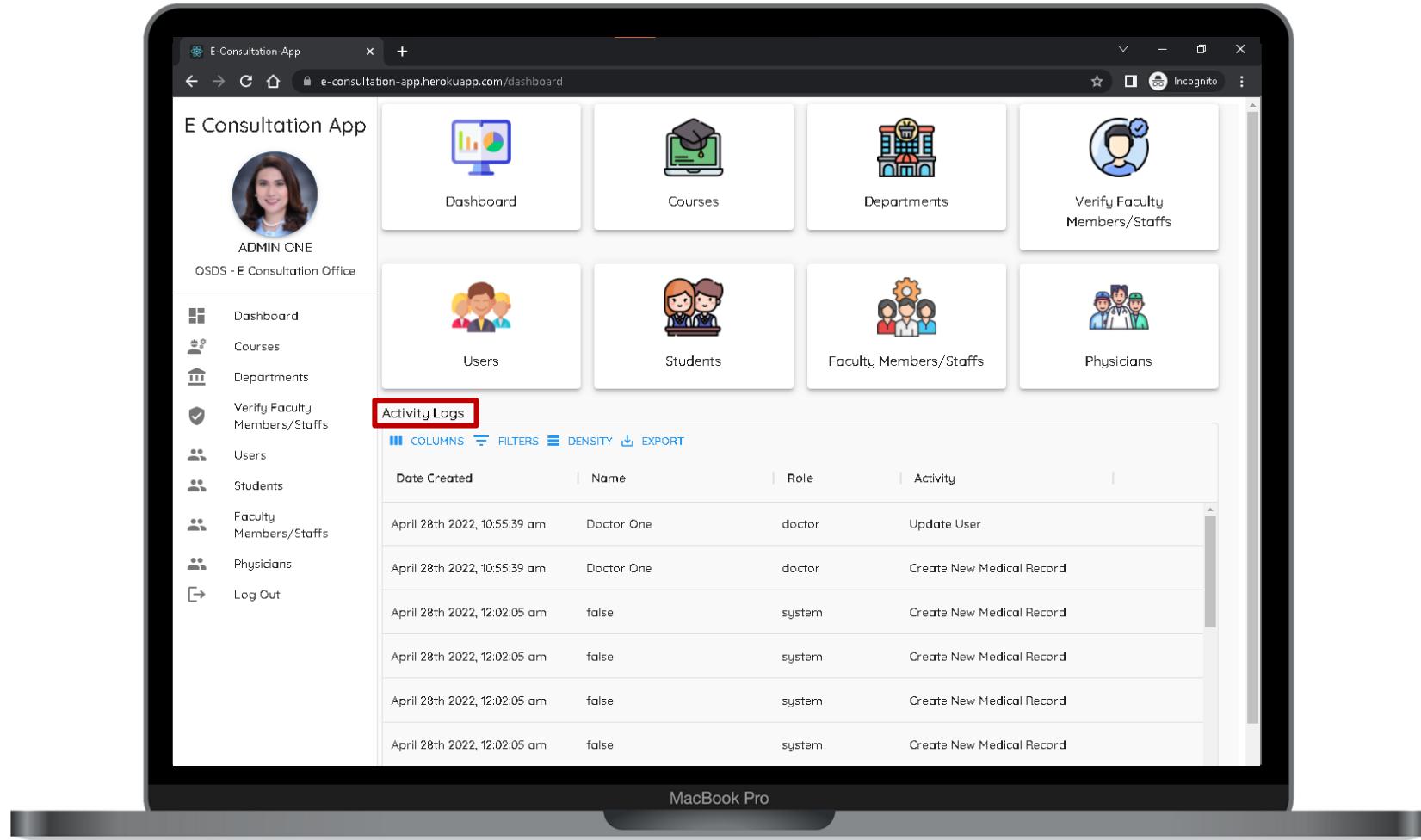
Tapping "verify here" can allow pharmacies to confirm **whether the shared file is authentic**. The link can be opened using any device in verifying a prescription. Clicking "verify here" will direct you to view the medical record with the date it was issued within the app or website.

Note that in the Mobile App, WPS may cause problems in opening links:

<https://github.com/flathub/com.wps.Office/issues/106>

<https://support.google.com/drive/thread/85639638/appears-writing-the-file-format-is-not-supported-pls-wait-for-subsequent-version-wht-should-i-do?hl=en>

Logs/History of Physician Activities



Logs are available only to the administrators and encoders of the system. Activities can be seen in the admin's dashboard.

CRUD OPERATIONS

Sorting/Filtering Lists

The screenshot shows a user interface for filtering data lists. At the top right are buttons for 'COLUMNS', 'FILTERS', 'DENSITY' (with a dropdown arrow), 'EXPORT' (with a CSV icon), and 'EXPORT' (with a download icon). Below these are several filter options:

- A 'Find column' input field.
- A list of selected columns: 'Date Created' (selected), 'Name', 'Role', and 'Activity'.
- 'HIDE ALL' and 'SHOW ALL' buttons.
- A detailed filter row for 'Date Created': 'Columns' (set to 'Date Created'), 'Operators' (set to 'contains'), and 'Value' (set to 'Filter value').
- Buttons for changing list density: 'Compact', 'Standard' (selected), and 'Comfortable'.
- Action buttons at the bottom: 'Download as CSV' and 'Print'.

Red boxes highlight the following elements:

- The 'EXPORT' button with the CSV icon.
- The 'EXPORT' button with the download icon.
- The 'SHOW ALL' button.
- The 'Standard' density button.
- The 'Download as CSV' button.

E Consultation App



ADMIN ONE

OSDS - E Consultation Office

The dashboard menu includes:

- A 'Dashboard' section with icons for Courses, Departments, Verify Faculty Members/Staffs, and Users. The 'Users' item is highlighted with a red border.
- Links for Students, Faculty Members/Staffs, Physicians, and Log Out.

For ease in finding data, technicals can arrange data through the filtering tools included in the following tabs above highlighted in red. They can also change the density of the list according to their preference, export (.csv) and print data.

Search Active and Archived Users

Search Students

Filter

Active

Archived

Search Staffs

Filter

Faculty Members

Staff

Archived

Search Physicians

Filter

Active

Archived

E Consultation App



ADMIN ONE

OSDS - E Consultation Office

- Dashboard
- Courses
- Departments
- Verify Faculty Members/Staffs
- Users
 - Students
 - Faculty Members/Staffs
 - Physicians
- Log Out

The ability to filter and search students, faculty members/staff and physicians are provided to help technicals or the administrators and encoders, to manage their users especially when used in large-scale populations such as a university.

Create, Read, Update, Delete

E Consultation App



ADMIN ONE

OSDS - E Consultation Office

- Dashboard
- Courses Departments
- Verify Faculty Members/Staffs
- Users Students
- Faculty Members/Staffs Physicians
- Log Out

ACTIONS

Department

The Departments that you create or modify here will reflect on Students Records

Department*

Details

CANCEL SAVE DELETE

Course

The Courses that you create or modify here will reflect on Students Records

Course*

Course Code*

CANCEL SAVE DELETE

User

The Users that you create or modify here will reflect on Students, Staffs & Physicians

Email*

Password*

Active

Yes No

Account Type

CANCEL SAVE DELETE

Physician

The Physicians that you create or modify here will reflect on Medical Records

UPLOAD PROFILE PICTURE

Current Account.*

PIRC License.*

PTB No.*

First Name* Middle Initial Last Name* Suffix

Educational Background*

CLEAR CANCEL SAVE DELETE

ACTIONS

Student

The Students that you create or modify here will reflect on Medical Records

Birthday*
 □

Address

+ ADD ADDRESS

Contact

+ ADD CONTACT

Staff

The Staffs that you create or modify here will reflect on Medical Records

Department *
 □

Address

+ ADD ADDRESS

Contact

+ ADD CONTACT

CANCEL CLEAR SAVE DELETE

CANCEL CLEAR SAVE DELETE

'Update' and 'Delete' operations are not applicable to Medical Records. Encoders can add accounts but are not permitted to edit and delete users while Administrators can perform all CRUD operations.

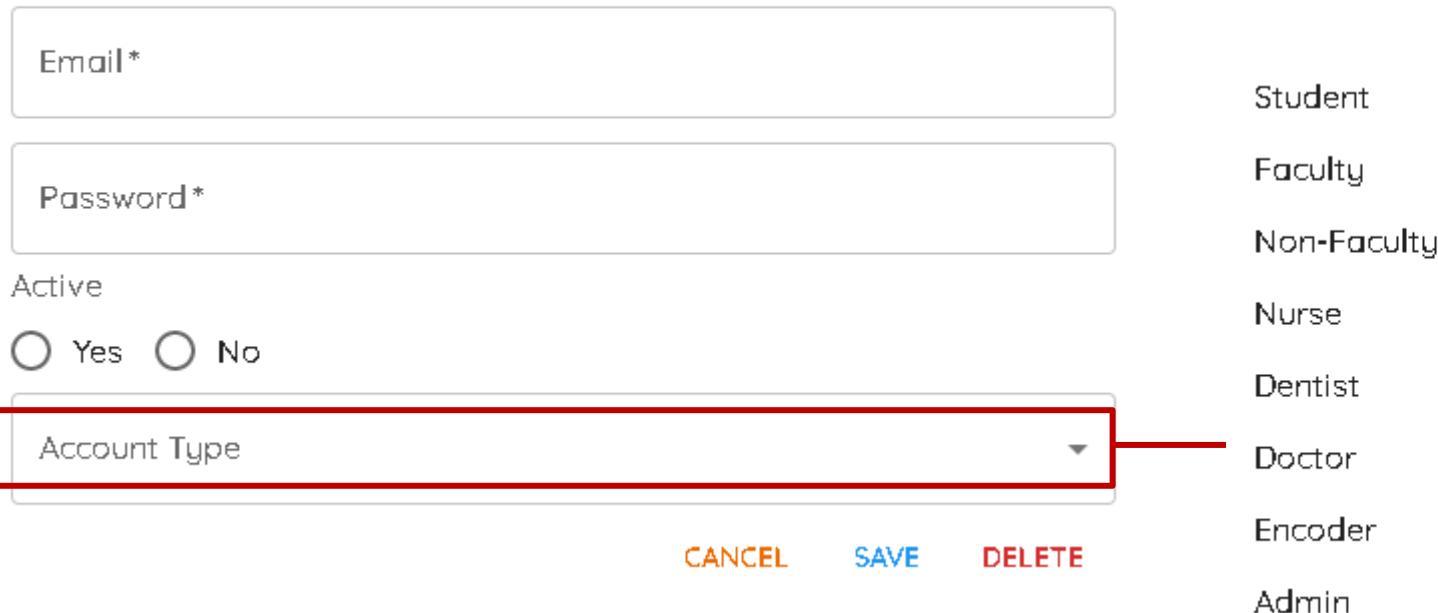
Technicals: Creating User Accounts

User

The Users that you create or modify here will reflect on Students, Staffs & Physicians

Email *	Student
Password *	Faculty
Active	Non-Faculty
<input type="radio"/> Yes <input checked="" type="radio"/> No	Nurse
Account Type	Dentist
	Doctor
	Encoder
	Admin

CANCEL SAVE DELETE



Other than signing up, creating user accounts as a technicals is another way of making an account for users. As part of creating an account, technicals can select what account type the user will have. Note that this "User" account is not functional unless assigned in a role that will be further explained in "Assigning User Accounts".

Technicals: Assigning User Accounts

The screenshot shows a user management interface with a sidebar on the left and a main content area on the right.

Left Sidebar:

- Dashboard
- Courses
- Departments
- Verify Faculty Members/Staffs
- Users**
 - Students
 - Faculty Members/Staffs**
 - Physicians
- Log Out

Main Content Area:

Staff Tab:

The Staff tab is active, indicated by a blue header bar. A red box highlights the list of accounts under "Current Account".

List of Accounts:

- faculty-two@gmail.com
- hazelkateanselmo@gmail.com
- encoder@gmail.com
- admin@gmail.com
- non-faculty@gmail.com
- faculty@gmail.com
- admin-two@gmail.com
- encoder-two@gmail.com

Form Fields:

- Birthday*: mm/dd/yyyy
- Age*
- Civil Status*
- Religion*

Address Section:

- House Number*
- Street*
- Barangay*
- Municipality*

Contact Section:

- City/Province*
- + ADD ADDRESS**

After creating a "User", go to the tab corresponding to the chosen account type. By clicking 'Action' or double-clicking the user, you will need to select the email you used during "User" creation and here, we can start filling out the account details.

PRC License for Physicians

Physician

The Physicians that you create or modify here will reflect on Medical Records

 UPLOAD PROFILE PICTURE

Current Account: hazelkateanselmo@gmail.com*

hazelkateanselmo@gmail.com

PRC License*

PTR No.*

First Name *

Middle Initial

Last Name *

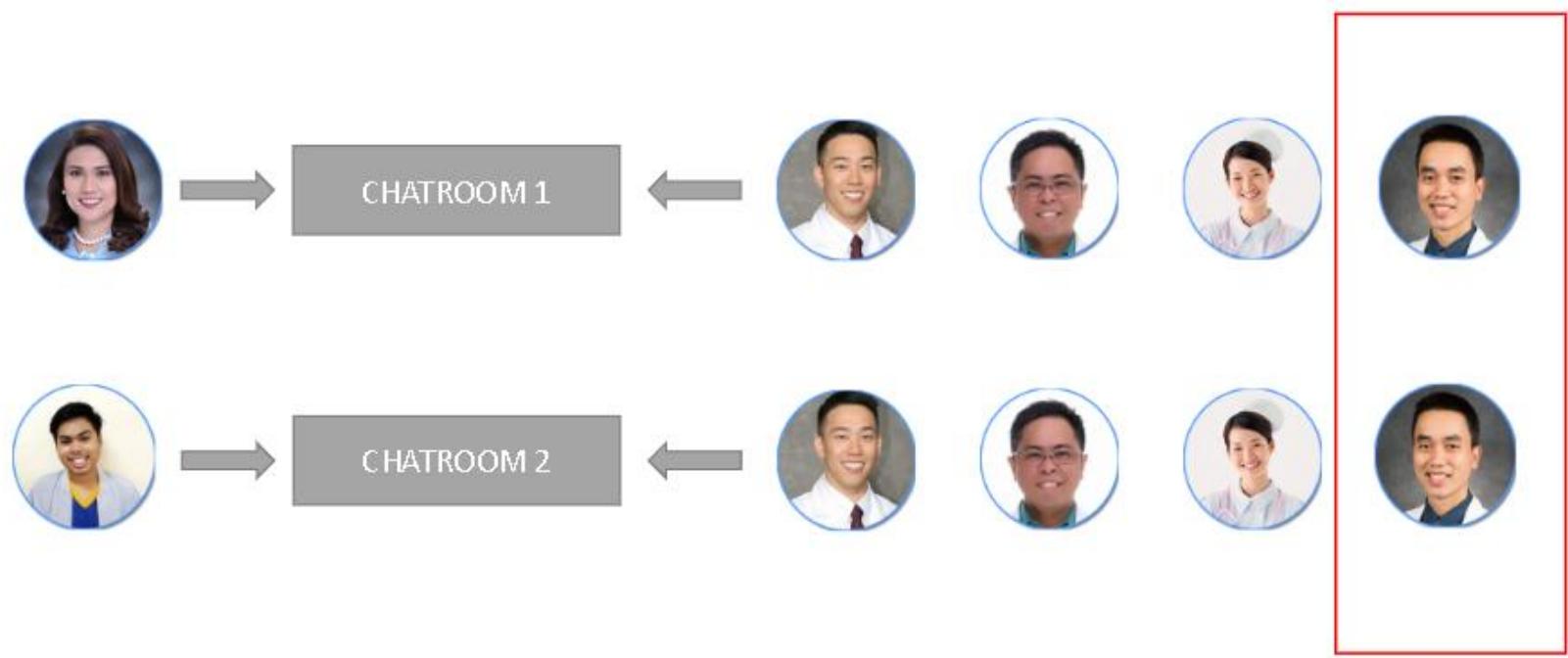
Suffix

Educational Background*

CLEAR CANCEL SAVE DELETE

Every role has a unique field required for them to sign up as mentioned before. Following the "Assigning User Accounts" above, physicians require a PRC License and a PTR No. **Note that the PRC License is a one-time input field meaning once saved, there is no way of editing it.**

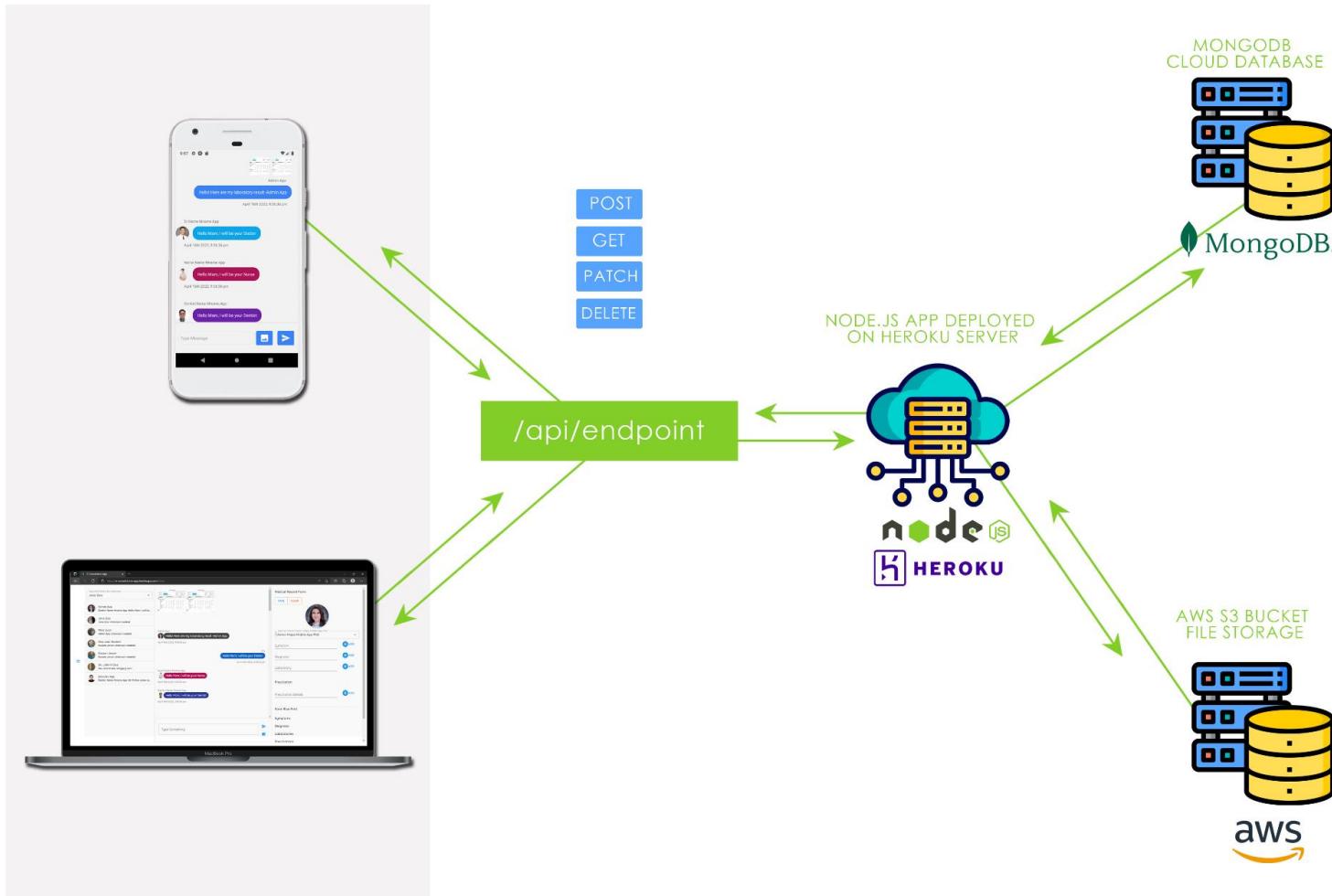
Chatrooms for New Physicians



Every new physicians added to the system are automatically included to all the existing chatrooms available.

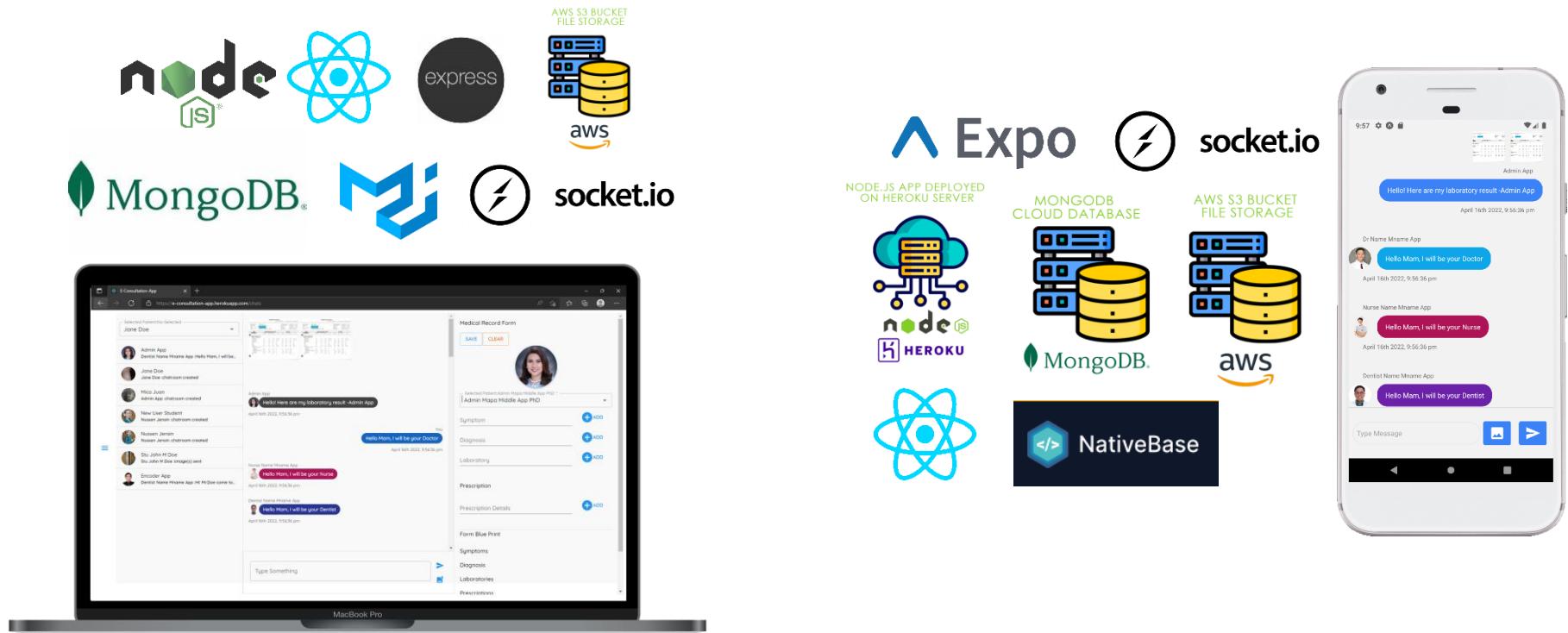
V. SYSTEM ARCHITECTURE

Restful API



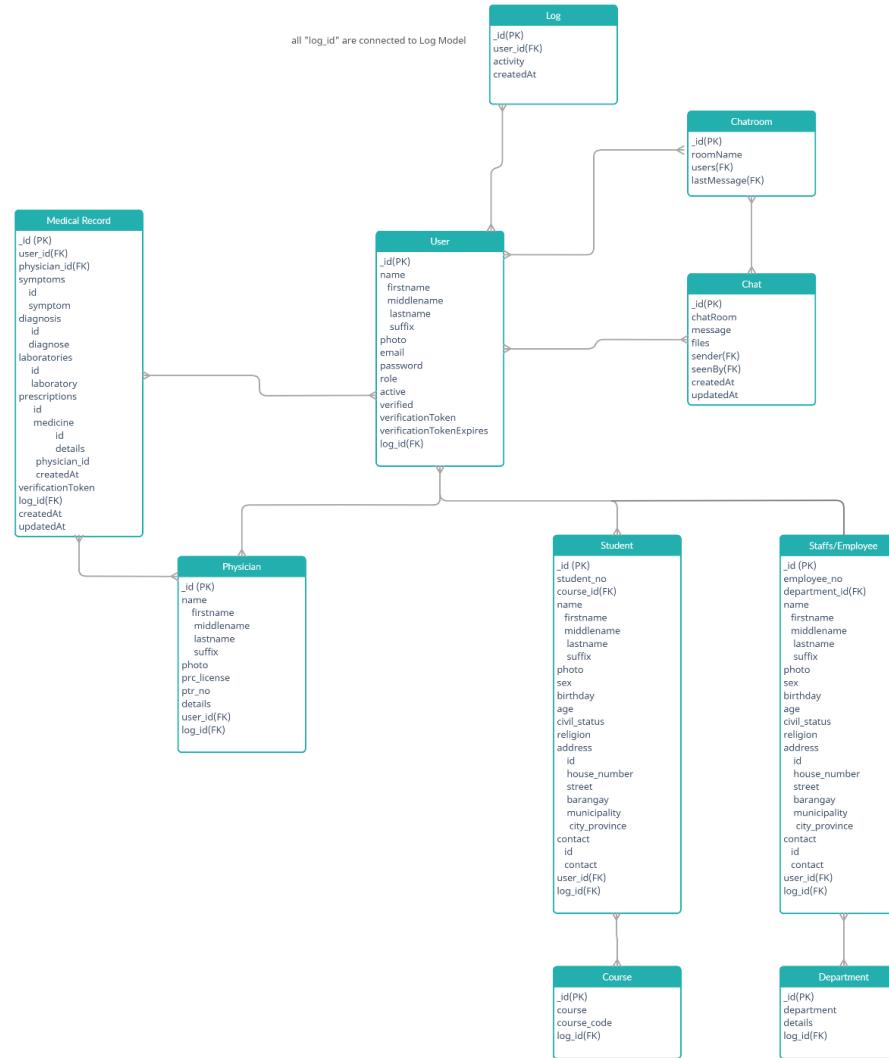
The figure above shows the model of the Restful API and overall architecture used to run the system.

Project Architecture



The figure above shows the tools used to create the system in a web and mobile client.

Relational Database Management System



The figure above shows the tables and the relational models of data.

Cloud Servers

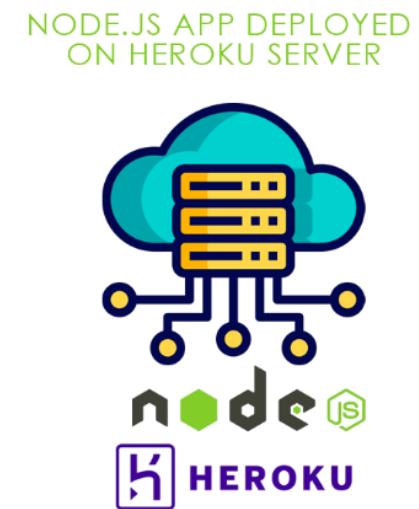
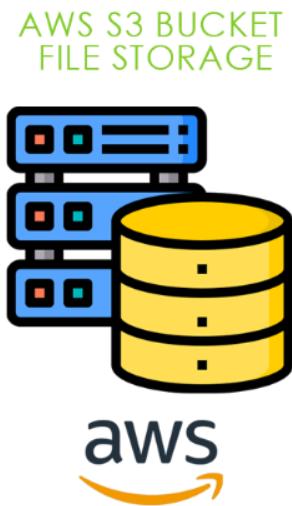


Figure above shows the server-owned APIs

Limitations

```
C:\Windows\system32\cmd.exe - "node" "C:\Users\URSM\AppData\Roaming\npm\node_modules\expo-cli\bin\expo.js" build:android -t apk
  iOS build
    ✓ Using remote iOS credentials (Expo server)

    If you provide your Apple account credentials we will be able to generate all necessary build credentials and fully validate them.
    This is optional, but without Apple account access you will need to provide all the missing values manually and we can only run minimal validation on them.
    ✓ Do you want to log in to your Apple account? ... yes

      > Log in to your Apple Developer account to continue
      ✓ Apple ID: ... zedekfelix7@gmail.com
      > The password is only used to authenticate with Apple and never stored on EAS servers
        Learn more: https://bit.ly/2VtGWhU
      ✓ Password (for zedekfelix7@gmail.com): ... *****
      > Saving Apple ID password to the local Keychain
        Learn more: https://docs.expo.dev/distribution/security#keychain
      ✓ Logged in, verify your Apple account to continue
      Two-factor Authentication (6 digit code) is enabled for zedekfelix7@gmail.com. Learn more: https://support.apple.com/en-us/HT204915

      ✓ Please enter the 6 digit code you received at +63 ..... ... *82: ... 868469
      ✓ Valid code
      ✓ Logged in and verified
      Authentication with Apple Developer Portal failed!
        UnexpectedAppleResponse: Apple provided the following error info:
        You are not registered as an Apple Developer. Please visit Apple Developer Registration.
        https://developer.apple.com/register/

C:\Users\URSM\Desktop\sirAnorico\e-consultation-mobile-app>eas build --platform all
  Linked to project @zedek/e-consultation-mobile-app ( https://expo.dev/accounts/zedek/projects/e-consultation-mobile-app )

  Android build
    ✓ Using remote Android credentials (Expo server)
    ✓ Using Keystore from configuration: Build Credentials D220Y4c1Xl (default)
    ✓ Uploaded to EAS 2s Learn more: https://expo.fyi/eas-build-archive

  iOS build
    ✓ Using remote iOS credentials (Expo server)

    If you provide your Apple account credentials we will be able to generate all necessary build credentials and fully validate them.
    This is optional, but without Apple account access you will need to provide all the missing values manually and we can only run minimal validation on them.
    ✓ Do you want to log in to your Apple account? ... yes

      > Log in to your Apple Developer account to continue
      ✓ Apple ID: ... zedekfelix7@gmail.com
      > Restoring session C:\Users\URSM\app-store\auth\zedekfelix7@gmail.com\cookie
      > Session expired Local session
      > The password is only used to authenticate with Apple and never stored on EAS servers
        Learn more: https://bit.ly/2VtGWhU
      ✓ Password (for zedekfelix7@gmail.com): ... *****
      > Saving Apple ID password to the local Keychain
        Learn more: https://docs.expo.dev/distribution/security#keychain
      ✓ Logged in New session
      Authentication with Apple Developer Portal failed!
        Error: You have no team associated with your Apple account, cannot proceed.
        (Do you have a paid Apple Developer account?)
```

No TEAM associated with Apple ID account

Full access to a comprehensive set of development tools	•
Advanced app capabilities and services	•
Code-level support	•
App distribution on the App Store	Full-screen logo •
App management, testing, and analytics with App Store Connect	•
Safari Extensions distribution	•
Software distribution outside the Mac App Store	•
Custom app distribution with Apple Business Manager and Apple School Manager	•
Proprietary app distribution to your employees with Apple Business Manager	•
Ad hoc distribution for testing and internal use	•
Access to members-only developer events or additional event content	•
Cost	Free
	99 USD**

To publish an application in the app store, you are required to pay the following amount shown in the figure above.

Performance and Analytics

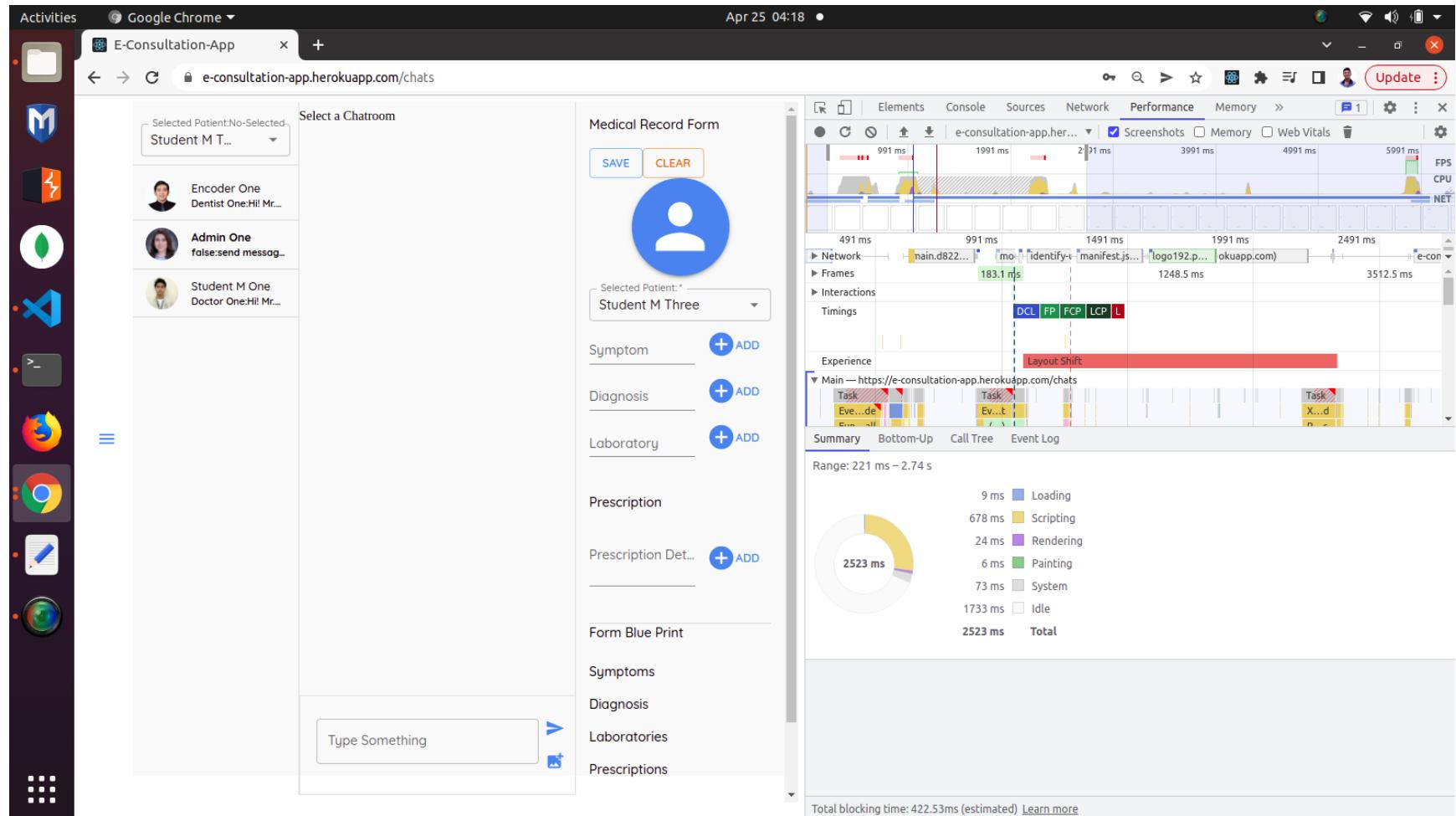


Figure above shows physician's chat performance analytics.

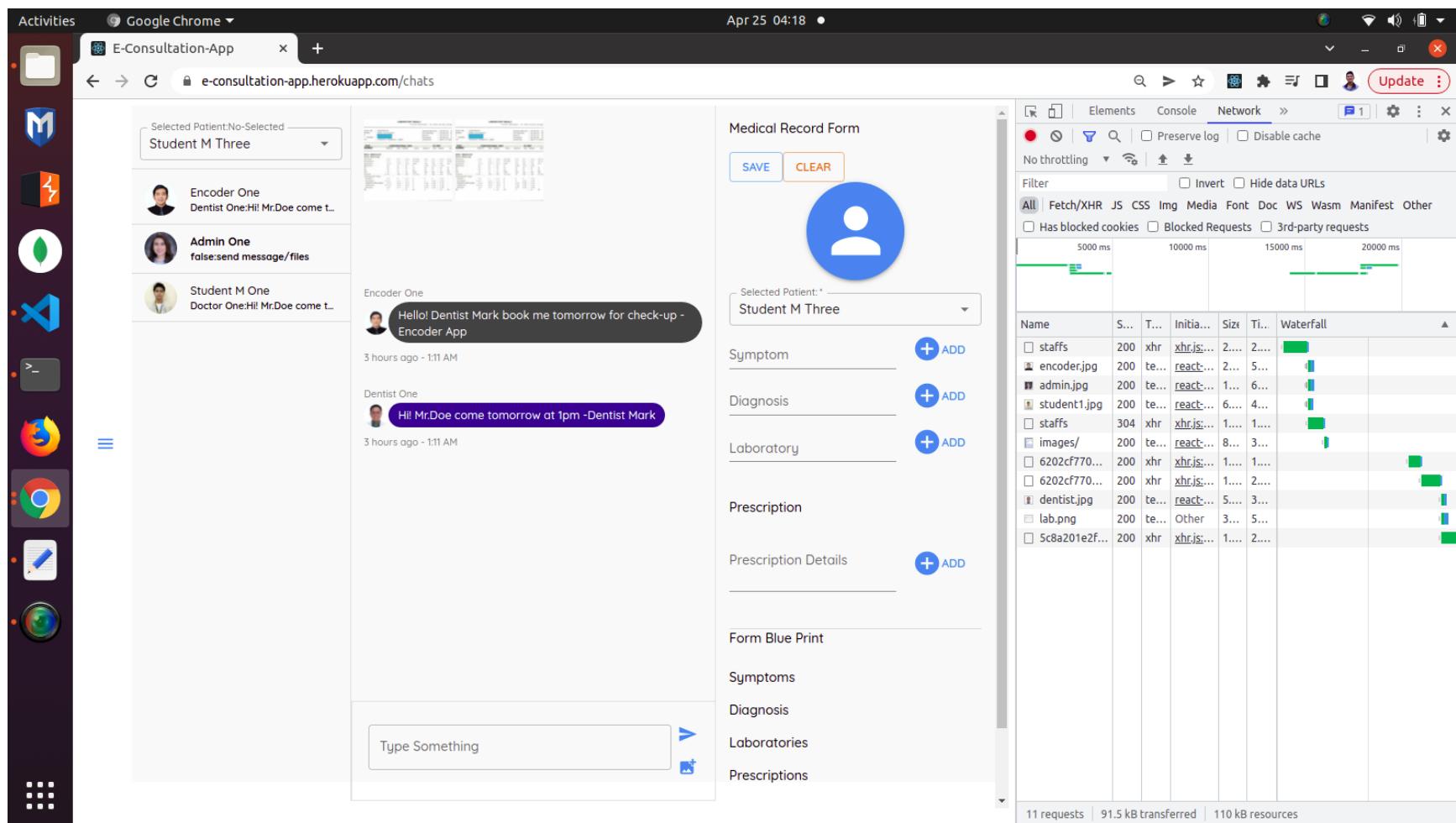


Figure above shows physician's chat network analytics.

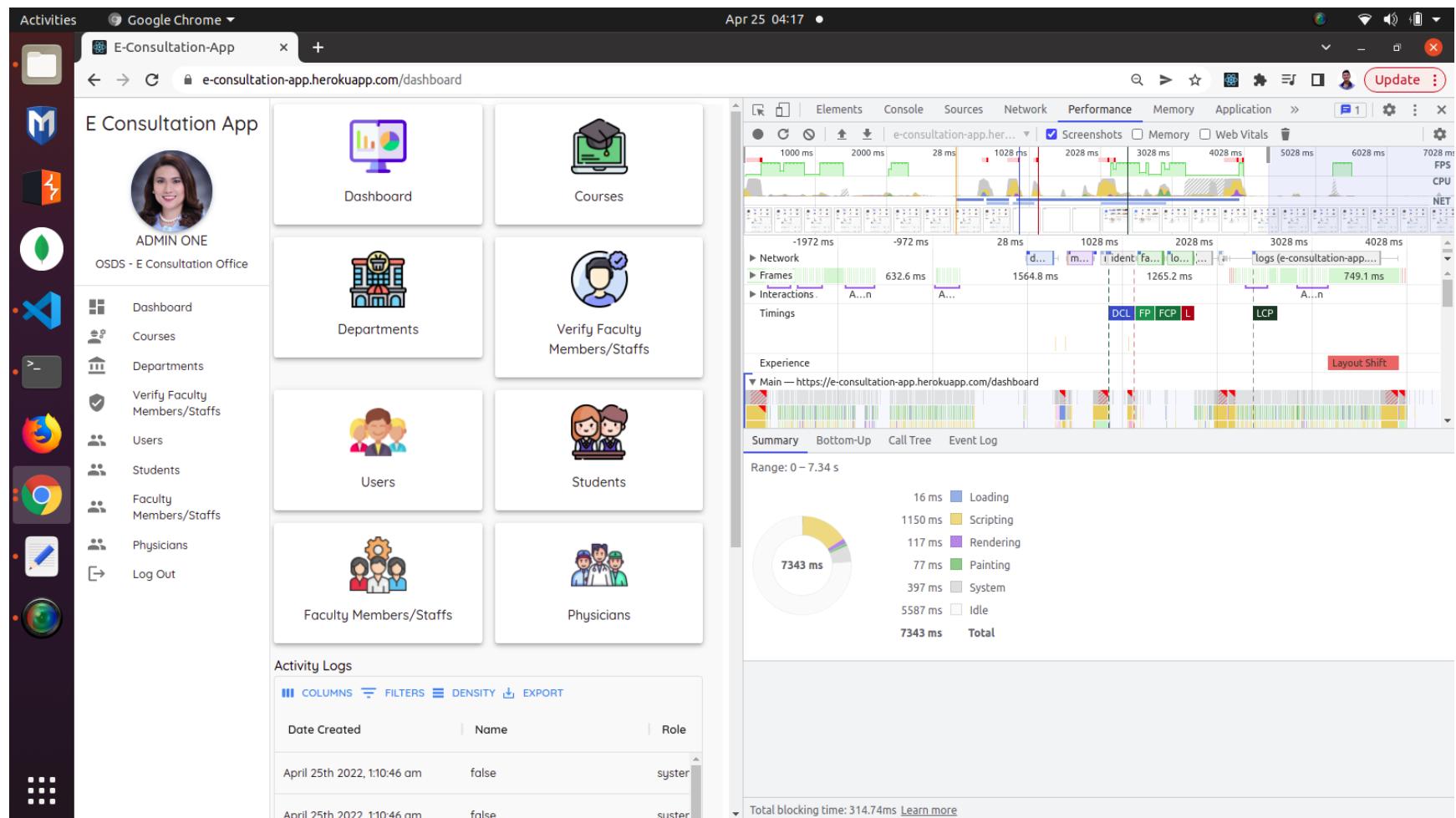


Figure above shows admin's dashboard network analytics.

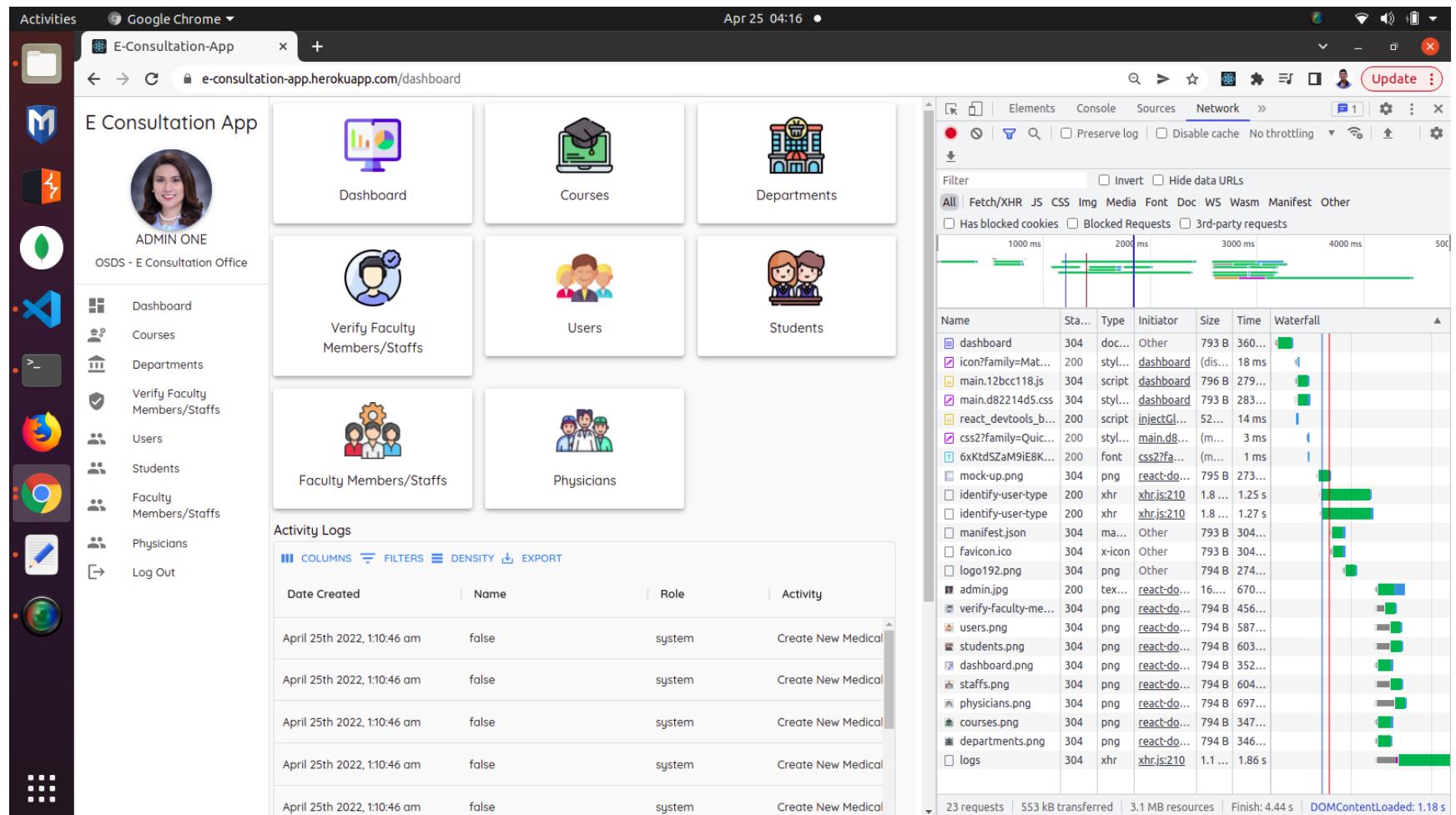


Figure above shows admin's network analytics.

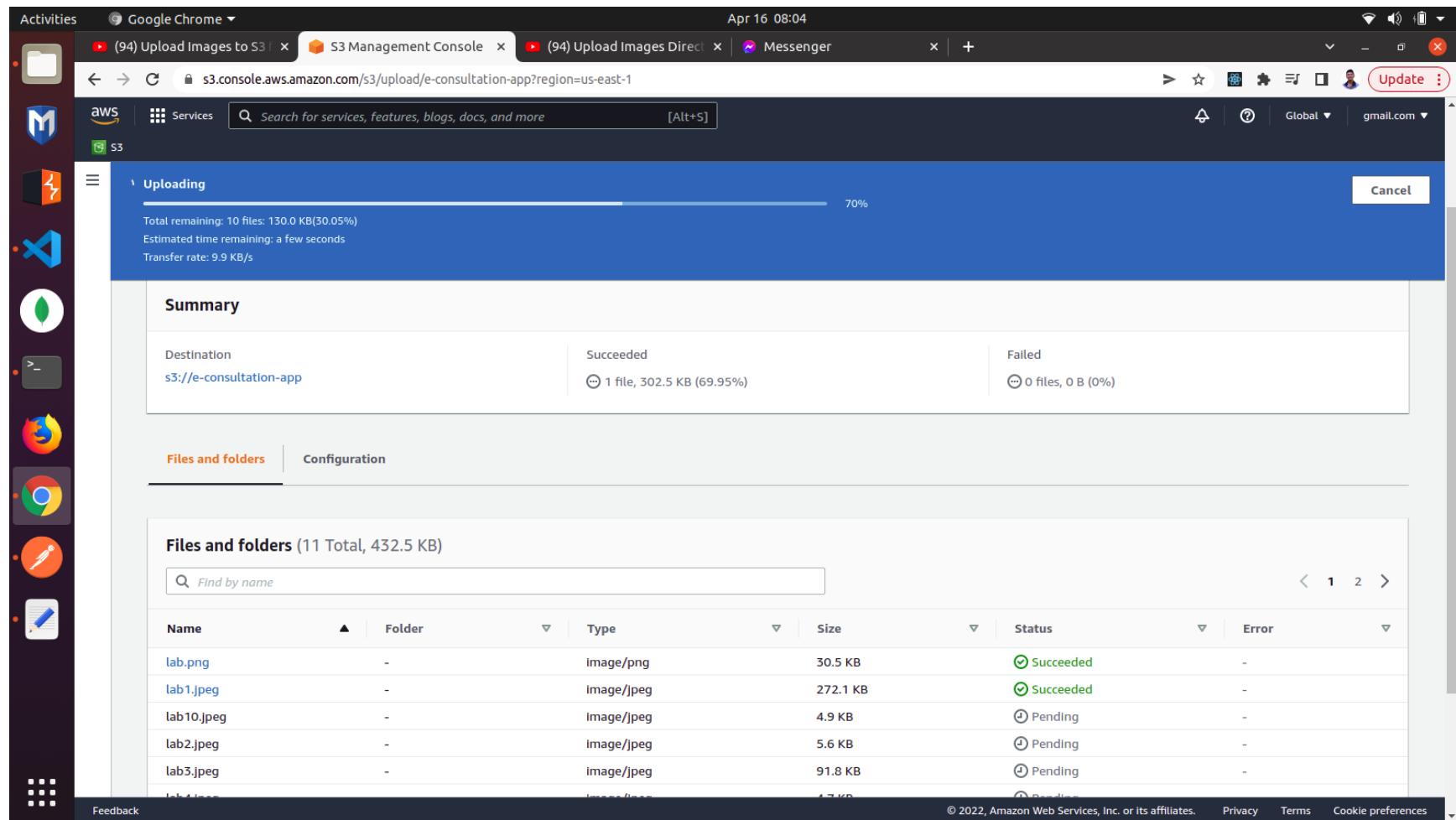


Figure above shows the AWS upload speed.

Website Speed Test | Pingdom Test

https://tool.pingdom.com/#6017f47423000000

Pingdom Website Speed Test

Enter a URL to test the page load time, analyze it, and find bottlenecks.

URL: https://e-consultation-app.herokuapp.com/ Test from: North America - USA - San Francisco START TEST

The internet is fragile. Be the first to know when your site is in danger.

START YOUR FREE 14-DAY TRIAL

Your Results:

	Performance grade B 90	Page size 1.3 MB
Load time 962 ms	Requests 9	

Improve page performance

Figure above shows the page load up performance

The screenshot shows a website speed test report from Pingdom. At the top, there's a navigation bar with icons for refresh, search, and user profile, followed by the URL <https://tool.pingdom.com/#6017f4742300000>. Below the navigation is a section titled "Improve page performance" which lists seven suggestions with grades and descriptions:

GRADE	SUGGESTION
F	34 Add Expires headers
B	89 Compress components with gzip
B	90 Make favicon small and cacheable
A	96 Make fewer HTTP requests
A	100 Avoid empty src or href
A	100 Put JavaScript at bottom
A	100 Reduce the number of DOM elements

Below this is a "Response codes" section showing a table with one row for "200 OK".

RESPONSE CODE	RESPONSES
200 OK	9

There are two more sections at the bottom: "Content size by content type" and "Requests by content type".

Content size by content type

	PERCENT	
Image	72.09%	957.0 KB
Script	24.48%	325.0 KB
Font	2.29%	30.4 KB
CSS	0.45%	5.9 KB
Total		

Requests by content type

	PERCENT
Total	

Figure above shows the page load up performance