

# Internal Infrastructure Web Application (IIWA)

DESIGN DOCUMENT

Team: sddec22-21

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# Executive Summary

## Development Standards & Practices Used

- Standard website formatting
  - Include a logo in the top left, menu bar on the left, and standard dropdown items.
- HTTPS protocol
  - An HTTPS-Only standard will eliminate inconsistent, subjective determinations across agencies regarding which content or browsing activity is sensitive in nature, and create a stronger privacy standard.
- AES-256 encryption
  - The Advanced Encryption Standard (AES) specifies a FIPS-approved cryptographic algorithm that can be used to protect electronic data. The AES algorithm is a symmetric block cipher that can encrypt (encipher) and decrypt (decipher) information.
- IEEE-23026-2015
  - The goal of this standard is to improve the usability of informational websites and ease of maintenance of managed Web operations in terms of locating relevant and timely information, applying information security management, facilitating ease of use, and providing for consistent and efficient development and maintenance practices.

## Summary of Requirements

- App should support Account Creation
- App should have a Home Summary Page
- Inventory Management Page should track inventory
- Shipment Management Page should track shipments
- Assembly Page should track assembly process
- Serviceability Page should track product service requests
- Product Page should track information specific to individual products
- Device Page should contain information regarding products in general

## Applicable Courses from Iowa State University Curriculum

COM S 309 - Software Development practices

S E 319 - Construction of user interfaces

S E 329 - Software Project management

COM S 363 - Database Management Systems

S E 339 - Software Architecture and Design

S E 317 - Software Testing

CPR E 431 - Basics of Information System Security

## New Skills/Knowledge acquired that was not taught in courses

Cloud Computing

JavaScript Frameworks and packages

JavaScript testing frameworks

## Table of Contents

Team	6
1.1 TEAM MEMBERS	6
1.2 REQUIRED SKILL SETS FOR YOUR PROJECT	6
1.3 SKILL SETS COVERED BY THE TEAM	6
1.4 PROJECT MANAGEMENT STYLE ADOPTED BY THE TEAM	7
1.5 INITIAL PROJECT MANAGEMENT ROLES	7
Introduction	7
2.1 PROBLEM STATEMENT	7
2.2 REQUIREMENTS & CONSTRAINTS	7
2.3 ENGINEERING STANDARDS	9
2.4 INTENDED USERS AND USES	9
3 Project Plan	10
3.1 PROJECT MANAGEMENT/TRACKING PROCEDURES	10
3.2 TASK DECOMPOSITION	10
3.3 PROJECT PROPOSED MILESTONES, METRICS, AND EVALUATION CRITERIA	10
3.4 PROJECT TIMELINE/SCHEDULE	10
3.5 RISKS AND RISK MANAGEMENT/MITIGATION	11

3.6 PERSONNEL EFFORT REQUIREMENTS	11
3.7 OTHER RESOURCE REQUIREMENTS	11
4 Design	12
4.1 DESIGN CONTEXT	12
4.1.1 Broader Context	12
4.1.2 User Needs	12
4.1.3 Prior Work/Solutions	12
4.1.4 Technical Complexity	13
4.2 DESIGN EXPLORATION	13
4.2.1 Design Decisions	13
4.2.2 Ideation	13
4.2.3 Decision-Making and Trade-Off	13
4.3 Proposed Design	14
4.3.1 Design Visual and Description	14
4.3.2 Functionality	20
4.3.3 Areas of Concern and Development	20
4.4 Technology Considerations	20
4.5 Design Analysis	20
4.6 Design Plan	20
5 Testing	21
5.1 Unit Testing	21
5.2 Interface Testing	21
5.3 Integration Testing	21
5.4 System Testing	21
5.5 Regression Testing	22
5.6 Acceptance Testing	22
5.7 Security Testing (if applicable)	22
5.8 Results	22

6	Implementation	22
7	Professionalism	23
7.1	Areas of Responsibility	23
7.2	Project Specific Professional Responsibility Areas	24
7.3	Most Applicable Professional Responsibility Area	24
8	Closing Material	25
8.1	Discussion	25
8.2	Conclusion	25
8.4.1	Team Contract	25

### List of figures/tables/symbols/definitions (This should be the similar to the project plan)

- Inventory management page
  - a web page where each part is listed in the inventory is listed
  - parts are able to be created with the ability to add/substract quantities
- Shipment management page
  - a web page that lists each shipment to be received
  - Able to enter a inventory part that will be received and it will increment that part when received
  - Control the status of shipments coming in

# 1 Team

## 1.1 TEAM MEMBERS

COLTON HAZLETT, DUSTIN HEIMS, ANTHONY NUSS,

KEVIN NGUYEN, CHRIS TAN, TY WALLIS

## 1.2 REQUIRED SKILL SETS FOR YOUR PROJECT

AWS services and implementing them in JavaScript framework react.

Creating a seamless UI in react JavaScript

Database implementation and defining the relationships between tables.

Automating parts of the application to avoid user inputs.

Creating test cases for critical aspects of the web application.

Implementing CI/CD into the git repository for error checking.

## 1.3 SKILL SETS COVERED BY THE TEAM

AWS services and implementing them in JavaScript framework react.

- Colton, Anthony, Dustin, Chris, Ty, and Kevin

Creating a seamless UI in react JavaScript

- Colton, Anthony, Dustin, and Kevin

Database implementation and defining the relationships between tables

- Ty, Chris

Automating parts of the application to avoid user inputs

- Colton, Anthony, Dustin, Chris, Ty, and Kevin

Creating test cases for critical aspects of the web application

- Colton, Anthony, Dustin, Chris, Ty, and Kevin

Implementing CI/CD into the git repository for error checking

- Colton, Anthony, Dustin, Chris, Ty, and Kevin

#### 1.4 PROJECT MANAGEMENT STYLE ADOPTED BY THE TEAM

The type of project management style that we have decided to implement is the Agile approach using Jira software. We organized the project into 2-3 week sprints and created a Gantt chart in Jira. Then we can focus on staying on track to completing the project by the end of the two semesters. In the sprints it has been broken into frontend and backend development.

#### 1.5 INITIAL PROJECT MANAGEMENT ROLES

Colton - Project Manager, Security & Frontend

Dustin - Security & Frontend

Anthony - Frontend

Kevin - Frontend

Ty - Backend

Chris - Backend

## 2 Introduction

### 2.1 PROBLEM STATEMENT

The sponsor company Hinckley Medical LLC does not currently have an effective way of tracking and managing internal operations. To improve day-to-day operations we are creating a web application to offer these services.

### 2.2 REQUIREMENTS & CONSTRAINTS

Our project requirements are role-based. Roles are listed with the requirements using the following key:

A: Admin users

DH: Department Head users

E: Employee users

G: Guest users

Basic webapp requirements (all users):

- Log in
- Sign up
- Serial number entrance

- Needed to gain access to some of the other pages
- When logged in
  - Menu to navigate to all other pages

Inventory management requirements:

- Create/edit inventory item (A)
- Subtract/Add quantity of item (A,E)
- Notify low inventory - on dashboard (A, E)
- View all inventory items (A, E)
- Search inventory items by labels, part numbers, and part names (A, E)

Shipment management requirements:

- Add/approve new shipment (A, E)
- View old & pending shipments (A,E)
- Edit old (locked) shipments (A)
- Search by bath no, manufacturer, PO
- Filter by label

Device information management requirements:

- Create/Edit/Delete device information (A)
  - Only device that are not PWS-100
- Calibrate (A, E)
- View devices information (A, E)
- Notified when calibration is due (A, E)
- Search device by S/N or filter by label or department

Product information management requirements:

- User manual (Downloadable) (A, E, DH, G)
- Link to service request page (A, E, DH, G)
- Selectable list of products owned by department (A, E, DH)
  - DH can only view list of products his department owns (DH)
  - A, E can view all departments to see the list of products they own (A, E)
- Individual product
  - Warranty information (A, E, DH)
    - Status
    - Expiration
  - Purchase date (A, E, DH)
  - Service History (A, E)
  - List of components with Batch No. (A,E)



- Link to that products device tracking page (A, E)
- Searchable by S/N, department name, batch no.,

Serviceability management requirements:

- RFS (G, DH)
- S/N List owned by department (DH)
- List of current RFS (DH)
- RFSA (A, E)
- List of current RFSA (A, E)
- Close RFS/RFSA (A, E)

Assembly Tracking requirements:

- Select an assembly tile to start the step (A,E)
- Input needed fields per assembly tile (A,E)
- Complete an assembly with the option to auto-decrement inventory items (A,E)

### 2.3 ENGINEERING STANDARDS

1. Standard website formatting. Include a logo in the top left, menu bar on the left, and standard dropdown items.
2. HTTPS protocol a. An HTTPS-Only standard will eliminate inconsistent, subjective determinations across agencies regarding which content or browsing activity is sensitive in nature, and create a stronger privacy standard.
3. AES-256 encryption a. The Advanced Encryption Standard (AES) specifies a FIPS-approved cryptographic algorithm that can be used to protect electronic data. The AES algorithm is a symmetric block cipher that can encrypt (encipher) and decrypt (decipher) information.
4. IEEE-23026-2015 a. The goal of this standard is to improve the usability of informational websites and ease of maintenance of managed Web operations in terms of locating relevant and timely information, applying information security management, facilitating ease of use, and providing for consistent and efficient development and maintenance practices.

### 2.4 INTENDED USERS AND USES

1. Hinckley Medical benefits
  - a. Organized and easy to use inventory tracking
  - b. Organized and easy to use shipment tracking
  - c. Step-by-step assembly process with digital signatures for approval
  - d. Product information page to access all the needed information for each product in the field
  - e. Effortless serviceability for when a department requires a product to be serviced
  - f. Display all relevant information about product provided a serial number
  - g. Ability to track internal devices and equipment serviceability schedule that is FDA compliant
2. People/Departments who bought the product benefits
  - a. Easy access to product information

- b. Ability to request a product to be serviced
- c. Track all the products a department owns (Department Head)

## 3 Project Plan

### 3.1 PROJECT MANAGEMENT/TRACKING PROCEDURES

We chose a waterfall + agile approach for the management style. The main reason being is that we had to have certain things done by certain times to continue with different aspects of the project and we set goals to have those done so we could continue. We had 2 week sprints that would help us keep these goals in mind and continue at a good pace on the project. We used Jira to track our schedule on the project and with the help of github we kept our code all localized so that we could work on it at any time.

### 3.2 TASK DECOMPOSITION

Breaking the project into different parts is an easy way for each of the parts of the project to get done without having to wait on each other. How we have it broken up is we work in teams of two and work on separate aspects of the project. One group works on the frontend and some on the backend.

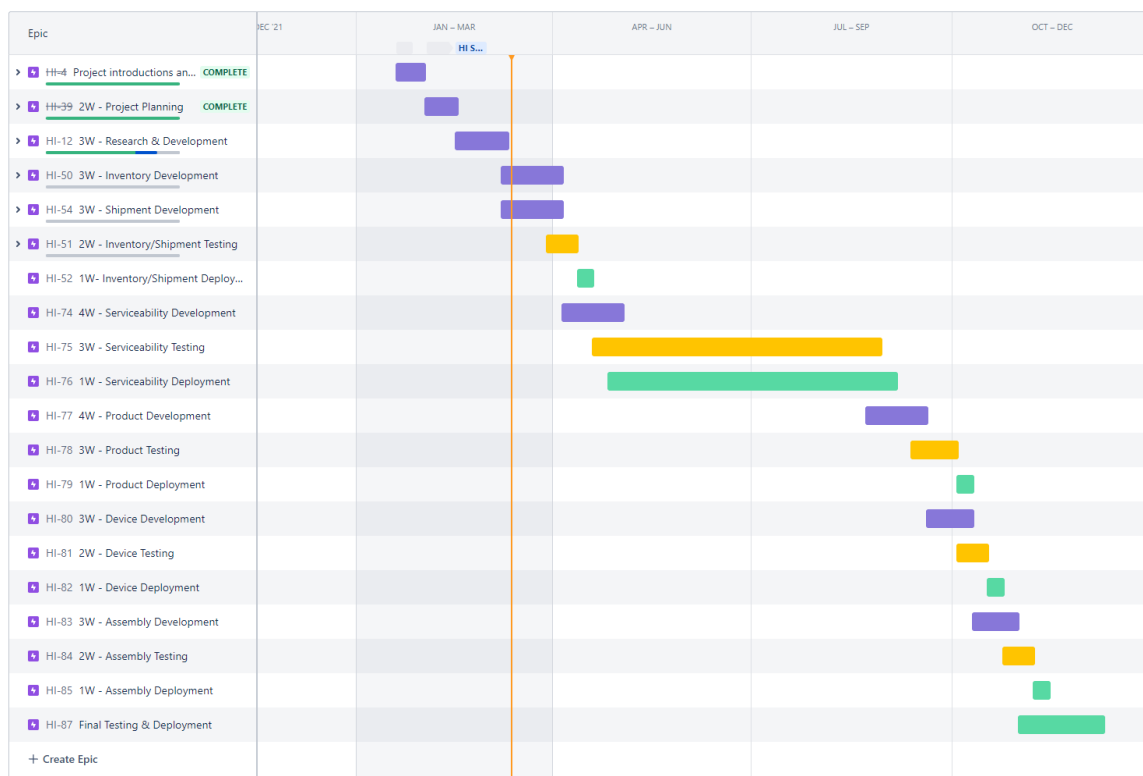
### 3.3 PROJECT PROPOSED MILESTONES, METRICS, AND EVALUATION CRITERIA

This semester there were 3 major milestones; 1 being the creation of the shipment page, 2 of the inventory page, and 3 of the login page. Each of these pages need to be functional and is part of the core functionality of Hinckley Medical LLC's website that they requested. Our goal was to get these core functionalities up and running so they can start using it by the end of semester.

The shipment page would keep track of all the incoming and outgoing shipment orders within the company. The inventory page would keep track of all in-house parts and display various information about those parts. The inventory page is also linked to the shipment page in the sense that when you receive something it will have been initially from the shipment page. Additionally from the shipment page you would be able to change the inventory of items. This would allow us to have the ability to show if an order is good because you don't have to manually change it on the inventory page. Lastly the login page would help the company organize permissions of users accessing the website such as guest, employee and admin.

### 3.4 PROJECT TIMELINE/SCHEDULE

Below is a detailed breakdown of our schedule that as you can see have different amounts of time to each sprint. The main and longest parts of the sprint being the Inventory and shipment page. Each of the pages were to be about 3 weeks in length with ample time for testing and working on each of the pages.



### 3.5 RISKS AND RISK MANAGEMENT/MITIGATION

Not too many risks are brought up with the creation of this product. The only one of major significance is the idea of user data getting stolen and that can be fixed through the implementation of securing personal information with hashing or any other method that AWS provides to us already.

### 3.6 PERSONNEL EFFORT REQUIREMENTS

Each of our team members are required to work on the project a certain amount of time each week but it can vary on the amount of time that they actually work on the project. The amount of time each of the group members work on the project varies from 5 hours to 10 hours each week.

### 3.7 OTHER RESOURCE REQUIREMENTS

The other type of resource that we needed for the project was for financial help. As AWS offers many different services and allows you to “pay as you go” meaning it will be more expensive the more it is used. We entered the AWS free tier to help with these costs and it offers most of our services for free while we are in the development phase. They check the usage amounts by the month and then it resets. If we go over the free tier amount then we get charged the normal amount. We also applied for \$300 in AWS credit which should cover the financial needs for the development of the project.

## 4 Design

### 4.1 DESIGN CONTEXT

#### 4.1.1 Broader Context

Area	Description	Examples
Public health, safety, and welfare	Our inventory system will save HM employees time by streamlining the shipment receiving and assembly tracking processes	Increasing/reducing exposure to pollutants and other harmful substances, increasing/reducing safety risks, increasing/reducing job opportunities
Global, cultural, and social	N/A	Development or operation of the solution would violate a profession's code of ethics, implementation of the solution would require an undesired change in community practices
Environmental	N/A	Increasing/decreasing energy usage from nonrenewable sources, increasing/decreasing usage/production of non-recyclable materials
Economic	Our Infrastructure App will increase productivity and save the company worker-hours that would otherwise be used to manually track inventory and warranty status.	Product needs to remain affordable for target users, product creates or diminishes opportunities for economic advancement, high development cost creates risk for organization

#### 4.1.2 User Needs

PARAMEDIC needs a way to SUBMIT A CUSTOMER SERVICE REQUEST because PRODUCT BROKE.

DEPARTMENT HEAD needs a way to ORDER REPLACEMENT PARTS because PRODUCT BROKE.

ADMIN needs a way to CHANGE PART CATALOG because PART NUMBER/SOURCE CHANGED.

EMPLOYEE needs a way to TRACK INVENTORY because HE/SHE NEEDS TO KNOW WHEN TO ORDER MORE PARTS.

#### 4.1.3 Prior Work/Solutions

When looking at other examples for page layout we find many examples online that we can follow along with, and these help a ton. Have a template design that someone says works really well and they explain every part of the design they created. It is easy for us as a group to take that and change it to our liking and use it as a base line.

#### 4.1.4 Technical Complexity

With our project being software based there are always ways that we can improve code that we find helpful and can use for ourselves. For the frontend we are using Javascript react with backend on AWS and with these two components we are creating from the ground up a system that Hinkley Medical can use in day to day life. What they asked for was to create many different aspects of the website, everything ranging from inventory, shipment, profile, assembly and much more. Each of these components are very different from each other and require a different way of thinking on how we are to create them.

### 4.2 DESIGN EXPLORATION

#### 4.2.1 Design Decisions

1. Using AWS as backend was a very smart choice as it is easy to create and use for our project.
2. Having an overall design layout of what each page is going to look like as a template.
3. Using widgets in our pages make them look more professional and gives it more ease of use which is always smart to have.

#### 4.2.2 Ideation

We came to widgets from many different ideas:

1. Drop down menu
2. Color coordinated parts
3. Pop up window
4. Seperate page loading
5. All info displayed without having to press a button

#### 4.2.3 Decision-Making and Trade-Off

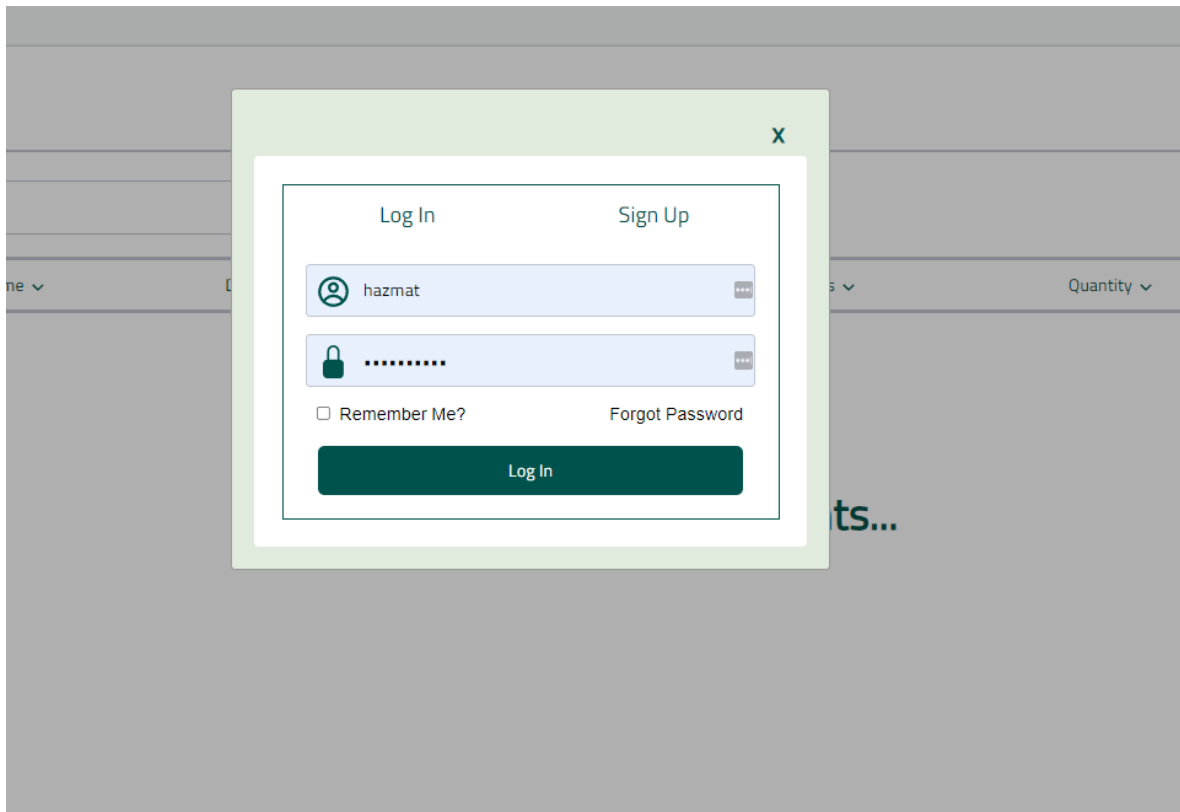
1. Drop down menu:
  - a. Pros: Easy access for menu
  - b. Cons: If too many options could confuse client
2. Color coordinated Parts:
  - a. Pros: Easier to see certain things like titles/menus
  - b. Cons: Too many colors could confuse client
3. Pop up window:
  - a. Pros: Clears up space and makes it less cluttered
  - b. Cons: Might be annoying for the client (new window may cause performance issues)
4. Separate Page Loading:
  - a. Pros: Clears up space like a pop up window and makes it less cluttered
  - b. Cons: May cause performance issues
5. All info displayed without having to press a button
  - a. Pros: Easy access for information needed
  - b. Cons: Could be overwhelming to look at

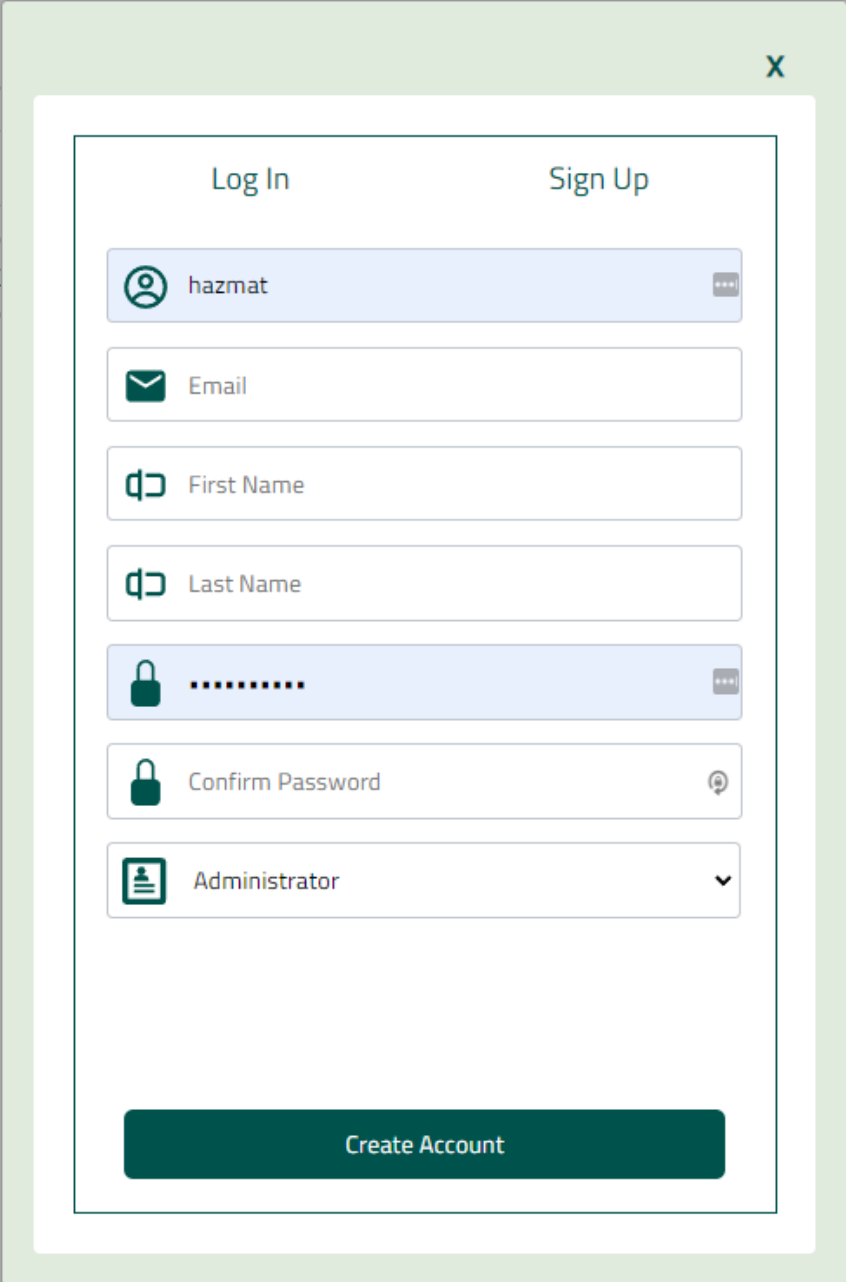
### 4.3 PROPOSED DESIGN

So far we have implemented our three main goals by the end of the semester. These were to have the ability to login/signup, functional inventory page and shipment. We have finished developing these pages and have moved into creating the necessary test cases for the critical function to implement into our CI/CD into git lab.

#### 4.3.1 Design Visual and Description

##### #1 Login/Signup page





The image shows a modal window for user authentication. It features two tabs: 'Log In' and 'Sign Up'. The 'Log In' tab is active. The form includes the following fields:

- Username: hazmat
- Email: (empty)
- First Name: (empty)
- Last Name: (empty)
- Password: (masked with dots)
- Confirm Password: (empty)
- Administrator: (dropdown menu)

A 'Create Account' button is located at the bottom of the form.

The first screenshots (#1) is our implementation of the logging and signing up feature. There is a button in the top right corner of the site for logging in. After logging in there will be a profile tab in place of the login button.

## #2 Shipment Page

Hi, Colton

Shipment Page

Export to Excel + New Order

Search Batch Number

Date Supplier Labels Status

Batch No	Part Name	Date	Supplier	Labels	Quantity	Status
AB1000-1	Amp Boards	03/31/2022	JLPCB	Loadcell Casing	150	Received
OB1000-2	PWS-100B	03/27/2022	Perrin	Overlays	20	Received
<p>Order Num: MICHAELO21122                      Order Date: February 16, 2022                      Delivery Date: March 28, 2022                      Supplier: Perrin                      Main Contact: Pat Crowley</p> <p>Received By: ad1cf83a-a537-40ba-a065-f6ecdf7768c4                      Inventory Quantity: 57                      Cost / Unit: \$93.16                      Other Cost: \$0.00                      Total: \$NaN</p>						
OC1000-1	PWS-100C	03/27/2022	Perrin	Overlays	3	Received
MB1000-1	Main Board	01/10/2022	JLPCB	Main Casing	50	Received
PH1000-1	PH 4in	12/31/2021	KRCD Elec.	Wires	400	Received
PH2000-1	PH 6in	12/31/2021	KRCD Elec.	Wires	700	Received
PH3000-1	PH 7.5in	12/31/2021	KRCD Elec.	Wires	900	Received
PH4000-1	PH 11.5in	12/31/2021	KRCD Elec.	Wires	200	Received

Search Inventory Part(s) X

Part Name(s):

Q Select... ▼

Amp Board (Loadcell Casing) X

Main Board (Main Casing) X

+ Add another item

Cancel Continue

03/27/2022 Perrin Overlays



### Create New Shipment X

**JLCPCB**

**Order Number:**  🔒

**Order Date:**  📅 **Estimated Delivery:**  📅

---

**Amp Board**

Quantity:	Cost/Unit:	Batch Number:
<input type="text" value="10"/>	<input type="text" value="11.99"/>	<input type="text" value="AB1000-2"/>

---

**Main Board**

Quantity:	Cost/Unit:	Batch Number:
<input type="text" value="10"/>	<input type="text" value="8.97"/>	<input type="text" value="MB1000-2"/>

---

**Shipping/Other:**  **Total:**

### Review Shipment X

**test123**

**Supplier:** JLCPCB

**Order Date:** April 20, 2022

**Estimated Delivery:** April 24, 2022

---

**Amp Board (Loadcell Casing)**

Quantity:	Cost/Unit:	Batch No:
<input type="text" value="20"/>	<input type="text" value="\$11.99"/>	<input type="text" value="AB1000-2"/>

---

**Main Board (Main Casing)**

Quantity:	Cost/Unit:	Batch No:
<input type="text" value="50"/>	<input type="text" value="\$8.97"/>	<input type="text" value="MB1000-2"/>

---

**Shipping/Other:**  **Total:**

The second screenshot (#2) shows the site's sidebar which is able to slide in and out when clicking on the menu button next to the Hinckley medical logo. Each page has a separate button inside of this sidebar. In this screenshot, we are on the shipment page. Each shipment is displayed with characteristics displayed for each. Each shipment has a dropdown displayed when clicking on it. Currently, the dropdown just displays the rest of the information although it will be formatted to look cleaner. We have the backend connected to the shipment page so the items displayed are the current items the sponsor company provided us. Export to Excel button will take all of the shipments and allow you to download them in excel form

The other screenshots for the shipment page show the steps to create a new shipment item. First, you need to select an inventory part, otherwise create a new inventory part (pending). You can have multiple inventory parts in one order as long as they are from the same supplier. Then it requires you to fill in the information about the shipment on the Create New Shipment page. Lastly, before creating the shipment it has you review the information for typos por anything that could have been inserted wrong.

### #3 Inventory page

The screenshot displays the 'Inventory' page of the Hinckley Medical system. The sidebar on the left shows the user's name 'Hi, Anthony' and navigation links for Home, Assembly, Devices, Inventory, Product, QMS, Shipments, and Serviceability. The main content area features a search bar, a '+ New Part' button, and a table of inventory items. The table has columns for Part Name, Full System Quantity, Label, and Inventory Status. The items listed are:

Part Name	Full System Quantity	Label	Inventory Status
Amp Board	79366	Loadcell Casing	Full
Casing Base	67	Loadcell Casing	Full
PH 7.5in	870	Wires	Full
PWS-100C	3	Overlays	Moderate
PH 6in	670	Wires	Full

The image shows a modal window titled "Add a New Part" with a close button (X) in the top right corner. The form is organized into two columns. The left column contains fields for "Part Name:", "Supplier:", "Label:", and "Website:". The right column contains fields for "Quantity:", "Part Cost:", "Amount PWSA:", and "Amount PWSB:". The "Supplier:" and "Label:" fields are implemented as search boxes with a magnifying glass icon, the text "Select...", and a dropdown arrow. At the bottom right of the form, there are two buttons: "Cancel" and "Save".

Part Name:	Quantity:
_____	_____
Supplier:	Part Cost:
<input type="text" value="Select..."/>	_____
Label:	Amount PWSA:
<input type="text" value="Select..."/>	_____
Website:	Amount PWSB:
_____	_____

Cancel Save

The third screenshot (#3) is our implementation of the inventory page. The inventory page has similar characteristics as the shipment page. Each part is displayed and has a dropdown for each that will display more information about each. The inventory has a button to create a new part. The button will open a popup as shown where you can insert characteristics about the new part that will be populated into the inventory when successfully created.

### 4.3.2 Functionality

The current design includes every functional requirement given by Hinckley medical for the pages that we have been working on. It also features many non-functional requirements that will enhance the experience of using the site. Some of these include a moving sidebar that is able to hide when staying on one page and other dropdowns that can be hidden to provide a clean user experience without unnecessary distractions. As we work on the other pages of the project we will make sure it meets all the sponsor companies requirements.

### 4.3.3 Areas of Concern and Development

That the product might not meet the requirements that they are looking for in the inventory and ordering of parts of the project. Also, for the shipment page making it too complicated to use by having too many user inputs and steps to create a new shipment.

The immediate plans are to organize the project into the required tasks so there won't be any missed requirements. We use Jira to organize all of the tasks that we are required to work on. Also share major project achievements with our client and allow them to provide feedback.

## 4.4 TECHNOLOGY CONSIDERATIONS

The strengths in the technology that we have chosen are:

- React JavaScript Framework is fast and has great pre-built packages
- AWS amplify is easy to implement with react
- AWS cognito for user based encryption
- AWS DataStore allows for offline access and will sync when connected to the internet

The weaknesses of the technology that we have chosen are:

- Accessibility, because of how AWS amplify charges the website will only be able to be accessed in the midwest region initially until the sponsor company decides they want to expand

## 4.5 DESIGN ANALYSIS

### **Did your proposed design from 3.3 work? Why or why not?**

Yes the design has worked well so far and we have not had to do any major redesigns to our initial ideas. Since the shipment and inventory page had so much in common we were able to work on them concurrently to finish both pages at once.

### **What are your observations, thoughts, and ideas to modify or iterate over the design?**

As previously mentioned we have finished the development of the shipment and inventory page for the sponsor company Hinckley Medical LLC. Our initial thoughts are to create the website to meet all the requirements and then upon looking over these pages to improve by adding additional features that are not essential but would be nice to have.

## 4.6 DESIGN PLAN

We created a Miro board wireframe with every page we will need to meet the overall requirements. Each page has its own functionality with the different roles described. It also has user capability roles, design inputs, and known database items. In this board we also describe each user role in

depth and the structure of our databases. There are also links to useful resources as well as security ideas..

Our Miro board can be viewed using the following link:

[https://miro.com/app/board/uXjVOQ2GbiI=?share\\_link\\_id=323438907833](https://miro.com/app/board/uXjVOQ2GbiI=?share_link_id=323438907833)

## 5 Testing

### 5.1 UNIT TESTING

The units that will be tested are most of our function calls that have a critical render that will change the UI in react. We will use what is supposed to do and also have a few edge cases for most of the test cases. Example units would be our login functionality.

Each member in the group will create their own unit test cases for the functions that they create so the next step in the testing process will go smoothly.

The tools that will be used are react testing libraries Jest & Cypress.

### 5.2 INTERFACE TESTING

The interface testing that will be done is for our calls to the web server that we are using. For the project it is AWS and we will use multiple different services such as, Coginto, Amplify, DynamoDB, DataStore, DataSync, and CloudWatch.

We will validate any edge cases so these services do not crash and it will be scalable with our web application.

### 5.3 INTEGRATION TESTING

Integration testing will be important for inserting everyone's work into each other and validating that nothing from someone else's part will break another. The critical integration path would be from moving from page to page in the design from any part of the project. Also, validating that when we are working on a part of the website that requires a submission it will be able to store the item as a draft.

### 5.4 SYSTEM TESTING

Inventory:

- Add/Edit Inventory items
- Auto increment inventory amount by shipment
- Filter and search inventory list

Shipment

- Add/Remove/Edit shipments in list
- Filter and search shipment list

### 5.5 REGRESSION TESTING

Any pushes that affect old functionality will run through our CI/CD pipeline inside of gitlab. The CI/CD will have to be updated with the new additions.

### 5.6 ACCEPTANCE TESTING

We would involve our client in the acceptance testing by allowing them to use our project and design. Since the clients are testing it, this ensures that the software meets and performs according to the client's expectations.

### 5.7 SECURITY TESTING (IF APPLICABLE)

Security Testing was done on the sign in credentials of the login page. This means that the passwords, usernames, etc are saved properly and not able to be stolen by malicious hackers.

### 5.8 RESULTS

Our test-implementation phase concludes on the 9th, so we haven't completed our testing requirements yet, but once we are done, we will ensure that we have tests that meet our requirements for handling shipping and inventory, namely incrementing and querying inventory counts and adding and searching shipment records. We will expect all tests to pass, and will modify our code to conform to specs if tests are failing.

## 6 Implementation

In the next semester, our goal is to create a overall fluid user experience when guest, employees and admins use our website. We want to create a Home page so users can easily access the most important information on our website all at once. An Assembly page to keep track of in-house parts and the progress of those parts being assembled together. Devices page tracks all internal devices that are used via Hinckley Medical LLC. Product page which show cases the companies products and it will have various information about those products. Lastly, the Serviceability page where users can submit a ticket of broken/faulty products that needs to be serviced on so we can ship new products out to the clients.

Each of these small milestones next semester will help the user have more functionality of the website along with increasing productivity with the use of a user friendly interface. Lastly, our big milestone for next semester is to make sure the website of our previous milestones from the first semester work flawlessly and trying to minimize small bugs and craneys when users are accessing the site during their day to day work time.

## 7 Professionalism

### 7.1 AREAS OF RESPONSIBILITY

<b><u>Area of Responsibility</u></b>	<b><u>IEEE Code of Ethics</u></b>
Work Competence	To maintain and improve technical competence.
Financial Responsibility	Honest estimates, reject bribery, give proper credit to the contribution of others.
Communication Honesty	Protect others' privacy, and disclose conflicts to affected parties.
Health, Safety, and Well-Being	To hold paramount the safety, health, and welfare of the public. Treat all fairly.
Property Ownership	To accept criticism, correct errors, and give credit to whom it is due.
Sustainability	To strive to comply with sustainable development practices. Reveal factors that might endanger the environment without delay.
Social Responsibility	Improve the understanding of society about emerging technologies.

The NSPE Canon focuses solely on values like Honesty and Integrity and Honorable Conduct. The IEEE code of ethics focuses on these values too, but also adds a performance and knowledge aspect. Where the NSPE Canon says to only perform services in your area of expertise, IEEE CoE says to strive to expand your areas of expertise. Where the NSPE says to give credit where credit is due, IEEE adds that we should accept criticism as well as credit for our own work. The IEEE promotes life-long learning and the bettering of oneself, not just maintaining one's honor and integrity.

## 7.2 PROJECT SPECIFIC PROFESSIONAL RESPONSIBILITY AREAS

<u>Area of Responsibility</u>	<b>Project's Professional Context</b>	<b>Team Performance</b>
Work Competence	This very much applies to our project. All of us have backgrounds in some of the required technologies required for this project, and those backgrounds were used when determining our initial project management roles. Since then we've all also had to learn new skills and expand our areas of expertise as needed to meet project requirements, as outlined in the IEEE code of ethics.	High
Financial Responsibility	This doesn't really apply to our project, since no major investments have been needed so far. The AWS fee estimates that we have calculated have been accurate to our knowledge and fully disclosed to our sponsor company.	High
Communication Honesty	Communication between our group has always been open and honest. We all understand that dishonesty and conflict only create more problems, and that if we all work together we will be much more productive.	High
Health, Safety, and Well-Being	This doesn't really apply to our project. It is purely software development, so there aren't any physical safety concerns.	N/A
Property Ownership	We never take credit for another group member's work in our weekly status reports. Each member of the team is able to share and claim their own accomplishments. We are also always open to constructive criticisms from other members of the group if something we create is not up to par with expectations.	High
Sustainability	Also not really applicable. Our project won't have any impact on the environment.	N/A
Social Responsibility	N/A. This is not an educational project.	N/A

## 7.3 MOST APPLICABLE PROFESSIONAL RESPONSIBILITY AREA

We believe that Work Competence is the most applicable area of responsibility relative to our project. Being accountable for only accepting responsibilities that we are capable of handling



ensures that we are able to proceed with our project in a timely manner without having to backtrack and redo someone's work because they didn't know what they were doing.

## 8 Closing Material

### 8.1 DISCUSSION

For the first semester our requirements were met and we were able to work on the actual implementation of the product into the company for starting of the use.

### 8.2 CONCLUSION

What we have done for the project so far is implement the login, inventory and shipment page. The only constraint that we met from time to time was the time we had to work on the project with all of the group members having such busy schedules it was sometimes difficult to find time to work on it. What we could have done differently from the start of the project is maybe have a more defined testing method to test what we have done.

### 8.3 REFERENCES

M. Hollands, "Amplify," *Amazon*, 2015. [Online]. Available: <https://aws.amazon.com/amplify/>. [Accessed: 25-Apr-2022].

"React icons - github pages." [Online]. Available: <https://react-icons.github.io/react-icons/>. [Accessed: 25-Apr-2022].

### 8.4 APPENDICES

Our Miro board can be viewed using the following link:

[https://miro.com/app/board/uXjVOO2GbiI=?share\\_link\\_id=323438907833](https://miro.com/app/board/uXjVOO2GbiI=?share_link_id=323438907833)

#### 8.4.1 Team Contract

Team Members:

- 1) Colton Hazlett                      2) Anthony Nuss  
 3) Dustin Heims                      4) Ty Wallis  
 5) Chris Tan                              6) Kevin Nguyen

Team Procedures

1. Day, time, and location (face-to-face or virtual) for regular team meetings:
  - Tuesdays at 4:30 pm, hybrid meetings.
  - Individual meetings with other team members when working together.
2. Preferred method of communication updates, reminders, issues, and scheduling (e.g., e-

mail, phone, app, face-to-face):

- Slack channels for communicating technical details
- Group text message for communicating meetings and quick questions
- Google meetings for virtual meetings
- Jira for scheduling tasks and issues

3. Decision-making policy (e.g., consensus, majority vote):

- Majority vote based on importance of the issue.

4. Procedures for record keeping (i.e., who will keep meeting minutes, how will minutes be shared/archived):

- Meetings are tracked by our project manager (Colton Hazlett).

#### Participation Expectations

1. Expected individual attendance, punctuality, and participation at all team meetings:

- Expected to attend every meeting as possible unless a conflict of scheduling occurs, individuals will be punctual during the meetings and expected to participate in the conversation.
- If a scheduling conflict occurs it is up to the individual to reach out to be caught up.

2. Expected level of responsibility for fulfilling team assignments, timelines, and deadlines:

- Requirements are managed based on a two week sprint.
- Group members must communicate about any difficulties with meeting deadlines.

3. Expected level of communication with other team members:

- Communicate frequently with assigned group members.
- Communicate as much as possible with other team members.

4. Expected level of commitment to team decisions and tasks:

- Group members should be actively involved in communications and decisions.
- Group members should be able to complete all expected tasks during a sprint, unless communicated otherwise with all team members.

#### Leadership

1. Leadership roles for each team member (e.g., team organization, client interaction,

individual component design, testing, etc.):

- Colton Hazlett (Project Lead & Client Integration Lead)
- Chris Tan (design and tester for backend)
- Kevin Nguyen (design and tester for frontend)
- Anthony Nuss (frontend integrator)

- Ty Wallis (backend integrator)
- Dustin Heims (Security integrator and frontend design and testing)

2. Strategies for supporting and guiding the work of all team members:

- Frequently checking and updating Jira to maintain records of their work.
- Communicating to assigned team members and any other team members to maintain up to date information.
- Reviewing team meetings and notes to stay up to date.

3. Strategies for recognizing the contributions of all team members:

- Since the team members are split within different groups, the contributions are easier to track since the task is different for each smaller group.
- Documenting contributions in Jira using an agile approach

### Collaboration and Inclusion

1. Describe the skills, expertise, and unique perspectives each team member brings to the team.

- Colton Hazlett: Frontend & Backend experience, project management role, AWS experience, React experience, agile experience, cyber security experience.
- Chris Tan: Backend application experience, experience with databases and queries. Experience with React as well. Very open to learning and to new ideas.
- Anthony Nuss: Experience developing frontend web application using react. Experience working in an agile environment.
- Kevin Nguyen: Frontend application experience, worked with UI/UX designs/debugging within a big company. Worked in an agile work environment.
- Ty Wallis: Frontend and Backend experience. Experience with CSS conformity and databases in an internship for a medical startup's webapp. Electives in Project Management, Software Testing, and Cloud Computing.
- Dustin Heims: Experience with backend development, open to learn new products that I can implement in the future, small amount of experience with frontend.

2. Strategies for encouraging and support contributions and ideas from all team members:

- Client offering us lunch when he is available.
- Weekly meetings encourage lots of communication and idea bouncing while collaborating on what to do next.

3. Procedures for identifying and resolving collaboration or inclusion issues (e.g., how will a team member inform the team that the team environment is obstructing their opportunity or ability to contribute?)

- Communicate to the team about the issue in order to solve the issue.
- Work directly with the project manager or advisor to resolve any issues.

Goal-Setting, Planning, and Execution

1. Team goals for this semester:

- Communication with our client and build a good working relationship.
- Finishing on a good checkpoint for our deliverables to our client.
- Create a frontend and backend application that is useful for our client.

2. Strategies for planning and assigning individual and team work:

- Split up the team into smaller groups that work together on the same part of the project.
- Assign each group tasks and in that group they will split the tasks to each individual.

3. Strategies for keeping on task:

- Weekly meetings on scheduled dates.
- Communication with the sub team throughout the week on work progress.
- Jira sprint board planner that lists weekly requirements.

Consequences for Not Adhering to Team Contract

1. How will you handle infractions of any of the obligations of this team contract?

- Meet together as a group and discuss what support or changes are needed.
- Find what is causing the issues and what is needed to address them.

2. What will your team do if the infractions continue?

- Discussions with the advisor.

\*\*\*\*\*

a) I participated in formulating the standards, roles, and procedures as stated in this contract.

b) I understand that I am obligated to abide by these terms and conditions.

c) I understand that if I do not abide by these terms and conditions, I will suffer the consequences as stated in this contract.

1) Colton Hazlett DATE 4/18/2022

2) Anthony Nuss DATE 4/18/2022

3) Dustin Heims DATE 4/18/2022

4) Ty Wallis DATE 4/18/2022

5) Chris Tan DATE 4/18/2022

6) Kevin Nguyen DATE 4/18/2022