Project Eir

Software Requirements Specification

Version 1.2

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Revision History

Date	Description	Author	Comments
02.19.2020	Version 1.0	Team Pantheon	Rough Draft of SRS Document
03.1.2020	Version 1.1	Team Pantheon	SRS Improved Login Working GUI Work
03.8.2020	Version 1.2	Team Pantheon	STS Improved Support Ticket System

Table of Contents

1. Introduction

Have you ever been to the hospital and was shocked about how much you had to pay to treat your injuries or illnesses? We're sure you have. Project Eir is designed to help you find the cheapest price for whatever procedure you need at your local hospitals. We wanna keep money in your pocket while hospitals wanna take it. We take the average prices that each hospital has to release every year and put them all in an easy to use website that will go through and find the cheapest hospital for you.

1.1 Purpose

Project Eir seeks to allow users to easily view the price of procedures to ensure they can obtain the lowest price. Our target audience is anyone who needs a medical procedure especially those without insurance.

1.2 Scope

The scope for this project is to create a free website that will allow people to get the best bang for their buck when visiting the hospital. These days a lot of people don't have insurance and have to pay out of pocket or they have insurance and have high deductibles. Project Eir will show them the average cost of their specific medical procedure at local hospitals to help them keep some money in their pocket. This product will of course not do the medical procedure for them or book an appointment for them, it will just show you the average cost from the hospitals yearly report of costs.

1.3 Definitions, Acronyms, and Abbreviations

Project Eir strives to provide the most user friendly experience, our program searches through difficult medical definitions to best match your medical related search.

Eir- In Norse mythology, Eir is the goddess associated with healing.

Pantheon- a group of particularly respected, famous, or important people.

1.4 References

Graphic User Interface Images:

1) https://www.pexels.com/photo/cash-dollars-hands-money-271168/

2)https://www.google.com/url?sa=i&url=http%3A%2F%2Fwww.josephkeen.com%2FDnD%2FQuick%2520Reference%2FBackground%2520Quick%2520Reference.pdf&psig=AOvVaw19ajT9JiUgJ8rbvOtkqzrI&ust=1584392734833000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCKjHwYOxnegCFQAAAAAdAAAAABAT

3)https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.pinterest.com%2Fpin%2F118430665173652740%2F&psig=AOvVaw0UdBge7mZMrsUvr7F8_NL_&ust=1584392996223000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCLCwpoKynegCFQAAAAAdAAAAABAK

(Rami)

1.5 Overview

The rest of the SRS document will include all of our UML diagrams/flowchart, our progress with each sprint, and explanations for paths we took along the way.

2. General Description

Our software is easily used, needing only an internet connection and web browser. We also require data from hospitals but since a recent law change requires hospitals to display this information, making it much easier.

2.1 Product Perspective

Similar products online do exist but they are convoluted and hard to use. Healthcare Bluebook is a similar product but requires an access code to use and Fair Health requires an extensive survey and sensitive information. Project Eir however is a free service and does not require an access code. Project Eir is the only service of its kind that is dedicated to fast and friendly support when searching for a medical procedure.

2.2 Product Functions

Project Eir includes many functions that are easy to use and navigate.

*Sign up or Sign in buttons allow users to create an account or log in using an existing account.

*Search Bar will allow users to compare prices of medical procedures.

*Safely stores passwords in our database to protect user information.

*Customer support page that provides users with dedicated help all hours of the day.

2.3 User Characteristics

The characteristics of our target users is anyone who needs an operation or would simply like to compare prices for a future procedure. The team at Project Eir understands that many of our users may be over the age of 50, and may have limitations in their technical ability, this affects the visual aspect of our program and as such we have made an easy to use interface with a large search bar and button to accommodate these users. (Clayton Damon)

2.4 General Constraints

For this Project the biggest constraint is time, there's only so much you can do in such a short development time, because of the time constraint we had to make changes to our database and use a smaller procedure list and filter out any medical names that were too vague and hard to implement in our search algorithm.

2.5 Assumptions and Dependencies

It is assumed that the user is familiar with an internet browser and also familiar with handling the keyboard and mouse. Since the application is a web based application there is a need for the internet browser. It will be assumed that the users will possess decent internet connectivity.

3. Specific Requirements

1. Database
2. Server
3. Hospital Data
4. Log-in and log-out system
5. Search bar that queries the database
6. A system to allow general search terms to show results
7. Support System for users having problems

3.1 External Interface Requirements

3.1.1 User Interfaces

1. Main Page with search bar and login/create account button.
2. Result page with that displays results with another search bar
3. Login Page
4. Registration Page
5. Support page

3.1.2 Hardware Interfaces

1. Keyboard or equivalent
2. Mouse or equivalent
3. Display

3.1.3 Software Interfaces

1. An interface for searching.
2. An interface for logging in.
3. An interface for registering new users.
4. An interface for submitting support tickets

3.1.3 Software Interfaces

3.1.4 Communications Interfaces

The only communication interface in this project is the support ticket system which allows users to submit problems and receive solutions via email.

3.2 Functional Requirements

This section describes specific features of the software project. If desired, some requirements may be specified in the use-case format and listed in the Use Cases Section.

3.2.1 <Functional Requirement or Feature #1>

3.2.1.1 Introduction

There are several requirements needed for a functional website and they must be implemented correctly to ensure full functionality without errors. Below are the requirements for Project Eir to function; they will expand as we add more functionality to satisfy our customers and provide them with even more access to procedures they need. <Keith Bragg>

3.2.1.2 Inputs

1. Input from user for searching
2. Input from user to log in
3. Input for user to register
4. Input for user to submit problems with website
5. Input from user to filter search results
6. Input from user to save procedures to profile if they are registered and logged in

3.2.1.3 Processing

1. Processing search terms to find synonyms
2. Processing search terms to find procedures
3. Processing hospital data to insert into database
4. Processing user passwords using salt and hashing algorithms to protect data
5. Processing user filters when searching.

3.2.1.4 Outputs

1. Results from searches
2. Notifying user they input an incorrect password or username
3. Notifying users no results were found from search term
4. Outputting user's saved procedure

3.2.1.5 Error Handling

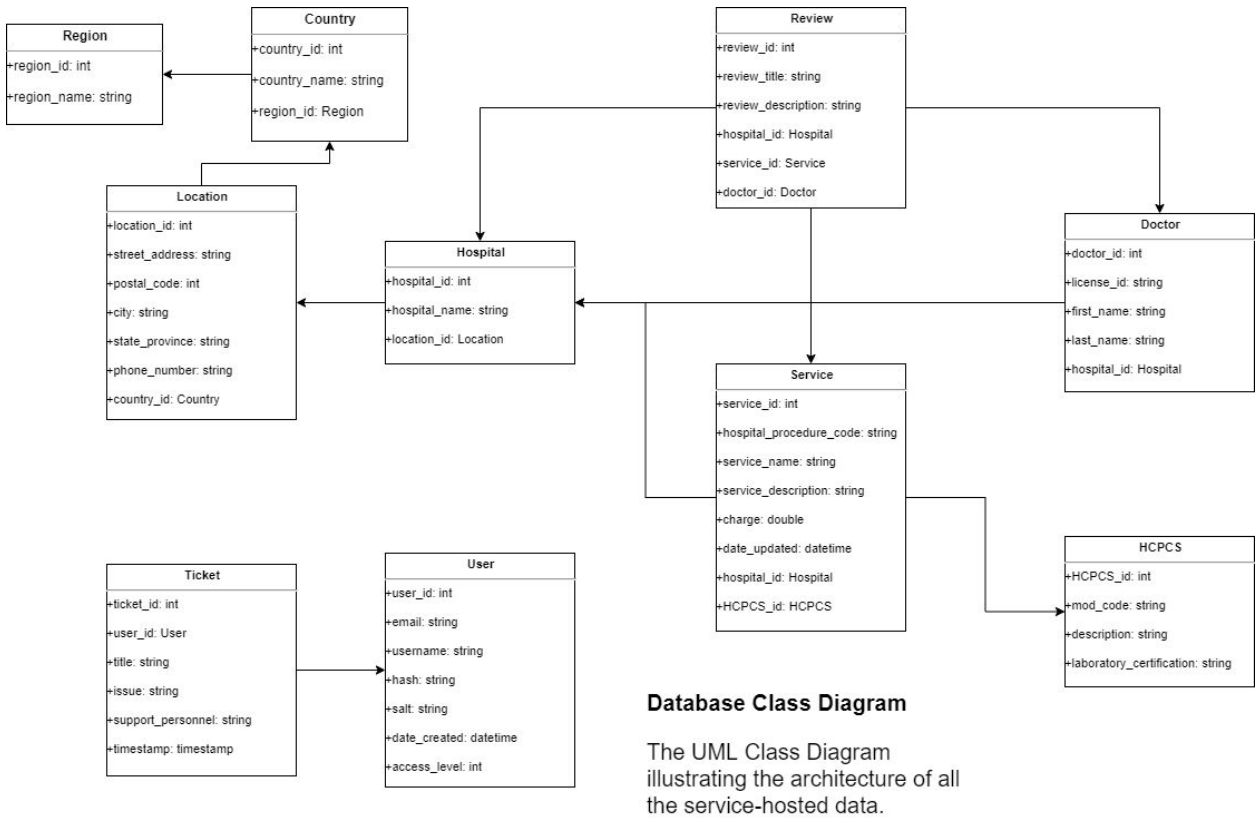
Errors are output to the console for the site administrator to review and fix. If a user encounters an unexpected error then they can submit a support ticket and receive help from trained support experts.

3.3 Use Cases

The use case of our website would be the user coming to the website and being greeted by the home page. On the homepage they would have multiple options to choose from, they could search right of the batt, register, login, or view the frequently asked questions page. Another feature they could utilize is the support page which they can use to submit tickets for our website.Then with the search they will be able to use aliases for different medical procedures and find the results for said procedure.

3.4 Classes / Objects

3.4.1 <Class / Object #1>



Database Class Diagram

The UML Class Diagram illustrating the architecture of all the service-hosted data.

3.5 Non-Functional Requirements

Non-functional requirements may exist for the following attributes. Often these requirements must be achieved at a system-wide level rather than at a unit level. State the requirements in the following sections in measurable terms (e.g., 95% of transactions shall be processed in less than a second, system downtime may not exceed 1 minute per day, > 30 day MTBF value, etc).

3.5.1 Performance

Users must be able to type in a search request and receive a response (under a normalized latency of 0ms) within 200ms. This means that the software must be able to process the request, search the database via MySQL query, and return data to the client within that amount of time.

Thus the server that the users connect to must have sufficiently-powerful hardware to facilitate this requirement. And, the code must be performant enough. Automated unit tests will ensure that common searches run under the given time constraints.

3.5.2 Reliability

The product must accurately parse the user's input and return a reliable search for medical procedures. The list of recognized procedures will grow as the product matures and the development cycle furthers.

Data stored for procedures, hospitals, departments like pricings, naming, availability, must be accurate. Continuous quality assurement must be practiced to ensure that the medical procedure data is up to date and accurate.

3.5.3 Availability

The product is available to anyone with a modern internet browser like Google Chrome, Microsoft Edge or Mozilla Firefox. Access to the product will require an internet-enabled device with an active connection.

It must be available in every major geographic region (Europe, North America, Asia, etc) within 50ms latency. This demands that the servers the product is hosted on be replicated and served with a geo-ip sensitive load balancer.

The product must be available to serve searches with 99.99999% uptime.

3.5.4 Security

Users entrust the product to securely store their personal information in our database. To protect their passwords, we utilize the standard hashing and salting method to mitigate sensitive user password leaks in the event that our database is compromised. Conventional "Direct Denial of Service" attacks will be mitigated through delayed queries to the backend API; rather than blindly allowing queries to be run, they will not run if there's been a query run too soon in the past.

The security of our front-facing APIs will be tested against common SQL attacks and maliciously malformed requests.

3.5.5 Maintainability

Quality of code will be ensured by automated unit tests and static quality analysis on code pulls to “master”. Code updates to “master” will reflect the main production server that the end users have access to. Code updates to “dev” will reflect the development server that will be used to ensure quality before changes are merged to “master”. Code will not be able to be pulled into “master” or “dev” if they fail any test cases.

To ease further contributions to the software, code standards must be established and enforced by automated “linting”. This ensures that there are no stylistic or syntactic differences in the software, such as the common “spaces” vs “tabs” indentation inconsistency.

Code reviews will periodically be performed to ensure that quality of code, even when it passes automated tests, is maintained.

3.5.6 Portability

The website will be available on any device that has an internet connection and a browser to view in, because it runs on a device friendly framework BootStrap that makes the page dynamic.

3.5.6 Customer Support

Customer support should be a top priority for a company when they deal with customers, because without them you wouldn’t have a company for very long. These support systems should be simple and non-confusing for the user and Eir.Plus has a few different ways to deal with customers. The first is a simple to understand FAQ page they can visit for simple questions that are asked all the time, and the second option is that of a support ticket system where users can fill out a simple form stating their problems and submit it to support staff who can start an email exchange with them to help them with their problem.

3.6 Inverse Requirements

Passwords should not contain only numbers or letters.

The database should not allow for unsanitized queries.

Users will not be forced to log in to search.

Our website will not book appointments or contact doctors in any way.

3.7 Design Constraints

Specify design constraints imposed by other standards, company policies, hardware limitation, etc. that will impact this software project.

One major constraint of our project is our data collection. Since most hospitals attempt to make their data as hard as legally possible to access, we cannot create a standard program to collect it. Instead, we are forced to manually gather data. Another limitation is that many hospitals name their procedures differently which makes searching much more difficult. Along the same line, the sheer amount of data makes it extremely difficult to make searching easier for the layman. The last constraint is the amount of time we have, forcing us to cut planned features.

3.8 Logical Database Requirements

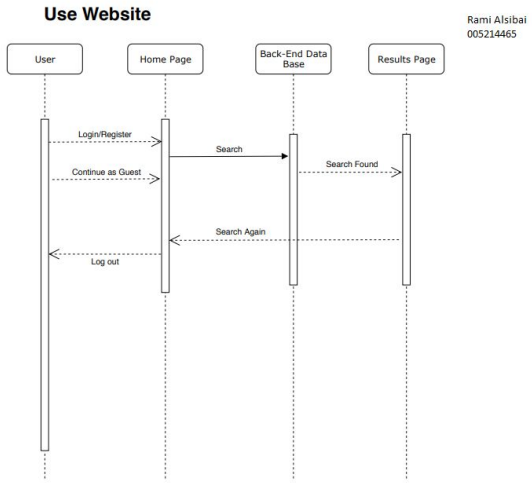
Will a database be used? If so, what logical requirements exist for data formats, storage capabilities, data retention, data integrity, etc

Our database requirements are not much since we are only storing text and numbers, which is why we chose MYSQL for our databases. The user database will require salted and hashed passwords and an email. The procedure table will require a procedure name, price, and hospital id as varchars, doubles, and ints respectively. The synonym table requires an ID and Name which are stored as varchars.

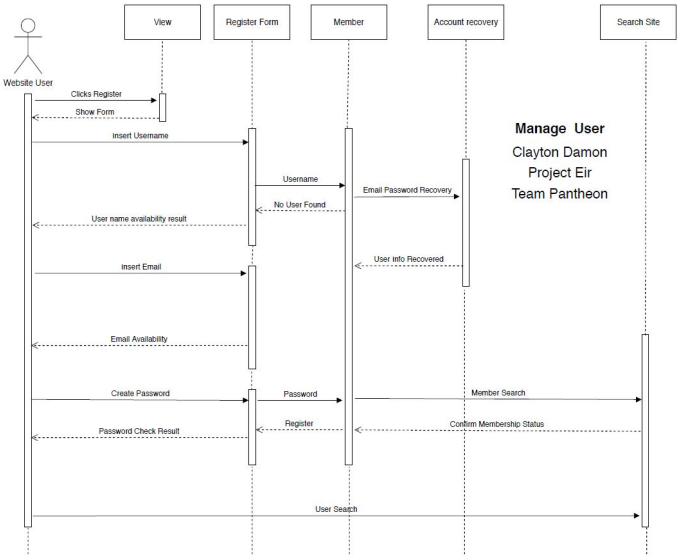
4. Analysis Models

List all analysis models used in developing specific requirements previously given in this SRS. Each model should include an introduction and a narrative description. Furthermore, each model should be traceable to the SRS's requirements.

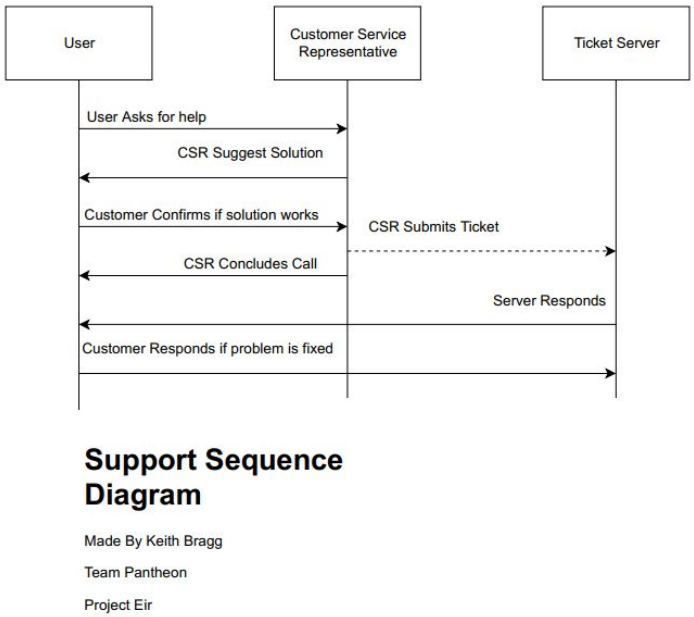
4.1 Sequence Diagram(s)

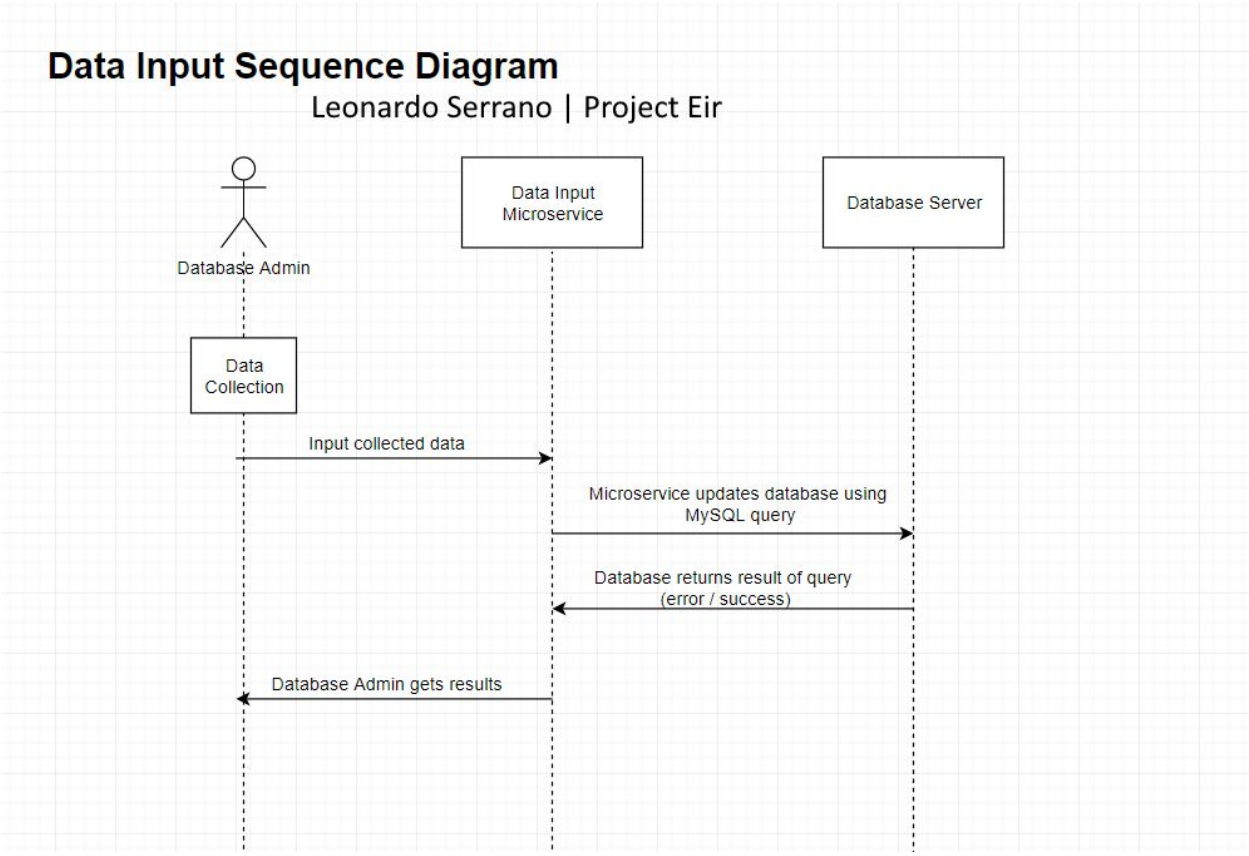


In my current sequence diagram I have the basic structure of the website and its function. The user can go through each page and will be given a new GUI with each page. I plan to add more as we get further into the project to meet the goals of the website.

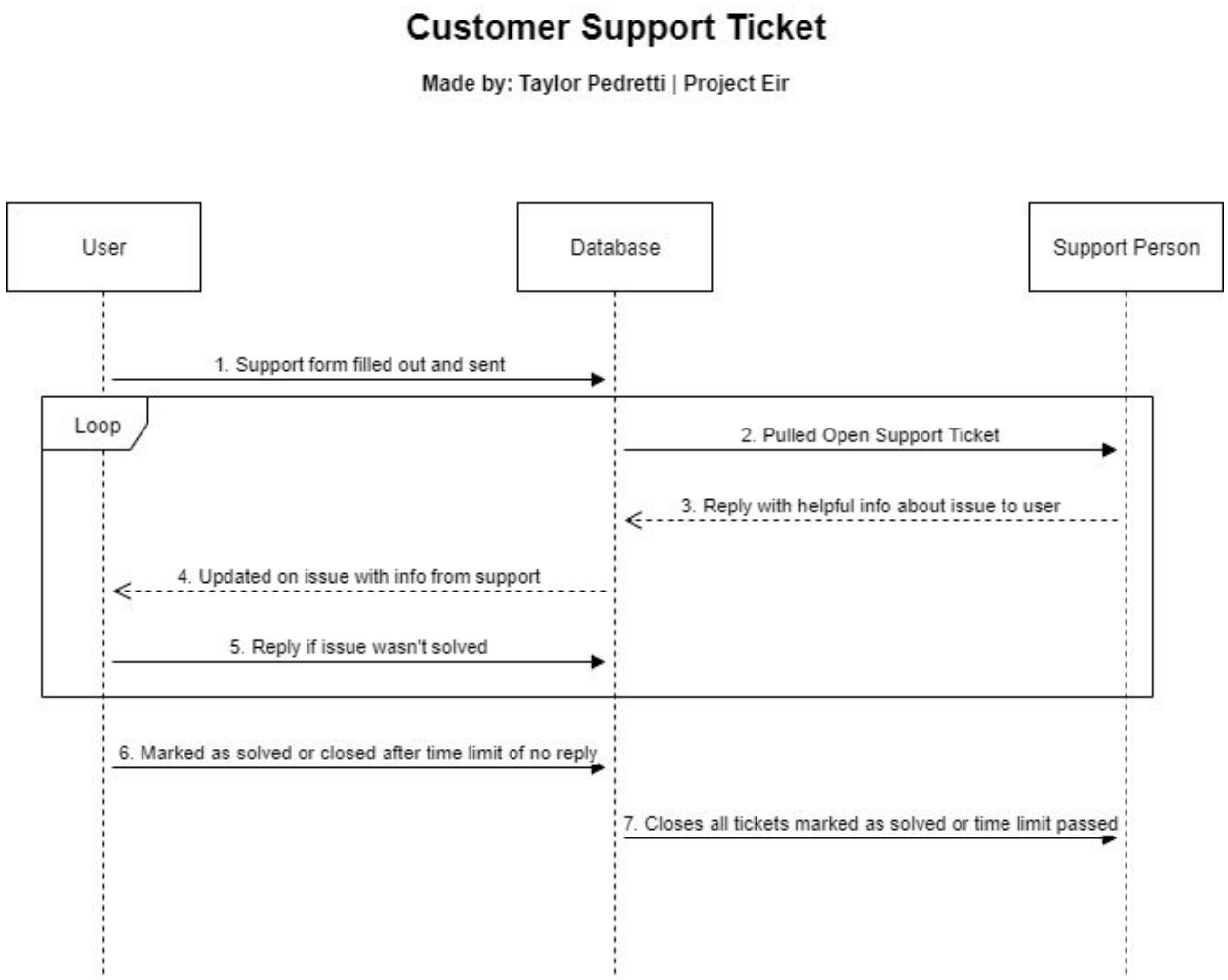


After looking back on my sequence diagram everything is still within my scope, and I will continue to work on managing the users. Sign up works and saves the users information to the database, the password is hashed to protect their information in our database.

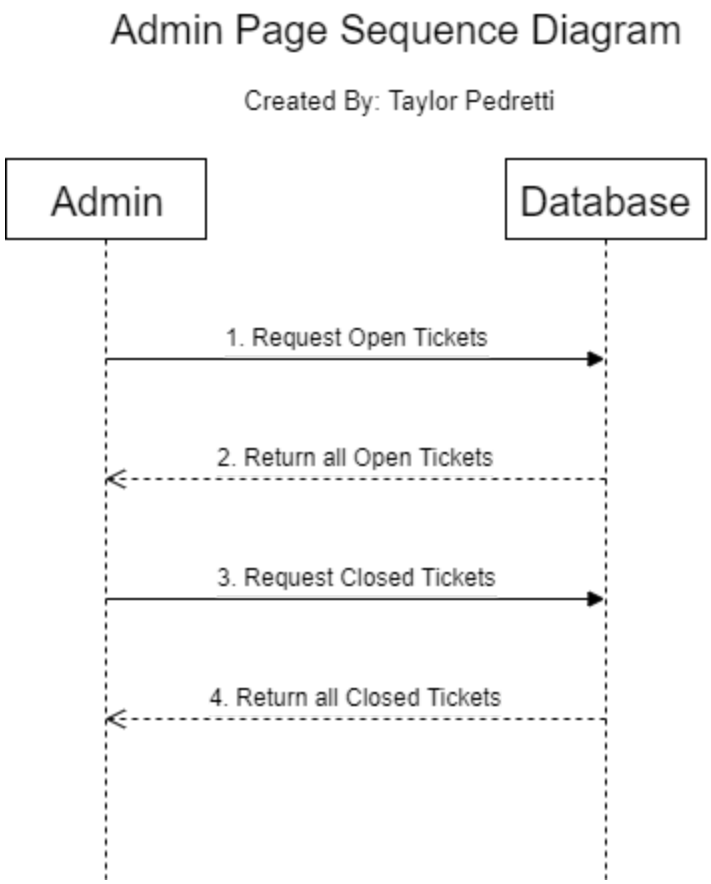




Sequence Diagram for data input into the database.

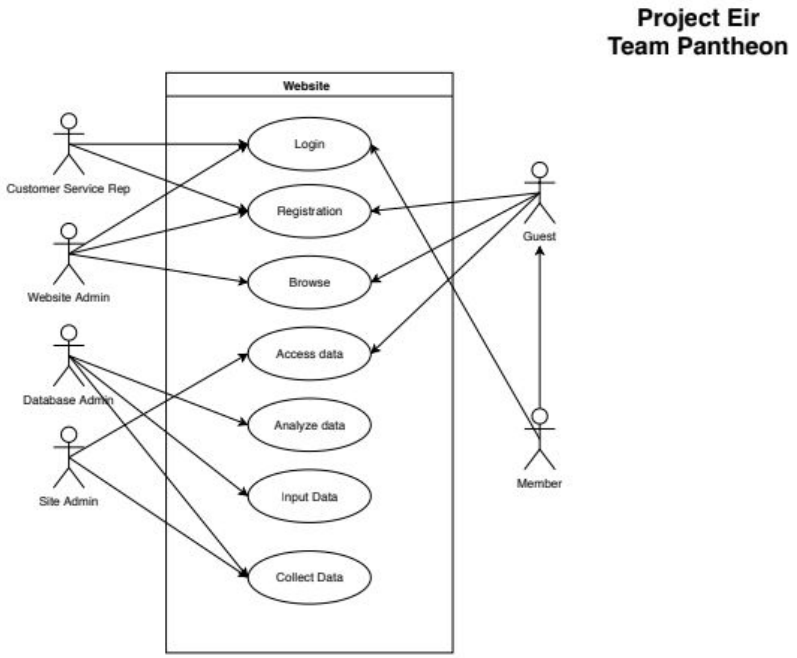


Support Ticket System Sequence showing the steps the user and support person have to take to get an issue solved.



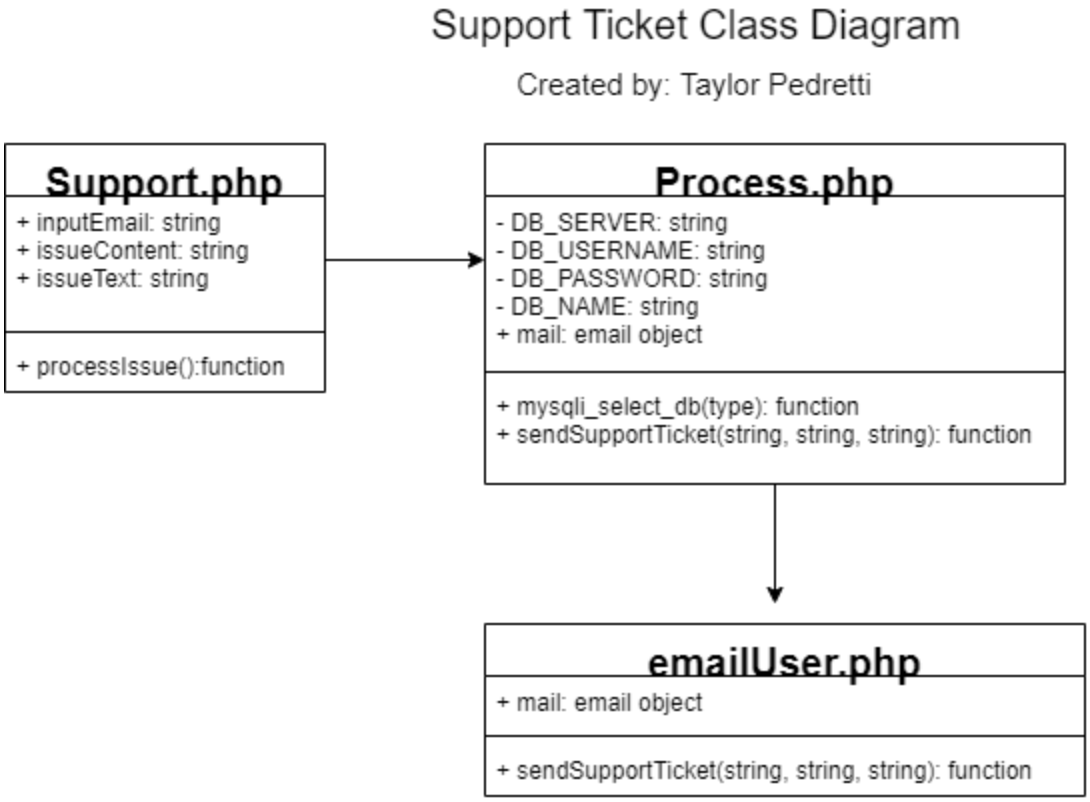
Above is the sequence diagram of the admin page, where an admin can see open and closed support tickets.

4.2 Use Case Diagram(s)



The Use case diagram we had for our project allowed users to choose whether or not they wanted to be a member of the website. The website is theoretically run by a few different people. We start with a customer service representative that takes care of The issues that users have with login and register. We then have a website administrator that looks over members that login and what is being browsed. Next is a Database administrator that collects, inputs, and analyzes the data for the search on the website. They ensure that the results will be as accurate as possible and that data is being pushed and pulled properly. Lastly we have a site admin that has an overview of the whole website. They ensure all parts are working properly and keep the rest in communication.

4.3 Class Diagram(s)



Above is the class diagram for the support ticket system. It is split between three different php files so that they are modular and can be used with other files.

5. Change Management Process

If a change needs to be made to the project developers of the project can bring them up in a scrum meeting if they believe a change should happen. This will allow other developers to put their two cents in or their input to try to improve upon the change. If the change is an emergency change the developer should contact project management on change and implement quickly.

6. Sprint Retrospective

Sprint #1 Retrospective

For sprint one most of us were still getting used to how to use draw.io for all the diagram making and figuring out what needs to be in each diagram. For the deliverable for sprint #1 Rami was working on the GUI and style of the website and sent in a basic markup on the website. The hardest thing for us during this time was the breaking down of things into smaller parts, because we'd make one diagram and then be told that the diagram could be made into multiple smaller ones.

Sprint #2 Retrospective

For the second sprint we started to have a clear grasp of what we needed to do and made good progress in documenting who was doing what on the kanban board in Jira. Rami put together a design based on his previous markup. Clay further looked into PHP and became familiar with how the database works. Communication was good, professor Gonsalez in the lab helped us create clear buckets that were labeled properly. Some things we could have improved on was talking to professor earlier, so we could have had a clear understanding from the start.

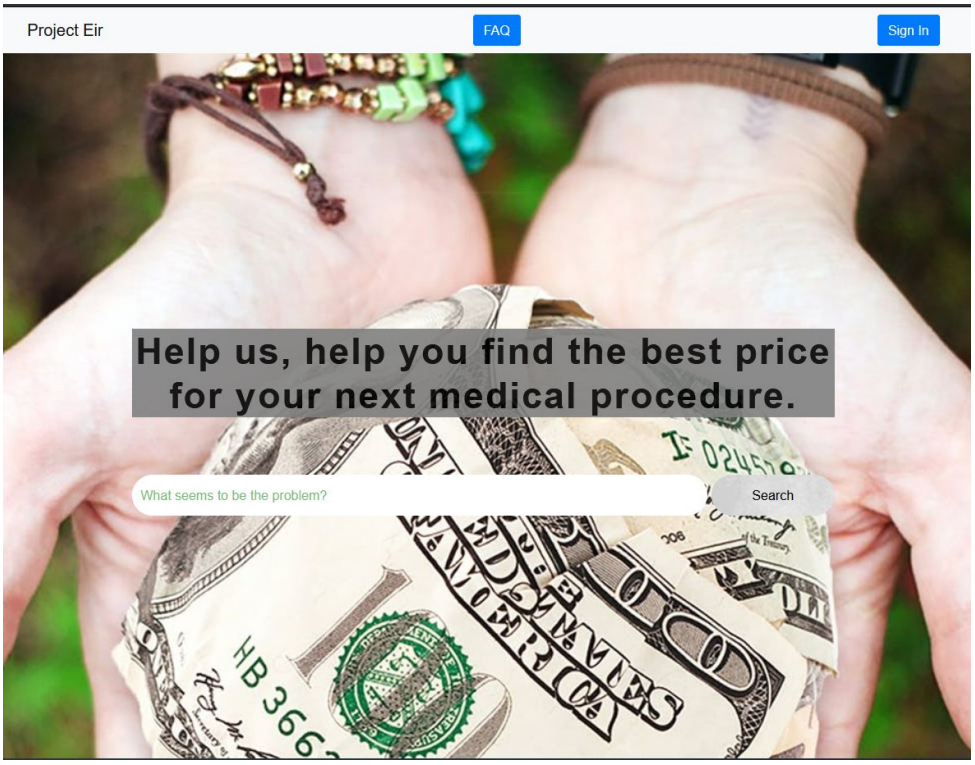
Sprint #3 Retrospective

By the 3rd sprint we had a working website that allowed a user to sign up and create an account that would store the user information in our database. Clay finished signup and would begin working on sign in. Rami finished the registration page layout and would add a sign in form to the GUI.

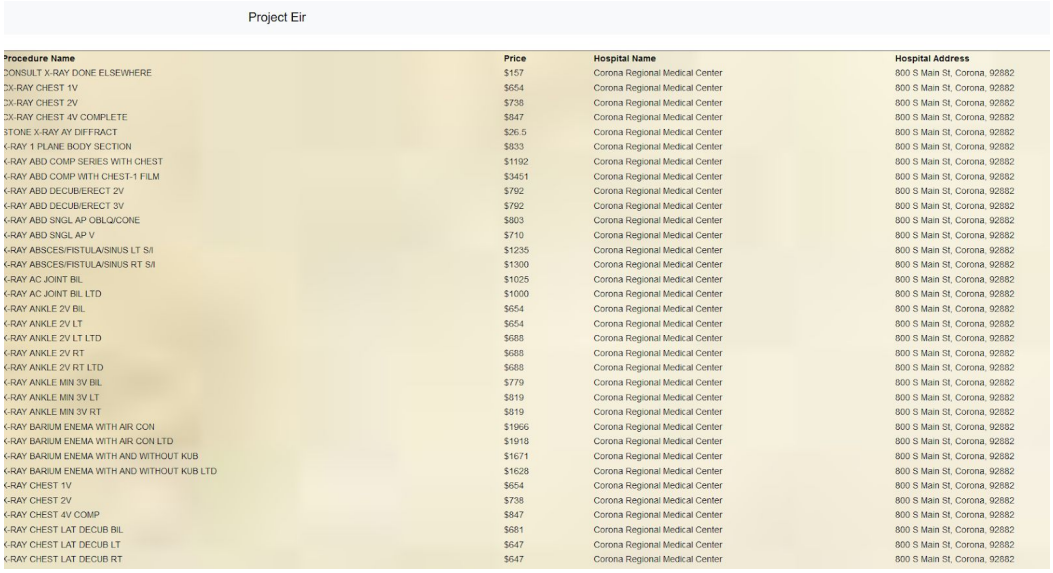
Sprint #4 Retrospective

On the final sprint we all connected the final pieces that we had been working on, and had a fully functional website complete with a login and registration, Clay worked on adding error catches for misfilled or wrong information on registration and sign up. As with any project, communication and structure is key, something we could have done better as a whole is had better communication

7. Prototype

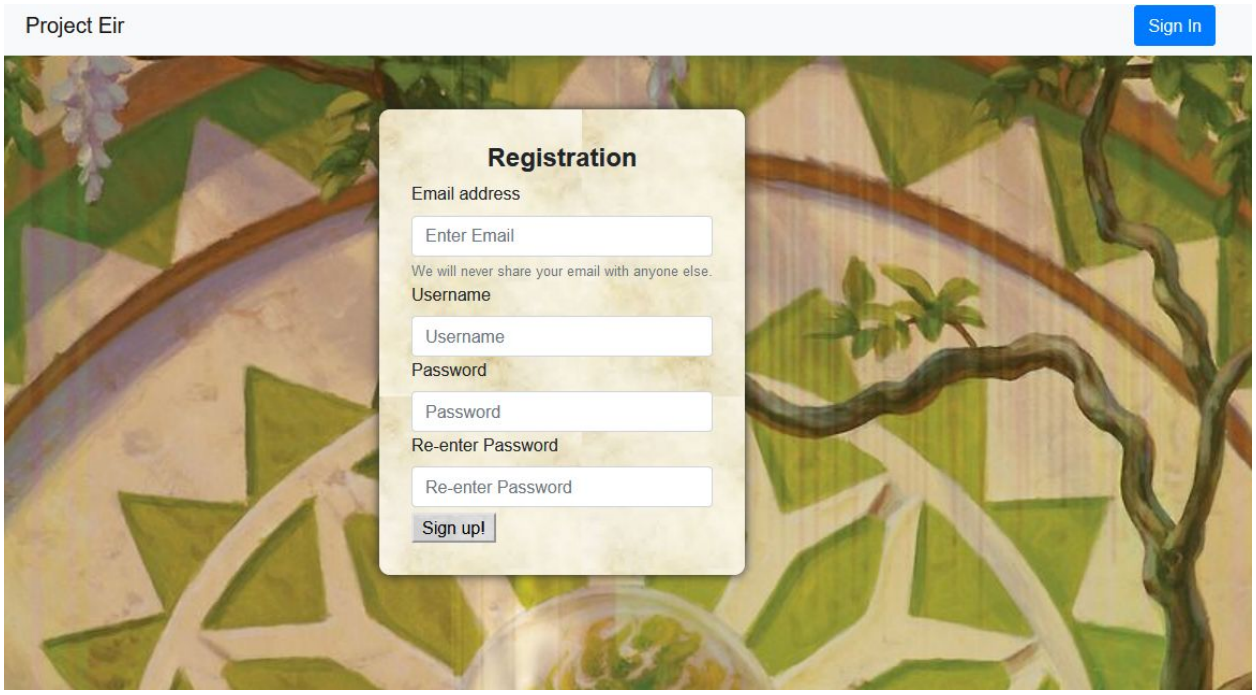


Above is the front page to http://www.eir.plus goal was to keep the GUI basic and simple for everyone.

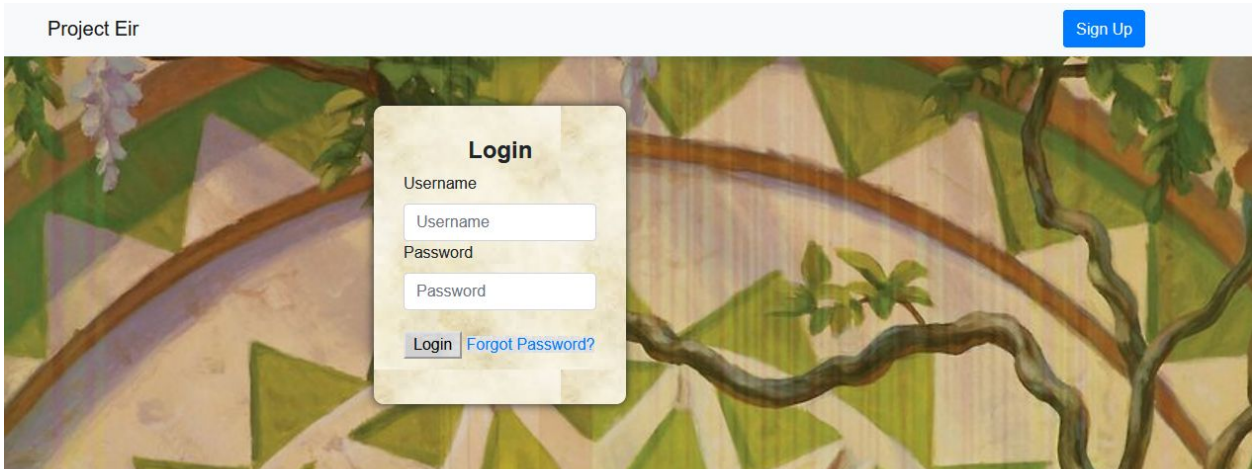


Procedure Name	Price	Hospital Name	Hospital Address
CONSULT X-RAY DONE ELSEWHERE	$157	Corona Regional Medical Center	800 S Main St, Corona, 92882
CX-RAY CHEST 1V	$654	Corona Regional Medical Center	800 S Main St, Corona, 92882
CX-RAY CHEST 2V	$738	Corona Regional Medical Center	800 S Main St, Corona, 92882
CX-RAY CHEST 4V COMPLETE	$847	Corona Regional Medical Center	800 S Main St, Corona, 92882
STONE X-RAY AY DIFFRACT	$26.5	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY 1 PLANE BODY SECTION	$833	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ABD COMP SERIES WITH CHEST	$1192	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ABD COMP WITH CHEST-1 FILM	$3451	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ABD DECUB/ERECT 2V	$792	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ABD DECUB/ERECT 3V	$792	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ABD SNGL AP OBLQ/CONE	$803	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ABD SNGL AP V	$710	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ABSCES/FISTULA/SINUS LT S/I	$1235	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ABSCES/FISTULA/SINUS RT S/I	$1300	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY AC JOINT BIL	$1025	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY AC JOINT BIL LTD	$1000	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ANKLE 2V BIL	$654	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ANKLE 2V LT	$654	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ANKLE 2V LT LTD	$688	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ANKLE 2V RT	$688	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ANKLE 2V RT LTD	$688	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ANKLE MIN 3V BIL	$779	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ANKLE MIN 3V LT	$819	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY ANKLE MIN 3V RT	$819	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY BARIUM ENEMA WITH AIR CON	$1966	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY BARIUM ENEMA WITH AIR CON LTD	$1918	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY BARIUM ENEMA WITH AND WITHOUT KUB	$1671	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY BARIUM ENEMA WITH AND WITHOUT KUB LTD	$1628	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY CHEST 1V	$654	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY CHEST 2V	$738	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY CHEST 4V COMP	$847	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY CHEST LAT DECUB BIL	$681	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY CHEST LAT DECUB LT	$647	Corona Regional Medical Center	800 S Main St, Corona, 92882
X-RAY CHEST LAT DECUB RT	$647	Corona Regional Medical Center	800 S Main St, Corona, 92882

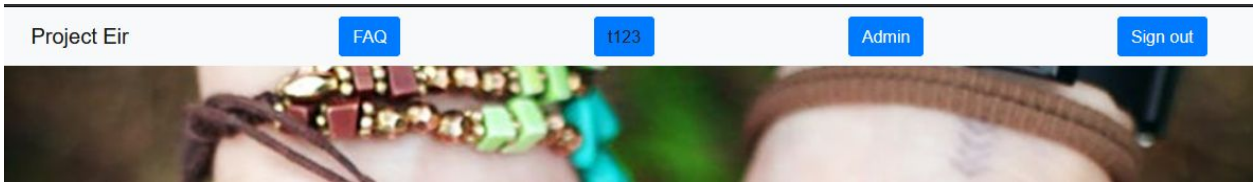
Above is the result page for when a user searches for a service.



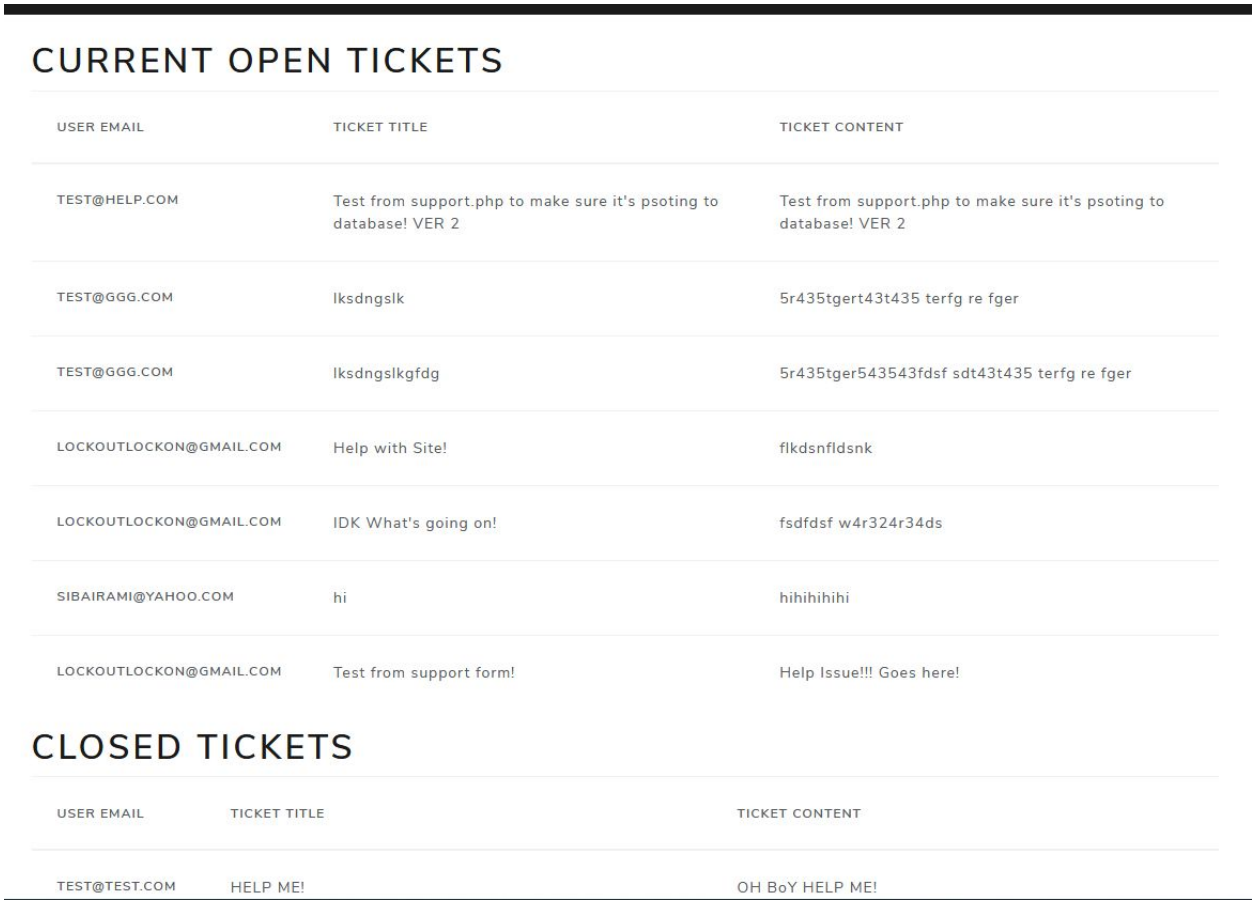
Above is the registration page where users can create an account. As of right now the account really doesn't do anything for a normal user but in the future allow them to make bookmarks.



Above is the login page users can login with.



Above is the navigation which once a user logs in will change with their username and a sign out button. Admin button is for admins to allow them to see current support tickets.



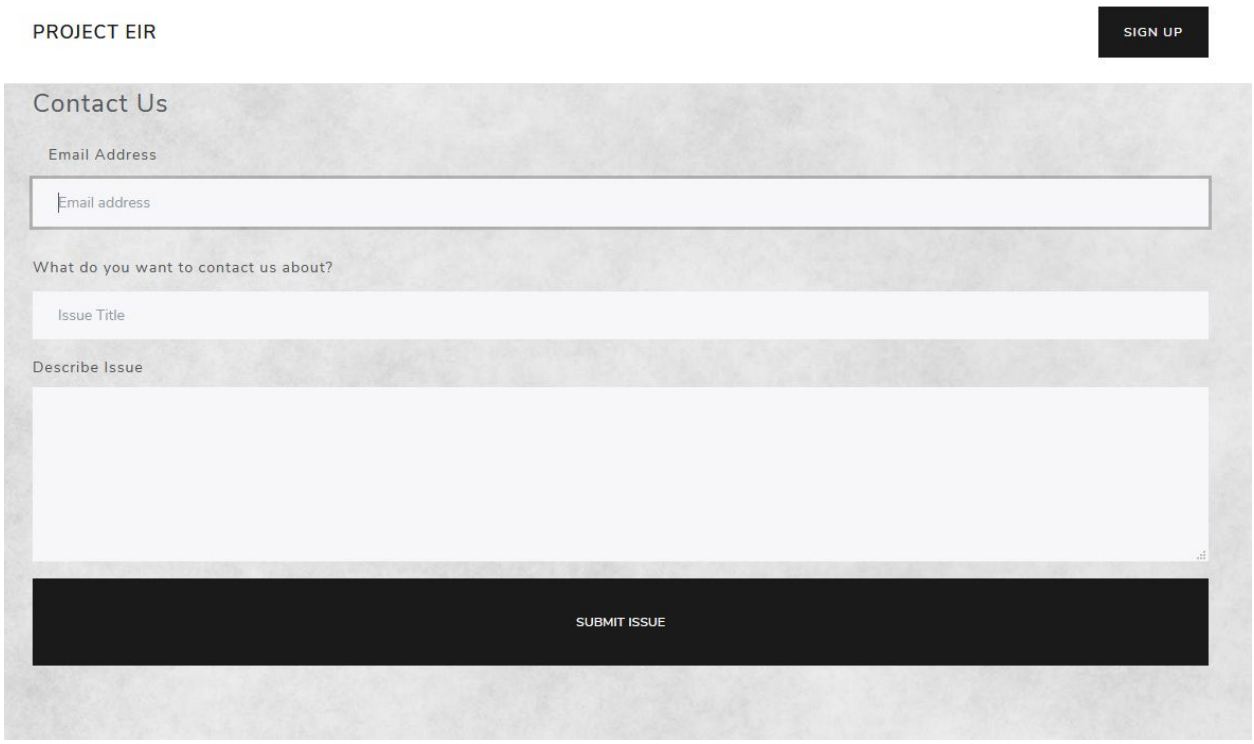
CURRENT OPEN TICKETS

USER EMAIL	TICKET TITLE	TICKET CONTENT
TEST@HELP.COM	Test from support.php to make sure it's psoting to database! VER 2	Test from support.php to make sure it's psoting to database! VER 2
TEST@GGG.COM	lksdngslk	5r435tgert43t435 terfg re fger
TEST@GGG.COM	lksdngslkgfdg	5r435tger543543fdsf sdt43t435 terfg re fger
LOCKOUTLOCKON@GMAIL.COM	Help with Site!	flkdsnfldsnk
LOCKOUTLOCKON@GMAIL.COM	IDK What's going on!	fsdfdsf w4r324r34ds
SIBAIRAMI@YAHOO.COM	hi	hihihihihi
LOCKOUTLOCKON@GMAIL.COM	Test from support form!	Help Issue!!! Goes here!

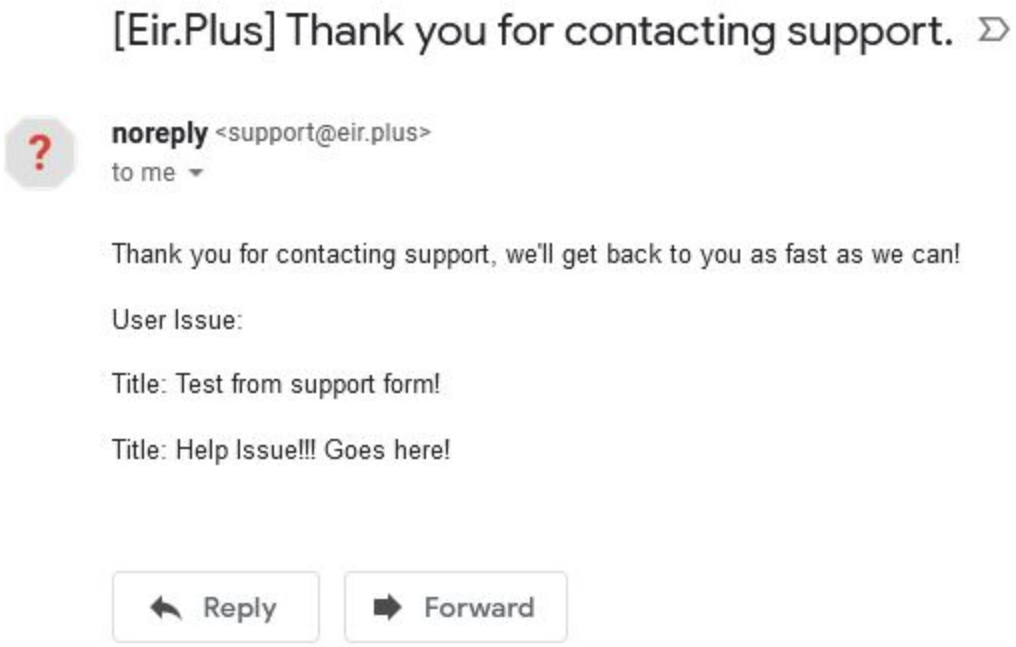
CLOSED TICKETS

USER EMAIL	TICKET TITLE	TICKET CONTENT
TEST@TEST.COM	HELP ME!	OH BoY HELP ME!

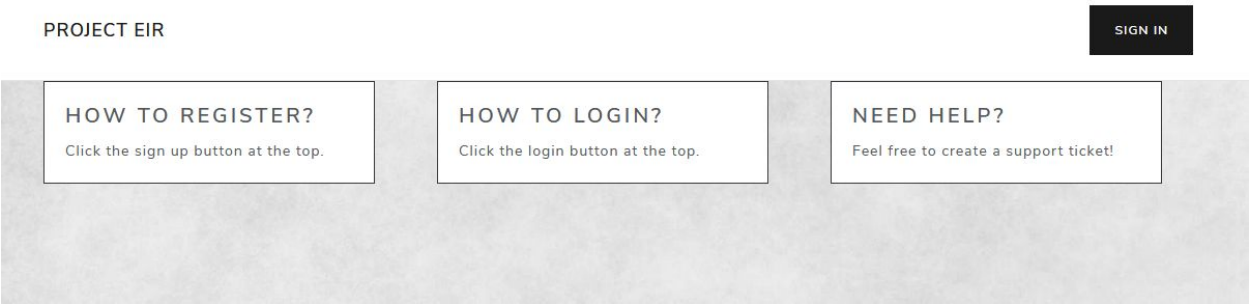
Above is the admin page where admins can see current open tickets and closed tickets.



If the user needs to create a support ticket because they have a problem they can fill out a easy to use support form.



Once the user submits the ticket they'll be emailed with issue info in the email.



There is a small FAQ for users to use too if they need help.

8. Future Development

There are a few things that could be added to this project for future development. One of these things could be the addon of live chat feature, this was one thing we thought about at the beginning but it was never worked on after that. This feature would allow users to chat in real time with someone on a problem they could use. Another thing that could be changed to the project is a way to split up the results for only places you want to search by, this will allow the user to do searches based on a location they want to only look at. The addon of bookmarks to allow users to bookmark services so that they don't have to go back to search for something and only check their bookmarked list of services. Many more things could be added onto the project to improve user interaction and enjoyment out of the product.