Healthcare Website

Group Project 1

By

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CS 421/621 Adv Web Application Development

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1.) Introduction

The goal of this project is to develop a Healthcare website application that includes various features patients and providers can use to effect health care. The application provides an interface that allows the patients to securely inform professionals of their medical conditions, medications, and other history. Patient profiles are created to store information. In addition, patient has access to communicate to representatives or anyone in the department they desire in the form of direct messaging. Providers can schedule appointments and update patient information. With security being of utmost importance, both healthcare provider and patients will have the reliability to know that their information is secure through embedded login system using sessions. Session handling allows for a multi-user environment.

2.) Technologies

Multiple technologies were used in the implementation of this web application. The following are the front-end technologies used for this web application.

a.) HTML – This is the integral component of the front side that ensure appropriate structure is developed and can be presented to the user.
b.) CSS – Is the styling mechanism that serves as the texturing component and beautifying the web application
c.) JavaScript – Served as adding interaction between pages and internal components.
d.) Bootstrap – To provide additional presentable features to the application, Bootstrap served for styling forms, action objects and text.
e.) JQuery – Dynamic content
f.) Python – Served to make pages active and provide interaction

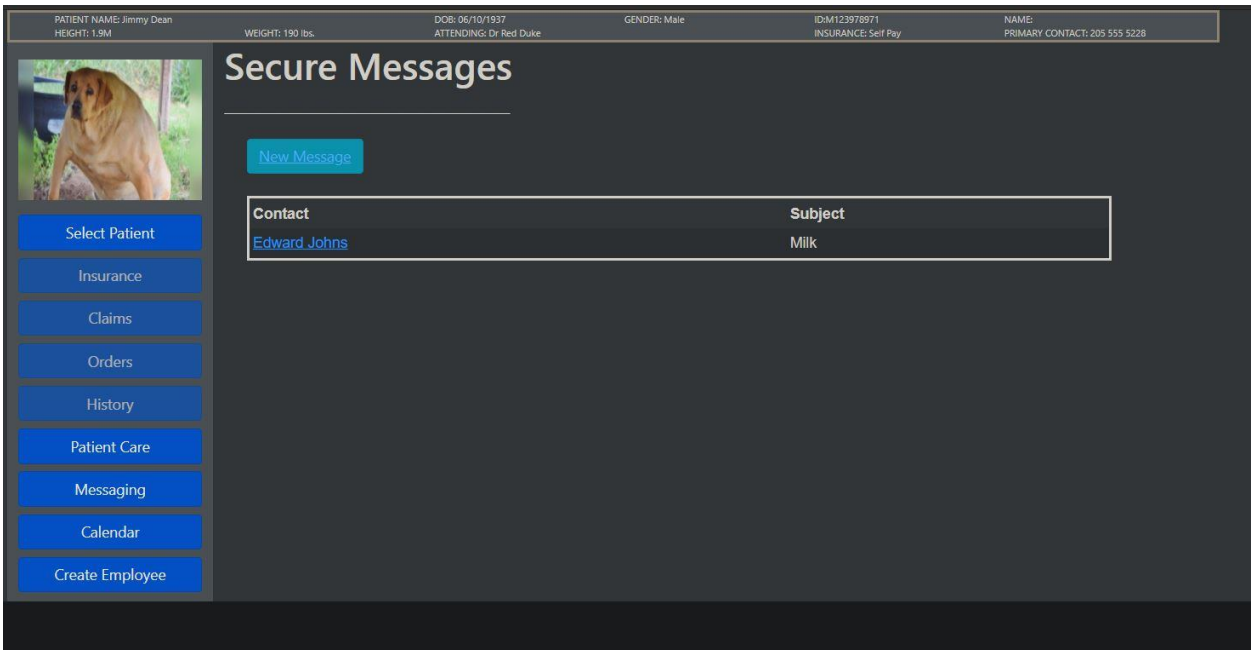
The following are the back-end technologies used for this application

a.) Python – programming language to provide interaction between the front end and the back end of the application
b.) Flask – Rest APIs and HTML templates
c.) SQLAlchemy – library dedicated to providing interaction and communication between Python, Flask and the database (ORM)
d.) SQLite3 – Database technology for non-ORM database interaction
e.) Hashlib – Generation of sessionId
f.) Datetime – Date calculation, parsing, display

The following are other technology tools used for management and communication

a.) IntelliJ - IDE used for development
b.) Visual Studio Code – IDE used for development
c.) Github – version control to assist in development and merging final product
d.) Discord - program used for communication and keep team updated on tasks

3.) Results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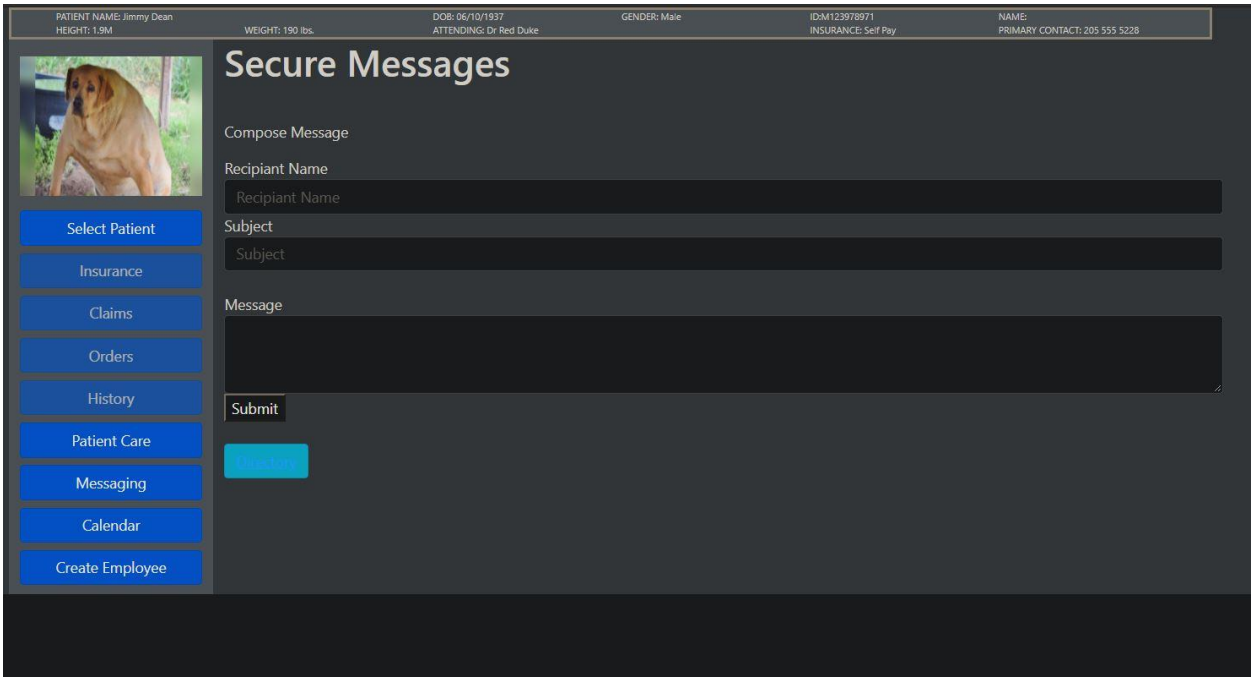
HEIGHT: 1.9M
WEIGHT: 190 lbs.
DOB: 06/10/1937
ATTENDING: Dr Red Duke
GENDER: Male
ID:M123978971
INSURANCE: Self Pay
NAME:
PRIMARY CONTACT: 205 555 5228
Secure Messages
New Message
Contact
Subject
Edward Johns
Milk
Select Patient
Insurance
Claims
Orders
History
Patient Care
Messaging
Calendar
Create Employee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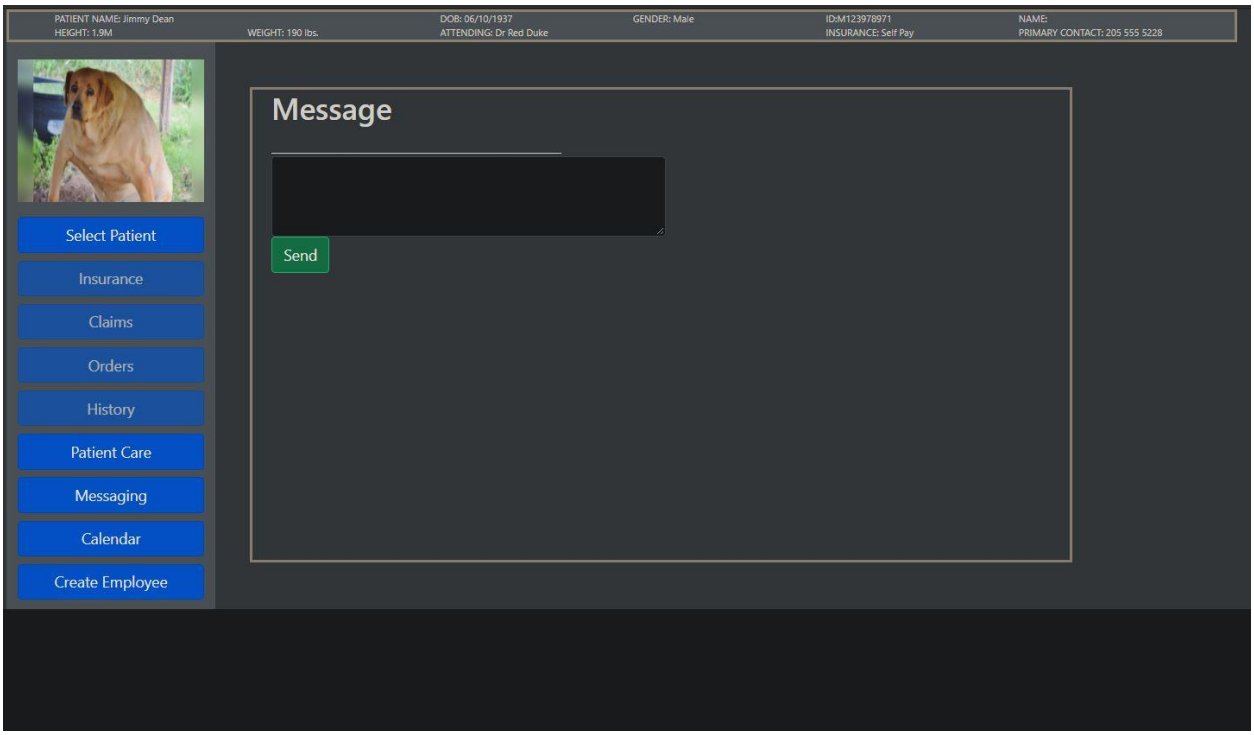
WEIGHT: 190 lbs.
DOB: 06/10/1937
ATTENDING: Dr Red Duke
GENDER: Male
ID:M123978971
INSURANCE: Self Pay
NAME:
PRIMARY CONTACT: 205 555 5228
Secure Messages
Compose Message
Recipiant Name
Recipiant Name
Subject
Subject
Message
Submit
Select Patient
Insurance
Claims
Orders
History
Patient Care
Messaging
Calendar
Create Employee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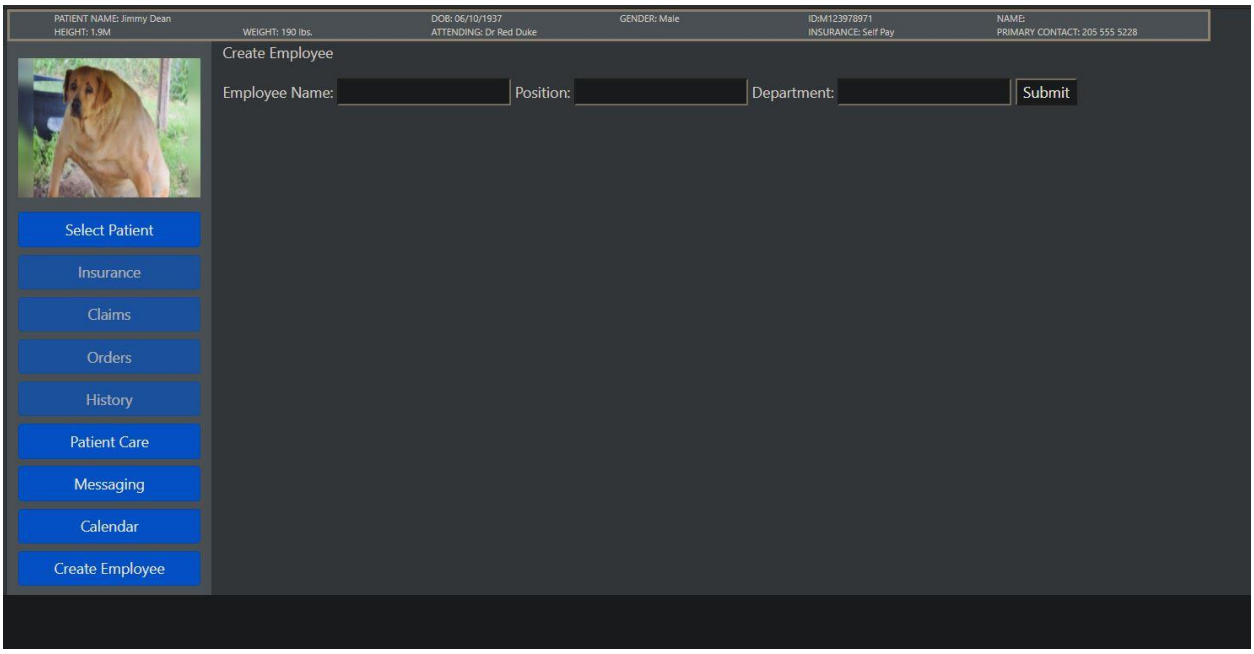
WEIGHT: 190 lbs.
DOB: 06/10/1937
ATTENDING: Dr Red Duke
GENDER: Male
ID:M123978971
INSURANCE: Self Pay
NAME:
PRIMARY CONTACT: 205 555 5228
Message
Send
Select Patient
Insurance
Claims
Orders
History
Patient Care
Messaging
Calendar
Create Employee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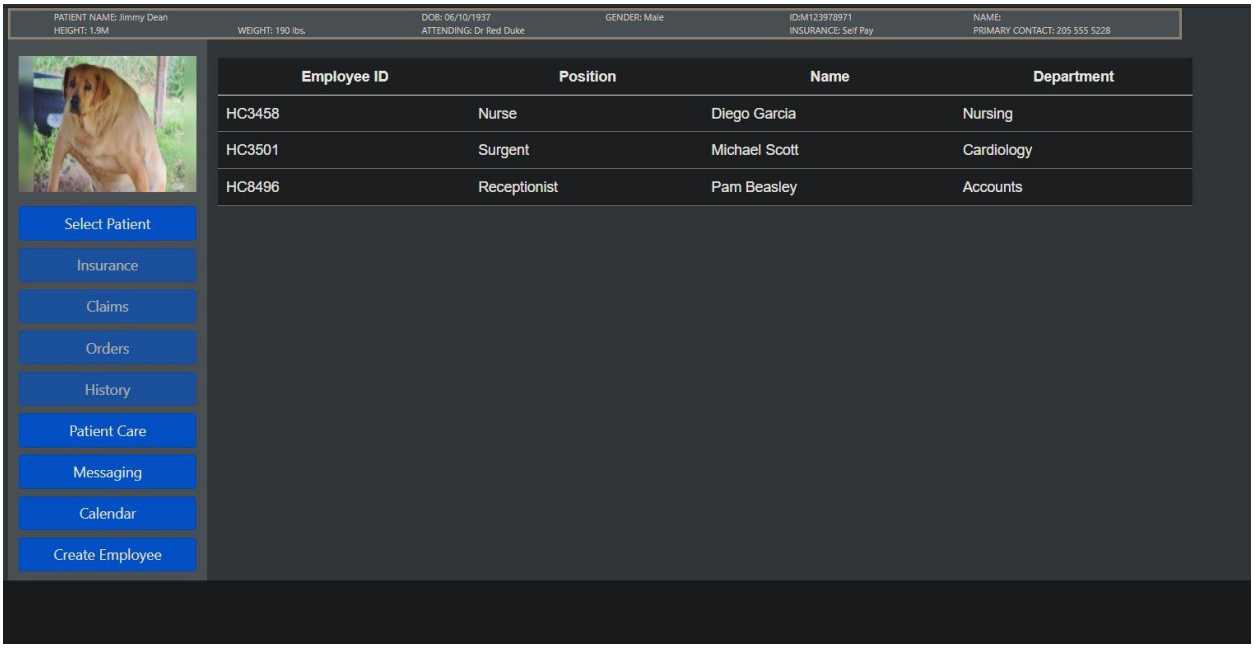
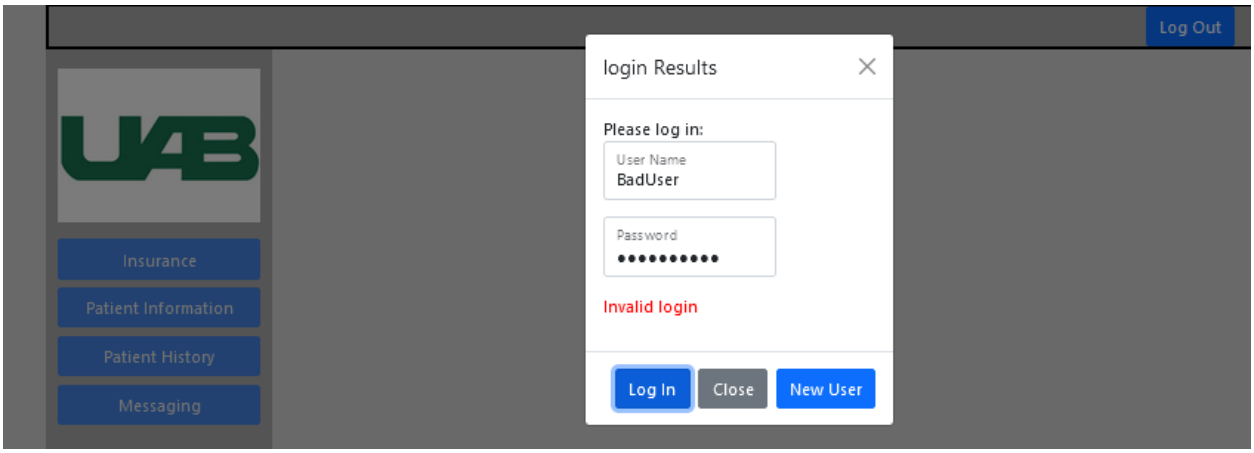
WEIGHT: 190 lbs.
DOB: 06/10/1937
ATTENDING: Dr Red Duke
GENDER: Male
ID:M123978971
INSURANCE: Self Pay
NAME:
PRIMARY CONTACT: 205 555 5228
Create Employee
Employee Name:
Position:
Department:
Submit
Select Patient
Insurance
Claims
Orders
History
Patient Care
Messaging
Calendar
Create Employee

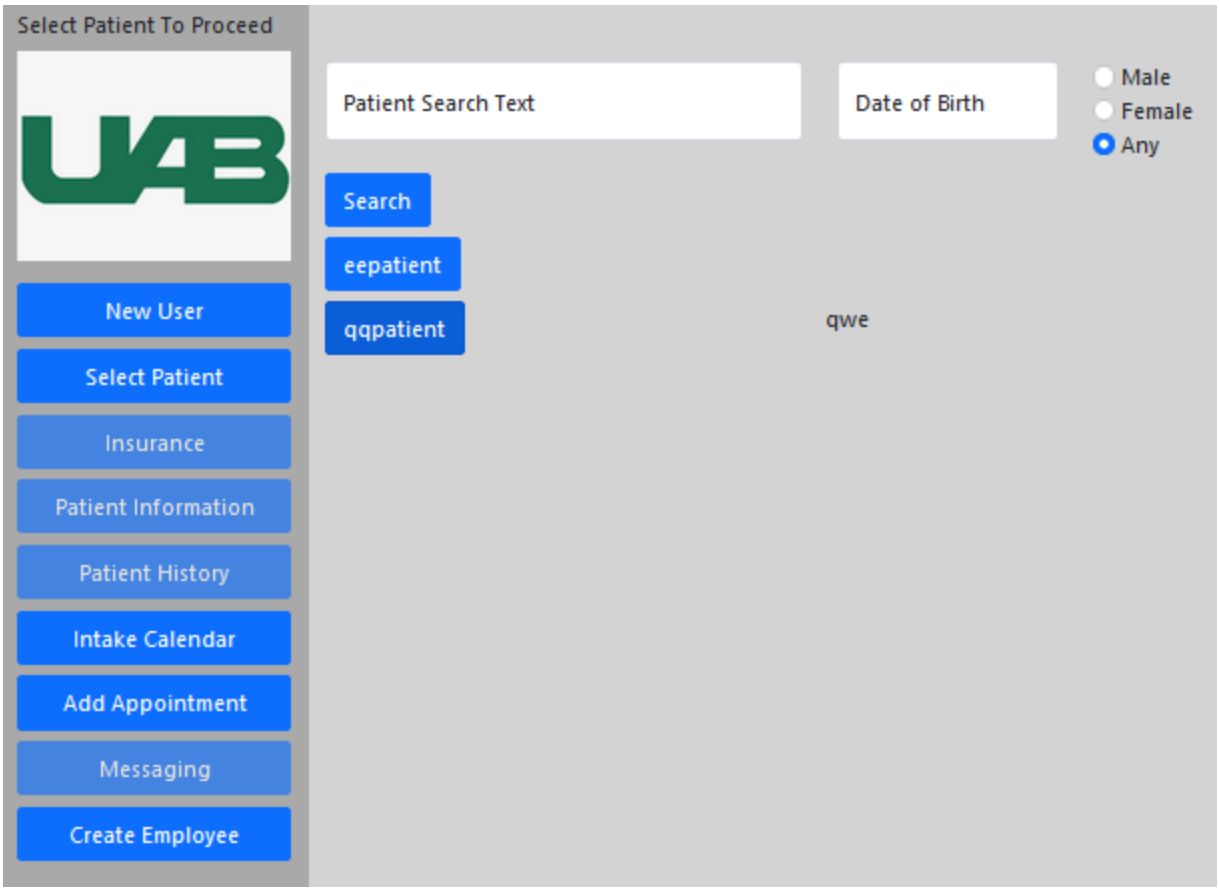

PATIENT NAME: Jimmy Dean
HEIGHT: 1.9M
WEIGHT: 190 lbs.
DOB: 06/10/1937
ATTENDING: Dr Red Duke
GENDER: Male
ID:M123978971
INSURANCE: Self Pay
NAME:
PRIMARY CONTACT: 205 555 5228
Employee ID
Position
Name
Department
HC3458
Nurse
Diego Garcia
Nursing
HC3501
Surgent
Michael Scott
Cardiology
HC8496
Receptionist
Pam Beasley
Accounts
Select Patient
Insurance
Claims
Orders
History
Patient Care
Messaging
Calendar
Create Employee

User Login:

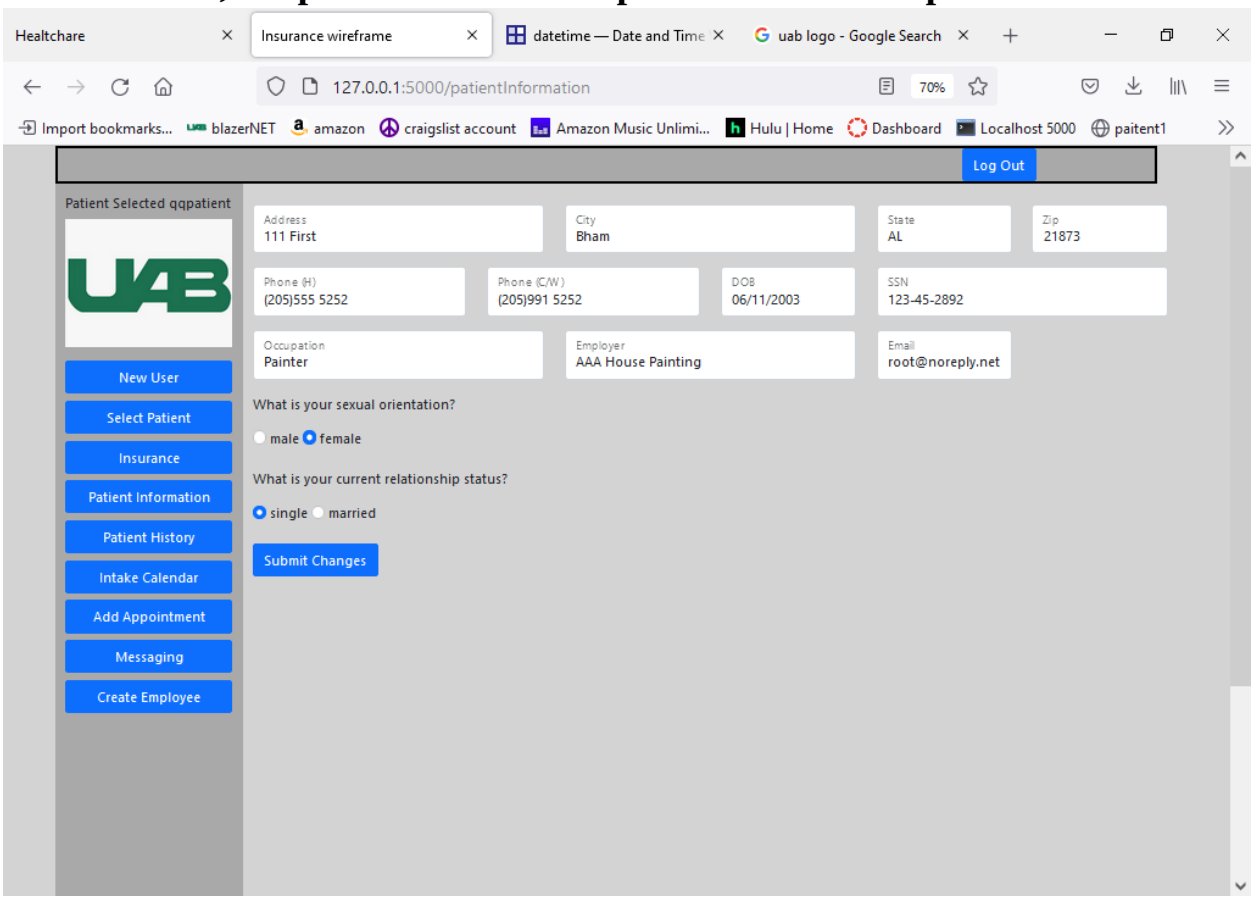


Patient Login has limited options:

Provider Login has more options but starts with several disabled until a patient is selected:

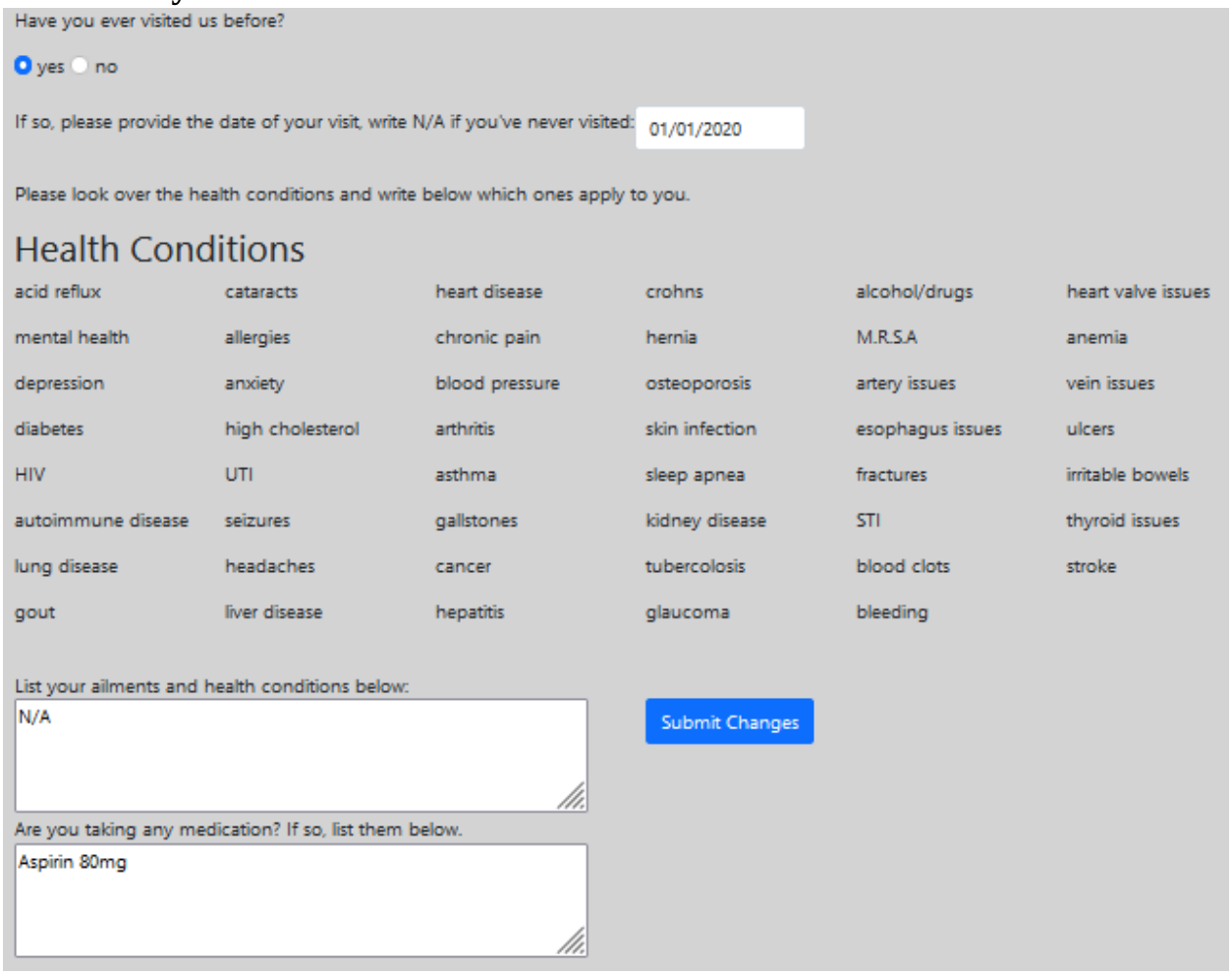

Select Patient To Proceed
Patient Search Text
Date of Birth
Male
Female
Any
Search
eepatient
qqpatient
qwe
New User
Select Patient
Insurance
Patient Information
Patient History
Intake Calendar
Add Appointment
Messaging
Create Employee

Once selected, the provider is able to update data for that patient:

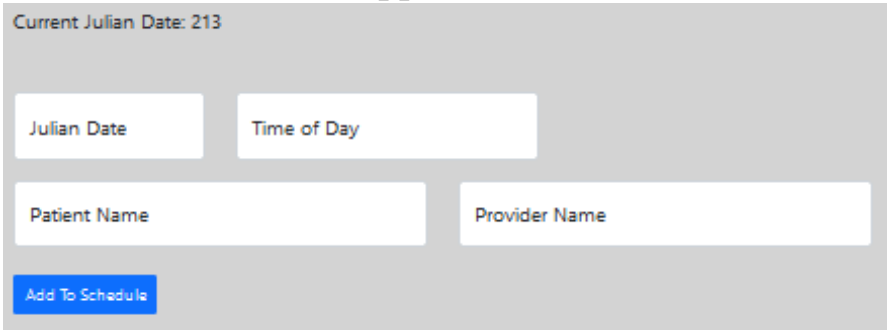


And insurance information:

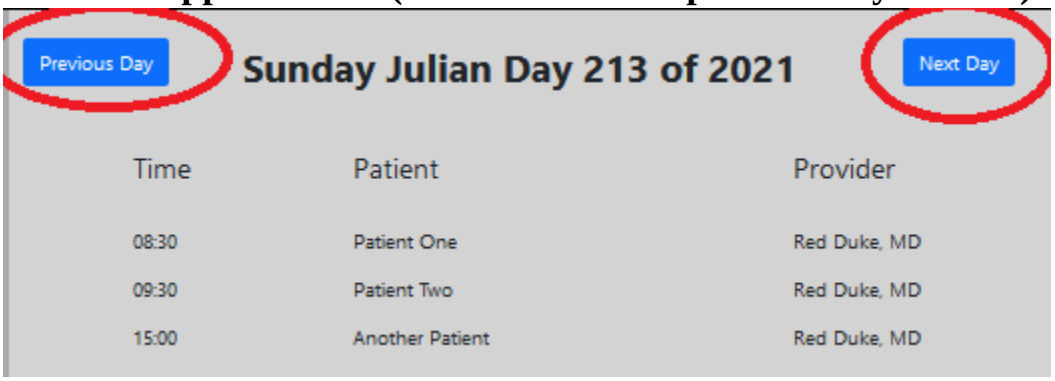
And history:



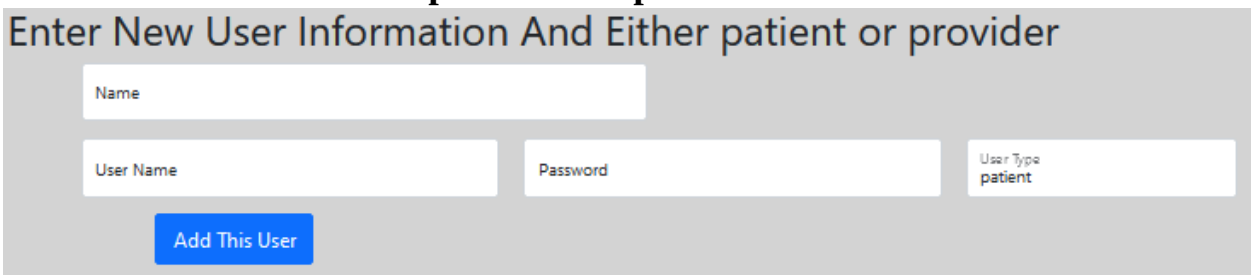
Provider can also add appointments:



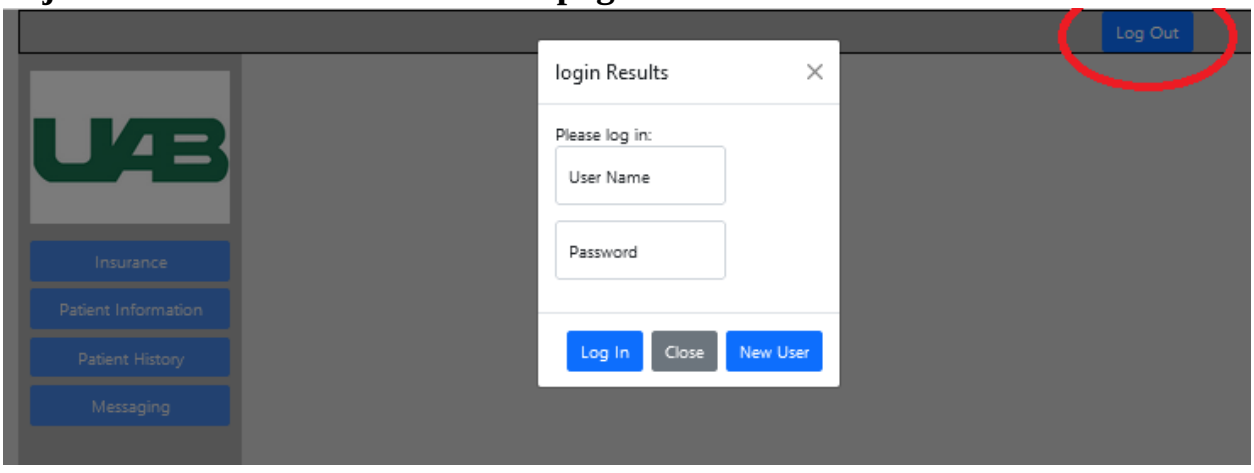
And view appointments (note the next and previous day buttons):



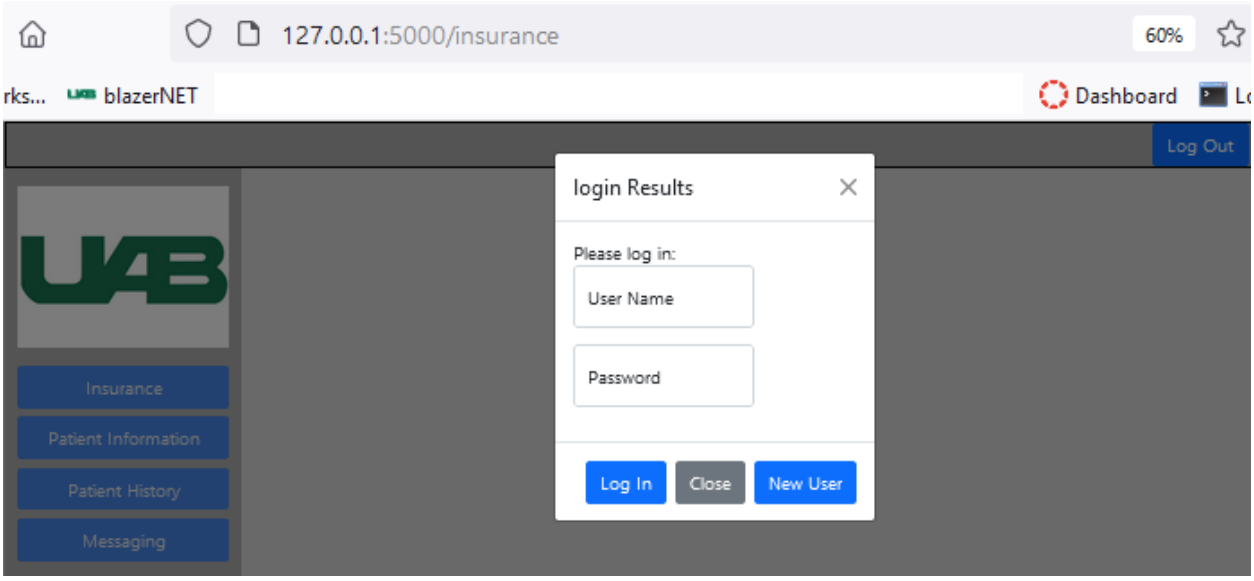
Add User is used to create patients and providers:



Log Out button clears the sessionId cookie and deletes the back end session object then redirects back to main page:

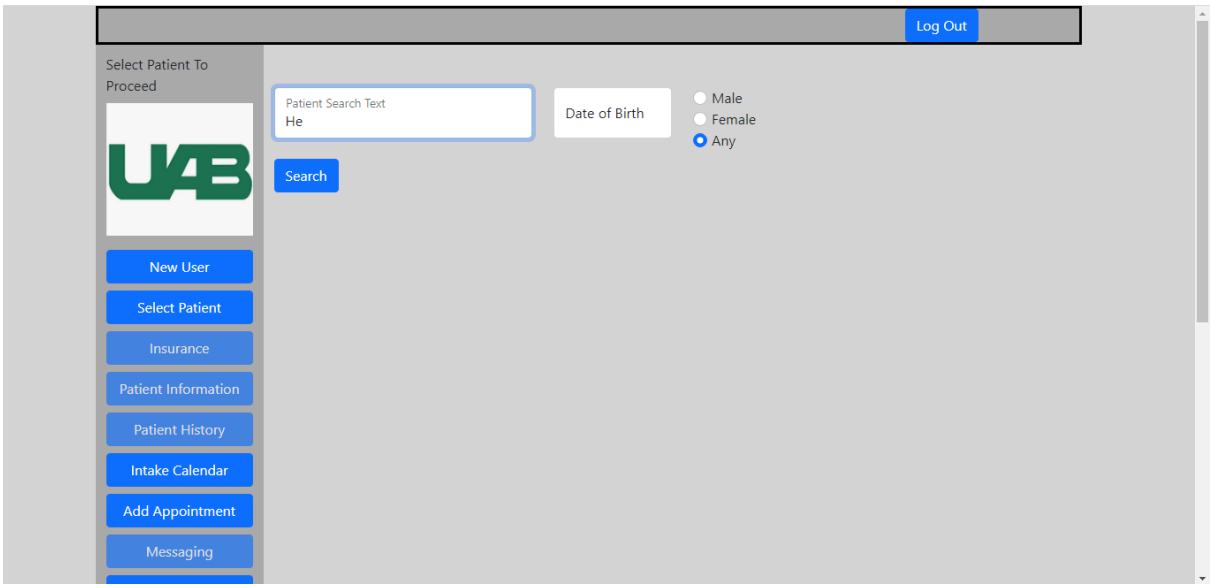


Note that without a valid session, the system redirects back to login and that all server side data requests require a valid session:

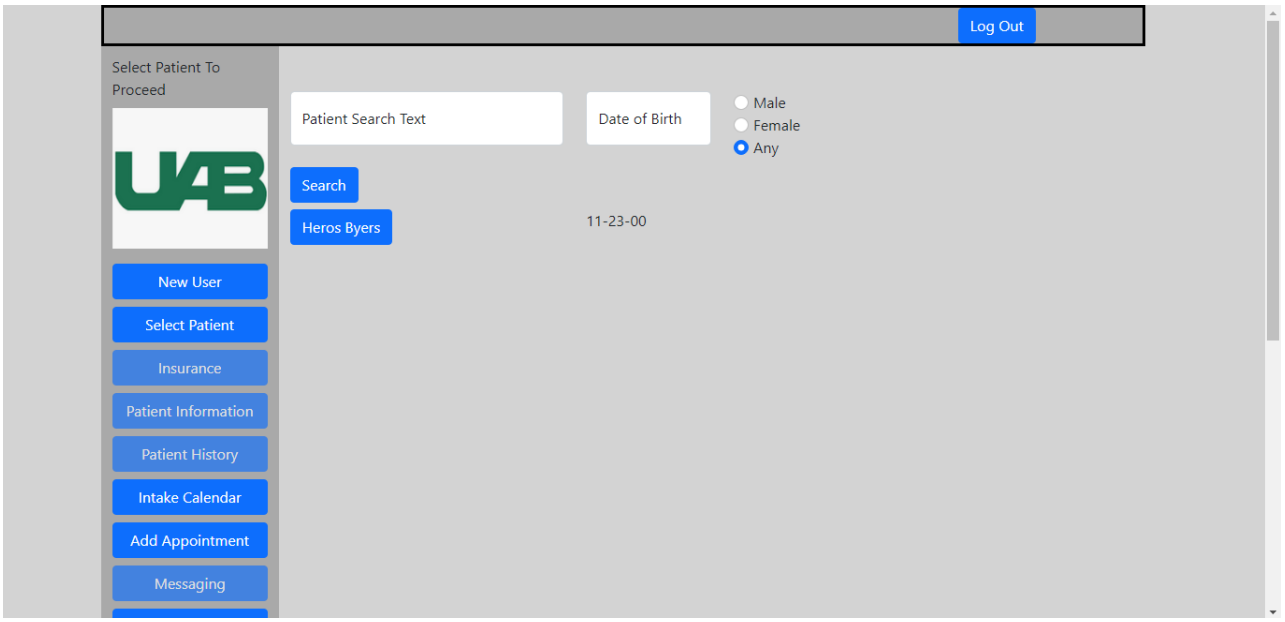


Patient-Select:

Patient select allows providers to search for patients based on name, gender, and DOB:

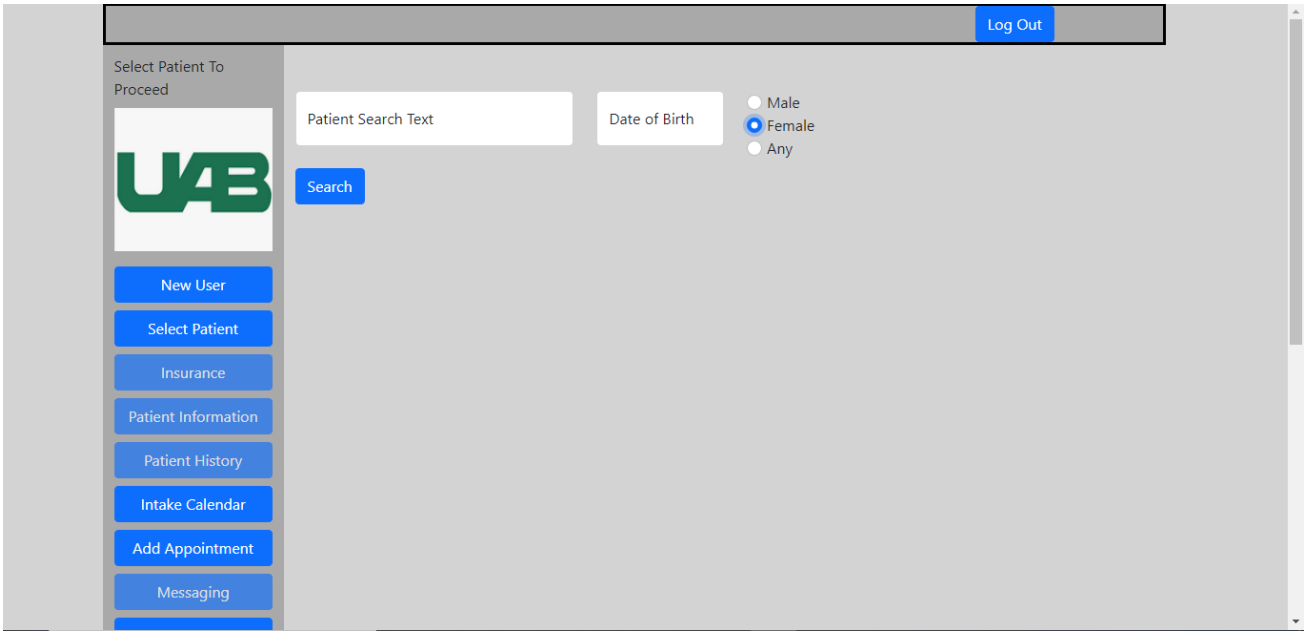


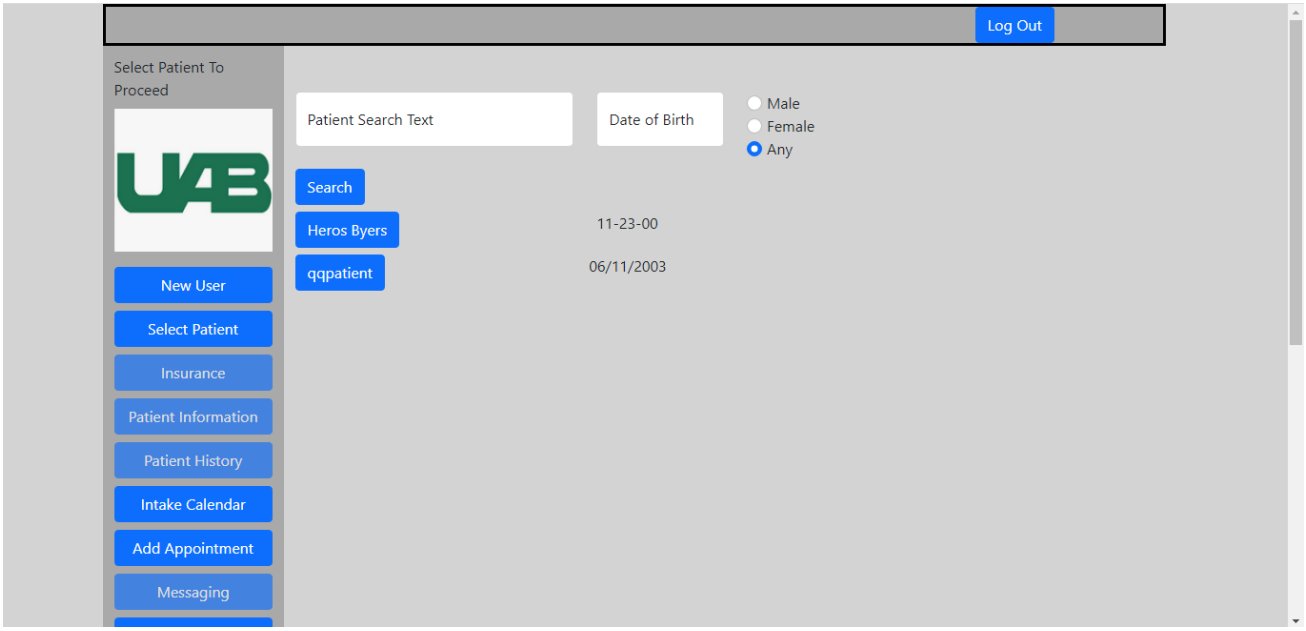
From their it will bring up a clickable button and the DOB for each patient that meets the criteria



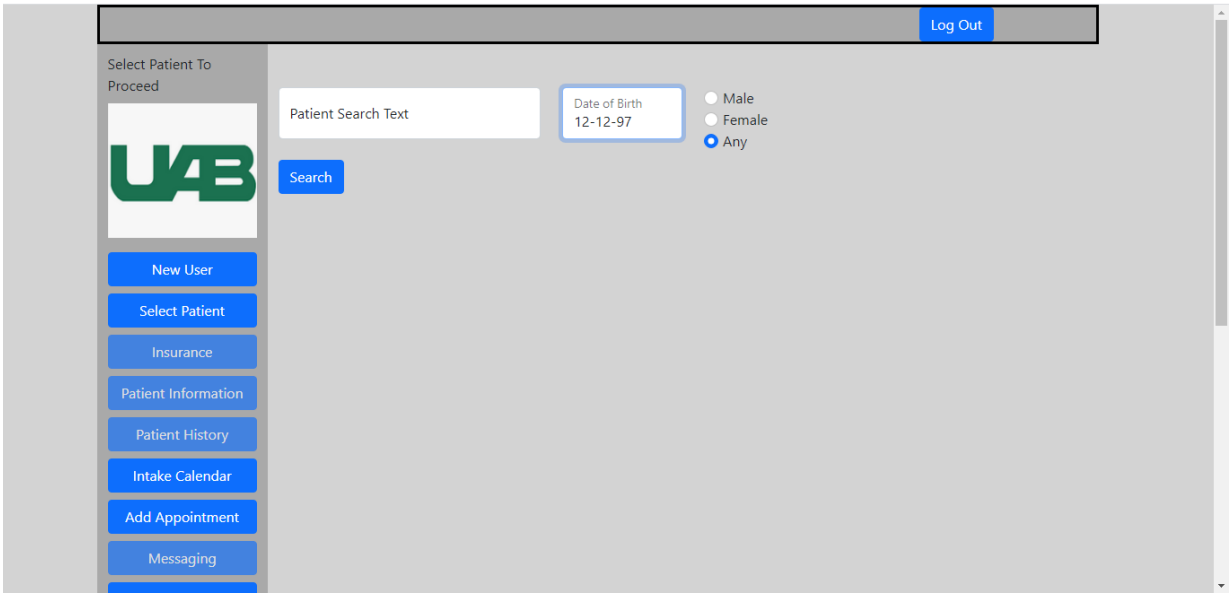
And once that is clicked it will bring you to the patient's page

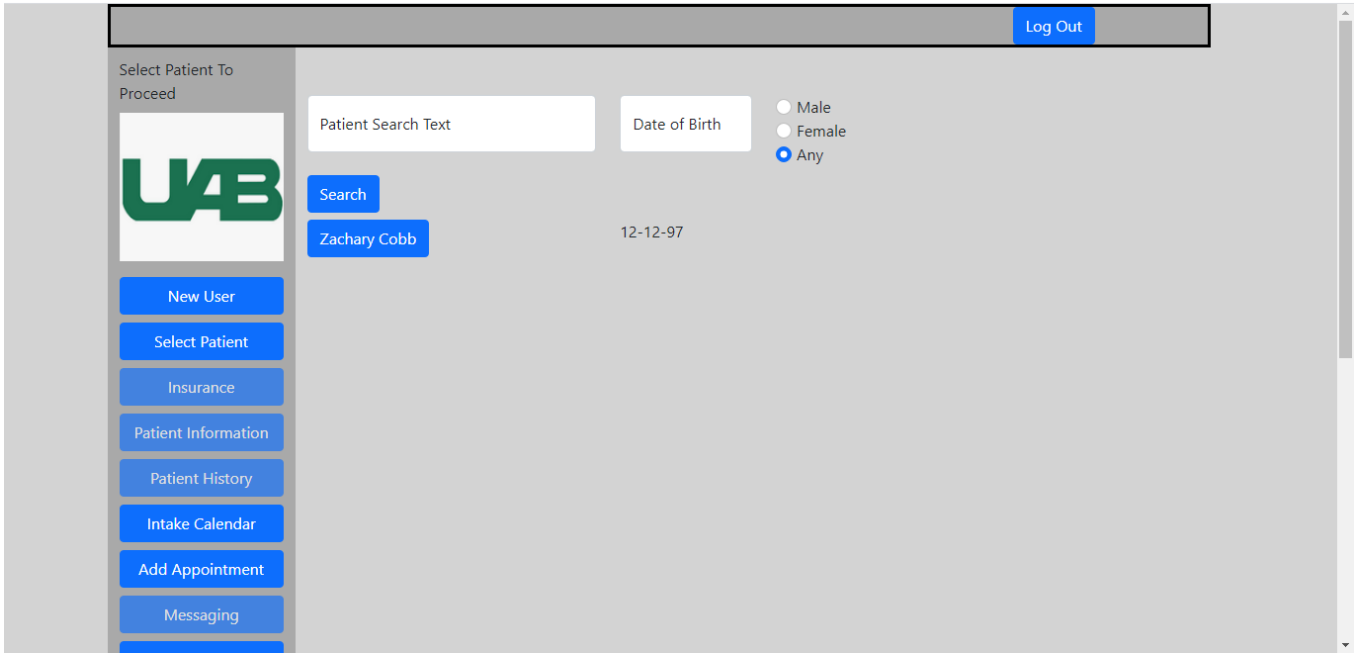
You can also search based off the female gender

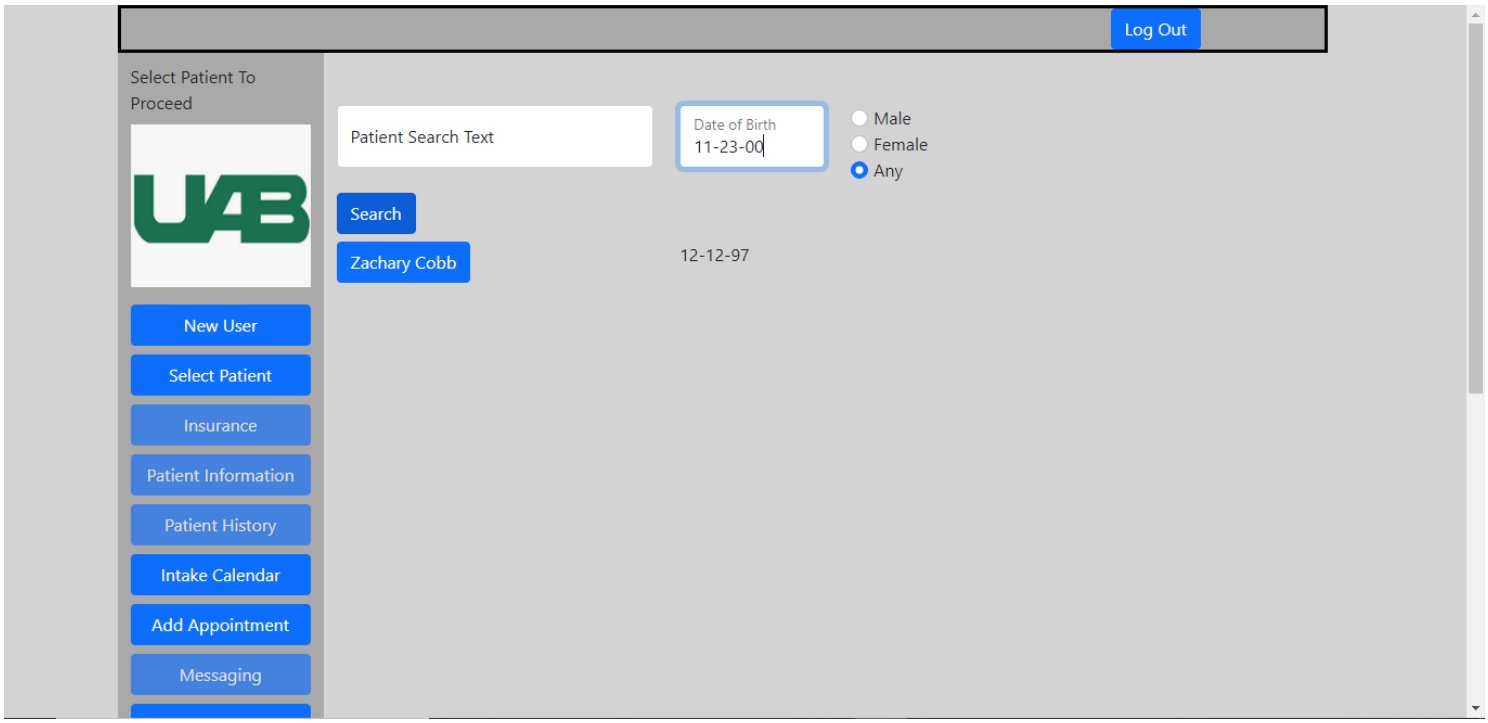


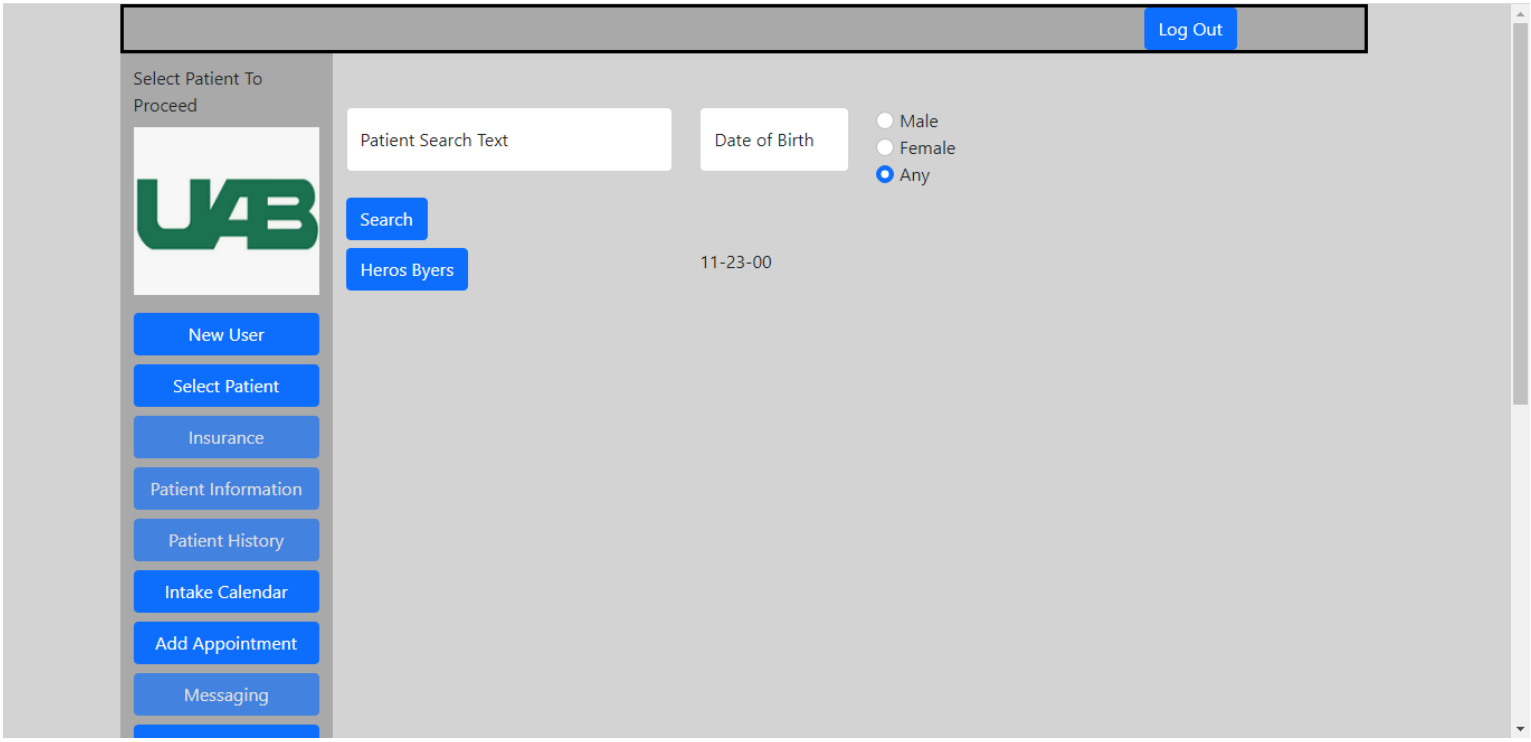


You can also search based off DOB

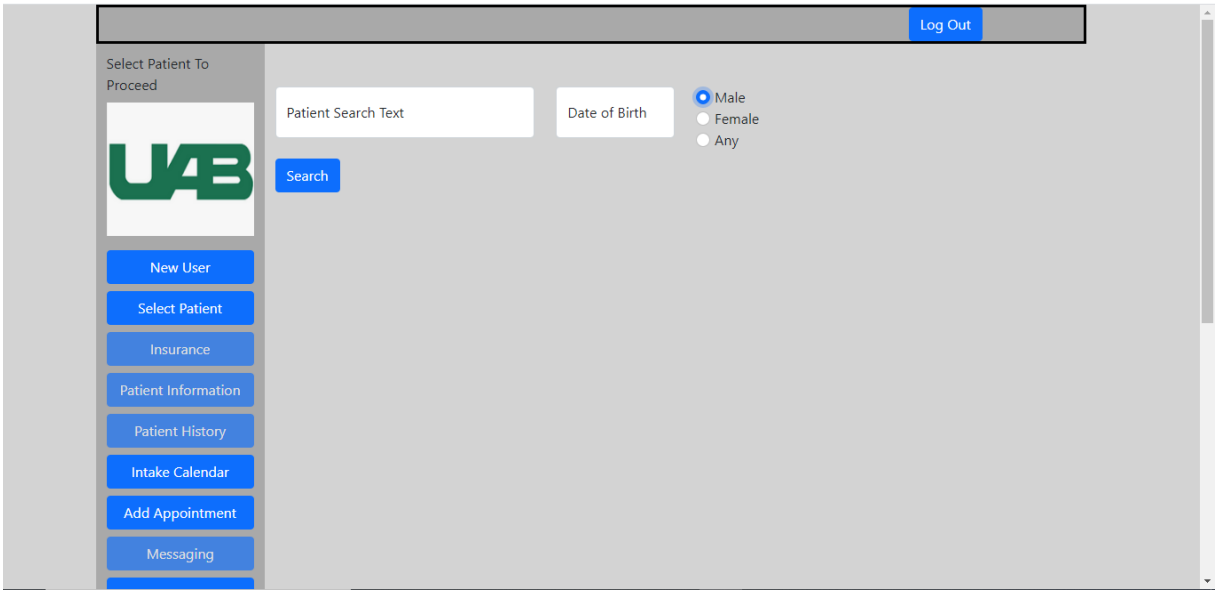

Log Out
Select Patient To Proceed
Patient Search Text
Date of Birth
12-12-97
Male
Female
Any
Search
New User
Select Patient
Insurance
Patient Information
Patient History
Intake Calendar
Add Appointment
Messaging


Log Out
Select Patient To Proceed
Patient Search Text
Date of Birth
Male
Female
Any
Search
Zachary Cobb
12-12-97
New User
Select Patient
Insurance
Patient Information
Patient History
Intake Calendar
Add Appointment
Messaging



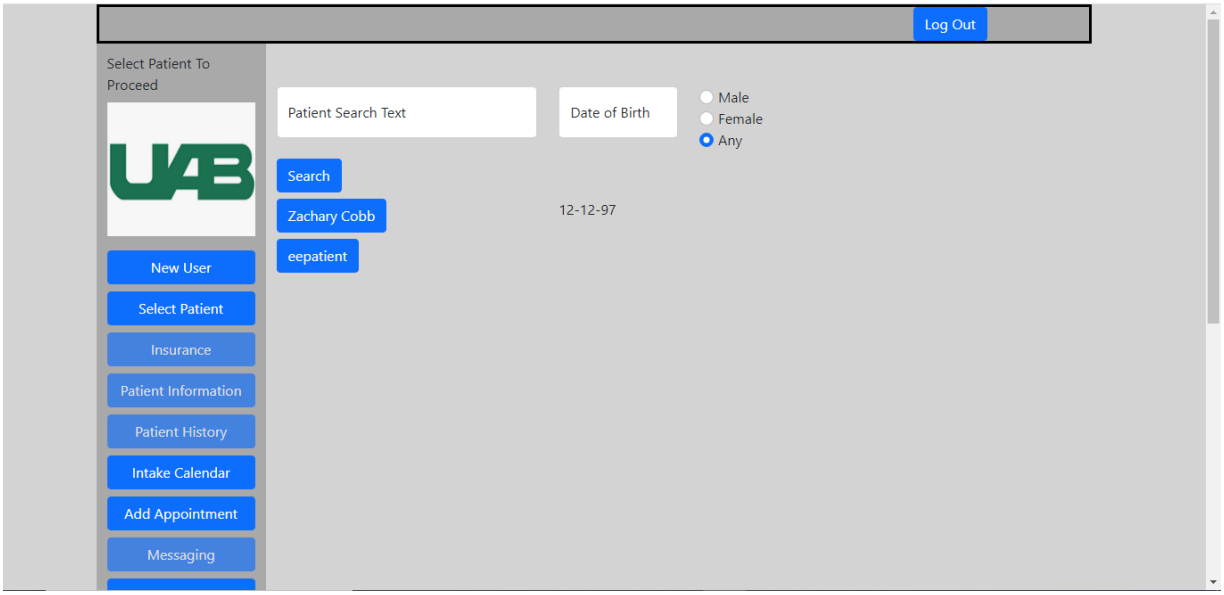


EX: Search just male gender



If you don't fill out your gender you will appear for either male or female

E.g.: eepaitent



4.) Discussions/ Future Works

Direct-Messaging: In the future to improve the messaging features, SocketIO can be added to provide instant messaging components so that the user can speak with a live representative. For the Secure messaging aspect, adding the availability to add documents or files in messages so that senders can provide important information to both parties that can be necessary for their healthcare needs.

Form validation, additional data for users. More separation of patients and providers. More reliance on ORM. Container usage for portability. More error handling. Fewer page loads. Intake Calendar should link to specific patients. Create calendar record should also link to existing patients and providers.

Patient-History-Update: Could have improved the overall look of the patient form and how it takes input from the user.

Patient-Select: Could improve the overall design of the search because it looks very basic. We could also add more options to search with and display more info of the patients.

5.) References

SQL Information

https://www.w3schools.com/sql/sql_intro.asp

Bootstrap Page in General

https://getbootstrap.com/docs/4.3/components/forms/

https://getbootstrap.com/docs/4.0/content/tables/

HTML Features

https://www.tutorialspoint.com/html5/html5_overview.htm

HTML Attribute Explanations

https://developer.mozilla.org/en-US/docs/Web/HTML/Attributes

Flask Documentation

https://flask-doc.readthedocs.io/en/latest/

SQL Alchemy Documentation

https://docs.sqlalchemy.org/en/14/

Various Knowledge Reference

https://stackoverflow.com