

# **WPI CS3733-D25 Software Engineering, Prof. Wong**

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## **Mass General Brigham Application User Manual**

**Team Coach: Matt Hagger**

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[\*\*Final GitHub Repository\*\*](#)

# Home Page

The screenshot shows the home page of a navigation application. At the top right is a navigation bar with "Navigation", "About", and "Log In" buttons. In the top left corner is the Brigham and Women's Hospital logo. The main content area features a large blue button labeled "How Can We Help?". Below it are two sections: "Go To Hospital" with input fields for "Starting Location" and "Hospital Destination", and "Navigate The Hospital" with icons for car, walk, bus, and bike. A large satellite map of a city is on the right. At the bottom right of the map are links for "Keyboard shortcuts", "Image may be subject to copyright", "Terms", and "Report a".

**User Instructions:** This is the first page you see when you open our website. A guest user can only access our navigation functions and About Page. If you have credentials, you can choose to navigate or log in from the navigation bar. From any point in the application, you may click the Brigham and Women's Logo in the top left corner to return to this page.

The screenshot shows the same home page in dark mode. A modal window titled "Sign in to CS3733-Team-O" is displayed, prompting the user to sign in with Apple, Google, or Microsoft accounts, or to enter their email address. Below the sign-in form is a "Continue" button. At the bottom of the modal, there are links for "Don't have an account? Sign up" and "Secured by Clerk Development mode". The background map and navigation options are visible but dimmed.

**User Instructions:** When you log in, you will be greeted by our Clerk authentication screen. There are two types of accounts: a staff account with basic permissions and an admin account with full permissions. You may also create your own account and manage permissions later.

**Staff Credentials:** username: staffD25O@gmail.com

password: cs3733D25O

**Admin Credentials:** username: softengD25O@gmail.com

password: cs3733D25O

The screenshot shows the Clerk application's homepage. At the top right, there are links for "Navigation", "About", and "Log Out". On the left, there are three main navigation options: "Go To Hospital" (with icons for car, walk, bus, and bicycle), "Navigate The Hospital" (with a north arrow icon), and "Request Services" (with a document icon). A large satellite map of a city is displayed on the right side of the page.

**User Instructions:** This is the homepage for staff accounts. Staff can file service requests, as reflected by the new selection bubble (Request Services). The process of filling out a request is outlined later in this manual.



# How Can We Help?



Go To Hospital

100 Institute Rd, Worcester,

Patriot Place



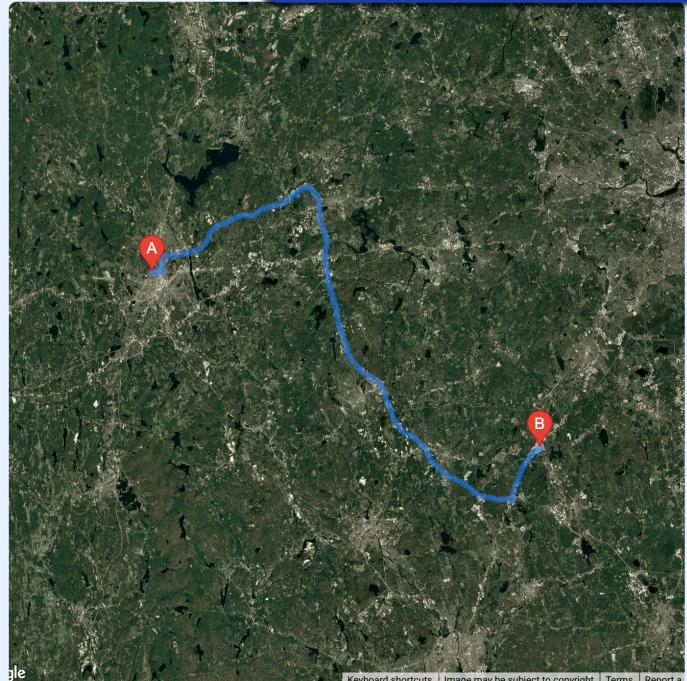
Expand Directions



Navigate The Hospital



Request Services



**User Instructions:** For ease of use, anyone can navigate to the hospital from our homepage. To do so, click on the “Go To Hospital” bubble. This will open a submenu asking for details about what hospital you want to go to, and from where. In the first box, fill out your starting location. In the second box, select a hospital from the dropdown. For your mode of travel, choose one of the icons below (Mode defaults to driving directions). The map on the right will update your inputs in real time. For more details about your trip, select the expand directions button to bring you to our full world map page (detailed later in this manual).



# How Can We Help?



Go To Hospital



Navigate The Hospital

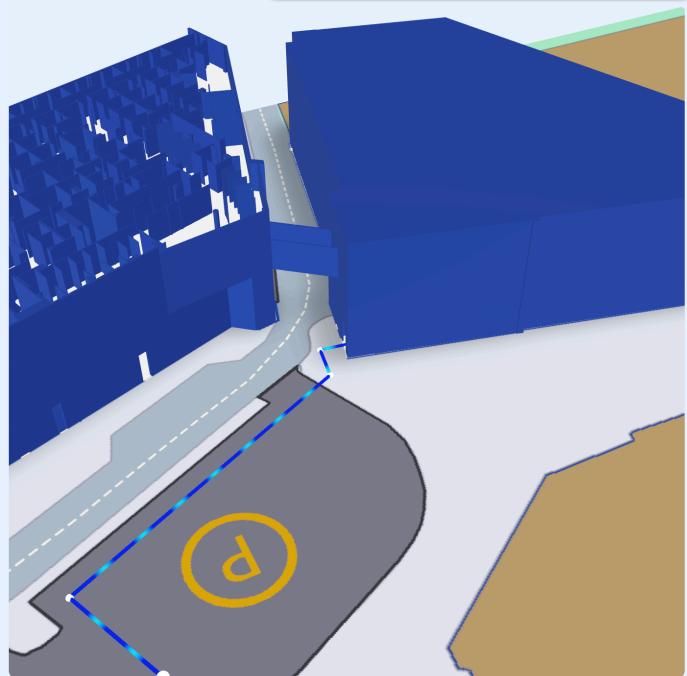
Patriot Place

Pharmacy

Expand Directions



Request Services



**User Instructions:** From the homepage, users may also choose to navigate within a hospital. By selecting the “Navigate the Hospital” bubble, users will be greeted with a submenu asking for details about which hospital and which department within the hospital they wish to navigate to. In the first box, select a hospital from the dropdown. In the second box, select the department in the hospital you want to go to. The map on the right will update according to the hospital you selected and the department you chose. It is important to note that selecting a department does not create a path to said department. This creates a path to the reception desk a user would need to check in at to be allowed in the department. Another important note is that the path is created based on a specified algorithm chosen for the website. An admin has permission to change this algorithm for the website (details later in the manual).

The image shows a mobile-style interface for hospital navigation. At the top left is a circular icon with a building symbol. At the top right is a blue header bar with white text: "Navigation", "About", "Admin", and "Log Out". Below the header, the main title "How Can We Help?" is displayed in large blue text. To the left of the title are three circular icons with symbols: a person in a hospital bed, a north arrow, and a document. Next to each icon is a link: "Go To Hospital", "Navigate The Hospital", and "Request Services". A sub-instruction "Please Select a Service Request" is shown below the "Request Services" link. To the right of the "Request Services" link are four blue square buttons arranged in a 2x2 grid. Each button contains a white icon and text: "Interpreter Request" (with a person and microphone icon), "Security Request" (with a shield icon), "Sanitation Request" (with a trash bin icon), and "Maintenance Request" (with a bell icon). The entire interface is set against a light blue background.

Navigation   About   Admin   Log Out

## How Can We Help?

- Go To Hospital
- Navigate The Hospital
- Request Services  
Please Select a Service Request

Interpreter Request

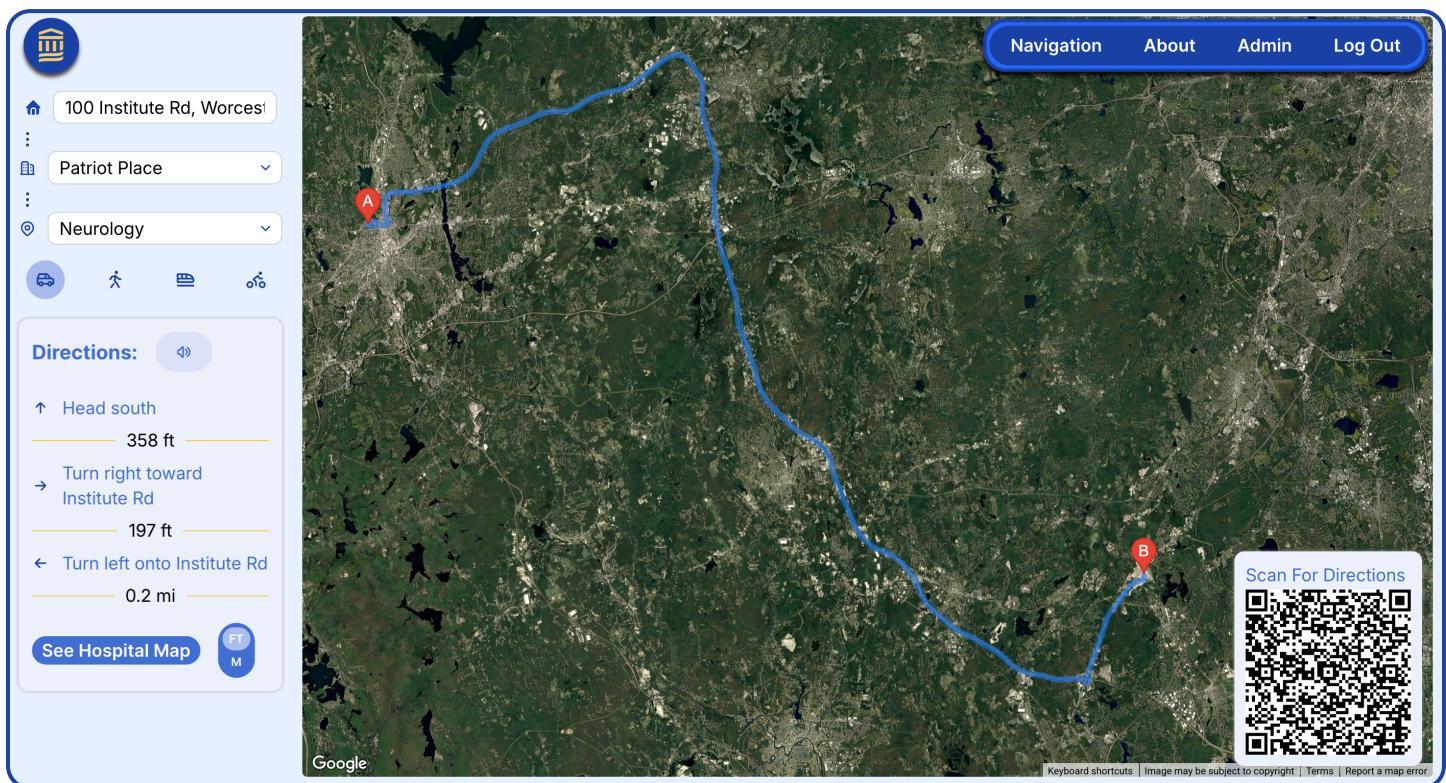
Security Request

Sanitation Request

Maintenance Request

**User Instructions:** Staff and admin accounts have the unique ability to submit service requests. By selecting the “Request Services” bubble, the right-hand maps will be replaced by the four service requests available in this application. To submit a service request, click the icon of your choice. The process of submitting a request is detailed later in this manual.

# Navigation



**User Instructions:** From the homepage, upon selection of the “Expand Directions” bubble in the “Go To Hospital” submenu, users will be brought to the whole world navigation page. This page contains many of the same fields relating to navigation from the homepage, plus the ability to select a hospital department you wish to navigate to. If you have entered any information about your start and end location and mode of travel on the homepage, it will be shown here. If you hadn’t, instead of clicking the “Expand Directions” button without filling in any information, you may fill out the navigation fields here. Details on starting location go in the first field in the sidebar, which hospital you wish to navigate to is selected from the second field, and which department you are navigating to is selected from the third field. You may then select a mode of transport by selecting one of the icons below the navigation fields. The sidebar also contains text-based directions for navigation. These directions can be given in feet or meters, depending on which is toggled from the switch in the corner of the directions box. Selecting the speaker icon in the direction box allows the application to read the directions to you using text-to-speech. As a delighter, we added a QR code at the bottom right of the page. If the user wishes, they can scan this QR code with their mobile phone, and the directions they see on the page will be sent to their phone. Selecting the “See Hospital Map” button in the sidebar routes the user to the indoor navigation page of the hospital they selected.



## Navigate the Hospital

Navigation About Log In

Faulkner Hospital  
Pulmonary Lab

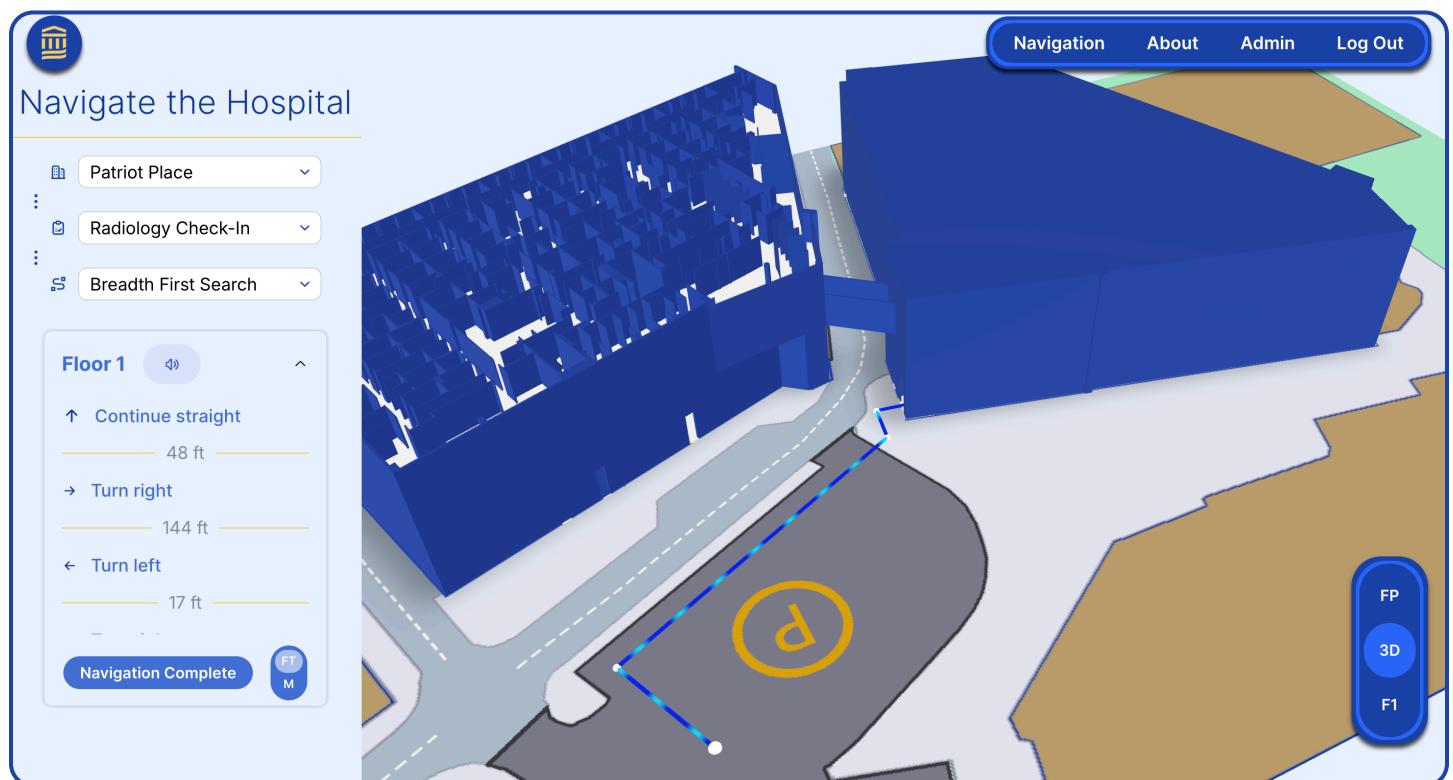
Faulkner   
↑ Continue straight  
59 ft  
→ Turn right  
151 ft  
→ Turn right  
9 ft  
← Turn left  
67 ft  
  
Navigation Complete



**User Instructions:** This is the application's indoor navigation page. It can be accessed by clicking the "Navigation" tab in the navigation bar, clicking "Expand Directions" from the "Navigate the Hospital" submenu on the homepage, or by clicking "See Hospital Map" from the world navigation page. Any fields regarding information about location and destination that have been input on other pages (such as the "Navigate the Hospital" or the "Go To Hospital" submenu or the world navigation page) are saved and automatically filled here. If no information has been filled out before routing to this page, the map defaults to the Patriot Place hospitals. Like the world navigation page, you can edit which hospital and department you are viewing from the sidebar. A path from the parking lot to whatever department's reception desk the user chose will be created. Also like the world navigation page, the sidebar has text-based directions (toggleable to be in feet or meters using the switch) and text-to-speech readings of said directions if the speaker icon is selected. If you cannot see the path enough, the map supports pan and zoom. To pan (move) the map, left-click it and drag. To zoom the map, hover your mouse over the map and use either the scroll wheel on a mouse or a two-finger drag on a trackpad.

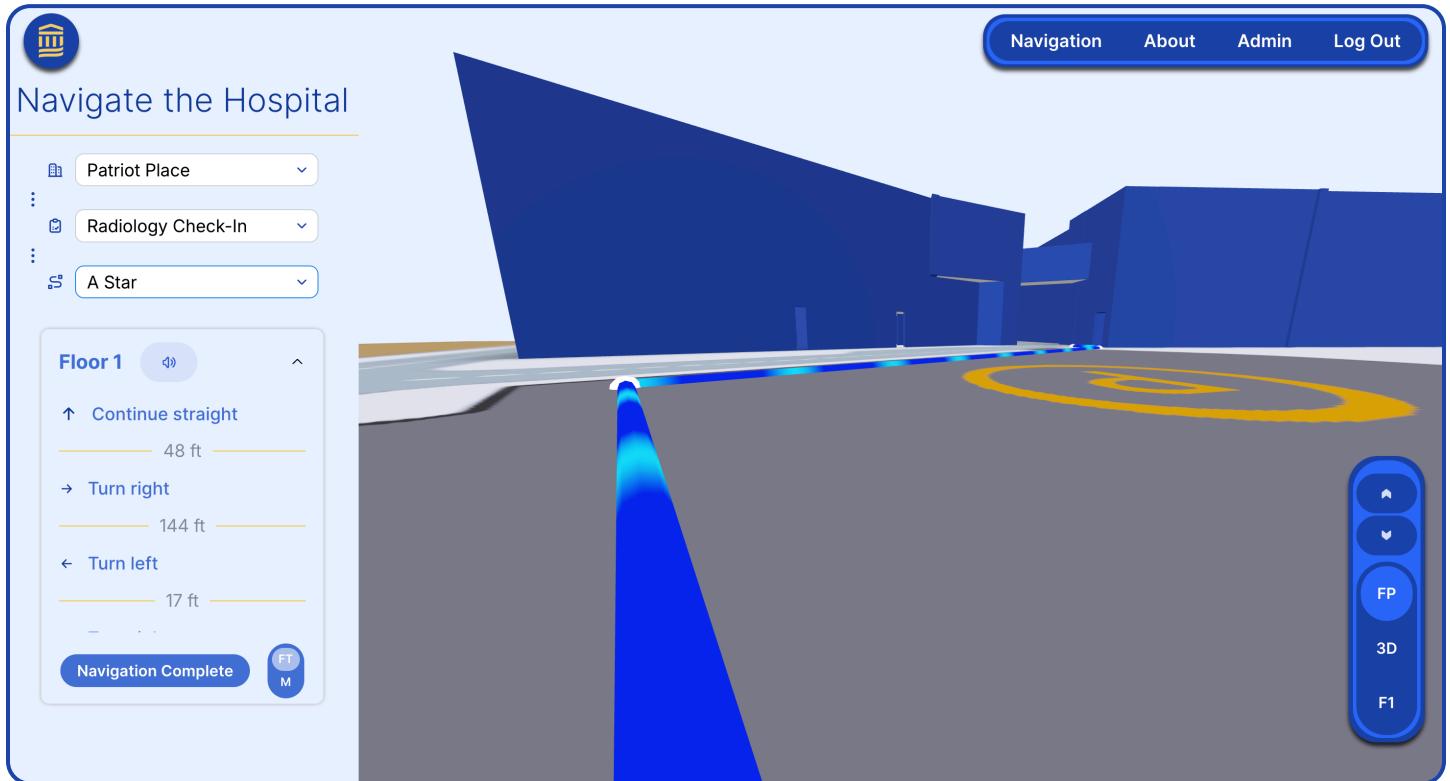


**User Instructions:** Admins are given special permissions on the map page. While almost everything remains the same, administrators can change which pathfinding algorithm the website uses to create paths. The sidebar has an extra drop-down menu for admins, from which they can select Breadth-First Search, Depth-First Search, or A\* to create paths.



**User Instructions:** We made a 3D map for the Patriot Place hospitals as a delighter since we had the resources. While you can view these maps in regular 2D, selecting the "3D" option

from the selector on the right (commonly used to choose which floor of Patriot Place you view) will show you the full 3D rendering of the map and paths. This map follows the same controls for zooming and panning as its 2D equivalents, but also comes with the ability to rotate. To rotate the map, right-click it and drag in the direction you wish to rotate.



**User Instructions:** Expanding on our delighter of the 3D Patriot Place map, we implemented first-person navigation of paths, akin to Google Maps' Street View. By selecting the "FP" option from the selector on the right, the camera will transition to "ride" along the path, and the selector will expand to include a forward and backward button. Pressing the forward button will navigate the camera to the next node on the route, and clicking the backward button will navigate the camera to the prior node on the path. In this view, the user can look at their surroundings by left-clicking their field of view and dragging in the direction they wish to view.

# Filing a Service Request

The screenshot shows a modal window titled "Language Interpreter Request". At the top right is a close button ("X"). Below the title, it says "Logan Winters". The form contains several input fields with validation stars (\*):

- Choose Employee \*: A dropdown menu labeled "Choose Employee". To its right is a microphone icon.
- Enter Date \*: A date input field labeled "Select a date". To its right is a microphone icon.
- Choose the Hospital Needed \*: A dropdown menu labeled "Select a Hospital". To its right is a microphone icon.
- Enter Time \*: A time input field labeled "Select a time". To its right is a microphone icon.
- Choose the Department \*: A dropdown menu labeled "Select Hospital First". To its right is a microphone icon.
- Choose the Priority level \*: A dropdown menu labeled "Select a priority". To its right is a microphone icon.
- Choose the Language Needed \*: A dropdown menu labeled "Select a Language". To its right is a microphone icon.
- What is the Status \*: A dropdown menu labeled "Select a Status". To its right is a microphone icon.

Below these fields is a section titled "Additional Details" with a text input field labeled "Specify additional details here". To its right is a microphone icon.

At the bottom left is a "Clear Form" button, and at the bottom right is a blue "Submit" button.

**User Instructions:** This form will pop up upon selecting a service request on the homepage (interpreter request is used in the above image, but they all follow the same pattern). Each form requires the user to enter the employee to fulfill the request, the hospital where the request is needed (along with the department), the date and time the request is required, the priority of the request, and the status of the request. Each form also has unique fields pertinent to the requested service. This form also accepts voice input from the user. To use speech-to-text for the form, select the microphone icon next to the field you wish to input it into (you may need to allow microphone permissions in your browser). The app will then begin listening for input. Upon completion, the field will populate with a valid input from the user. If you wish to revert all fields in the form to empty, press the "Clear Form" button. Upon completing the form, pressing the "Submit" button will store the data in the website's database, which can be fetched later and show a confirmation popup (shown in the following image). If at any point the user wishes to cancel filling out a service request, clicking the "X" in the top right corner of the popup closes the form and returns the user to the service request options.



X

## Service Request Submitted

Name: Admin 1

Language: Korean

Hospital: Chestnut Hill

Department: CT

Date: 2025-05-16

Time: 09:14

Priority: High

Status: Unassigned

Details: I need a translator for an elderly patient without family. Translation is needed to help treat this patient.

**User Instructions:** This is the confirmation screen shown to the user after submitting a service request. It shows all the details received and stored in the database. To close the pop-up, click the "X" button in the top right corner.

# Admin Page

The screenshot shows the Admin Page interface. At the top right is a navigation bar with links for 'Navigation', 'About', 'Admin', and 'Log Out'. On the far left is a sidebar with a blue circular icon containing a white document symbol. Below the icon, the text 'Admin Page' is underlined. A dropdown menu titled 'Service Request History' is open, showing several options with icons: 'Language Requests' (document with gear), 'Sanitation Requests' (trash can), 'Maintenance Requests' (bell), 'Security Requests' (shield), 'Graphs and Statistics' (bar chart), 'CSV Manipulator' (file), and 'Map Editor' (map). The main content area is titled 'Language Service Requests' and contains a sub-instruction 'Click on a row to find out more information'. A yellow 'Filter' button is located above a table. The table has four columns: 'Employee Name', 'Request ID', 'Language', and 'Submitted'. It lists six rows of data:

Employee Name	Request ID	Language	Submitted
Rohan Inamdar	25	English	33d ago
Owen Hart	26	German	33d ago
Hudson Kortus	27	French	33d ago
Ethan Ramoth	28	Spanish	33d ago
Camden Brayton	29	Afrikaans	33d ago
Joseph Abata	30	Portuguese	33d ago

**User Instructions:** This is our website's admin page. This page is only accessible to those who have administrator permissions. From this page, admins can view what service requests have been submitted through the website, as well as the details of the request itself. To see tables of specific service requests, select one of the options from the "Service Request History" dropdown in the sidebar. Doing so will display a table of all the service requests in that category, along with the information associated with them. For this explanation, we have chosen to view the language interpreter requests. Selecting a request from the table will expand the request, showing all fields that were input into the request (detailed in next image). From this page, admins also have access to the CSV manipulator, allowing for the addition and exportation of the node CSVs used for the hospital maps (detailed later in the manual). Finally, admins also have access to the map. Clicking the "Map Editor" icon will route the user to a page where they can create new paths for the hospital that the website will use in pathfinding. More information about this editor is detailed later.



Service Request History

Language Requests

Sanitation Requests

Maintenance Requests

Security Requests

Graphs and Statistics

CSV Manipulator

Map Editor

## Language Service Requests

Click on a row to find out more information

Filter

OWEN HART

Employee Name	Request ID	Language	Submitted
Owen Hart	26	German	33d ago

**Date:** May 3, 2025

**Time:** 07:48:PM

**Language:** German

**Description:**

**Department:** Admitting

**Hospital:** Faulkner

**Priority:** Emergency

**Status:** Done

**User Instructions:** Detailing two other features of the admin page, we show here the use of the filter button and the expanded details of a service request. By clicking the “Filter” button, a dropdown list of employees will be shown. Clicking on one of these dropdown options (for this demonstration we used our Assistant Lead SWE, Owen Hart), will show all of the service requests that they have filled for the selected service request category. Clicking one of the service requests in the table expands it, giving all the details of the filed request that were stored in the database.



Service Request History

Language Requests

Sanitation Requests

Maintenance Requests

Security Requests

Graphs and Statistics

CSV Manipulator

Map Editor

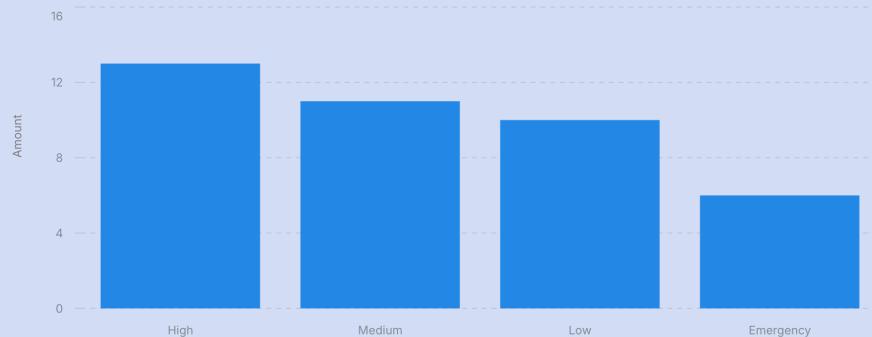
## Service Requests Statistics

Priority Level

Bar Chart

Pie Chart

Requests by Priority Level:



**User Instructions:** By clicking on the “Graphs and Statistics” tab in the sidebar, admins will be shown graphs of different data collected by the service requests. How the data is represented can be toggled between a bar chart and a pie chart by clicking the respective option from the

selector above the graphs. Clicking the yellow button above the graphs (currently displaying “Priority Level”) opens up a dropdown menu of different statistics that were collected by the service request. Different data can be shown by selecting one of the options from the dropdown, such as number of service requests of a given priority level, number of service requests from a given hospital, number of service requests by employee, and more.



**User Instructions:** Continuing about the statistics feature, we have the pie chart representation of the number of service requests filed by priority level (the same data as the bar chart in the previous image). This view can be shown by selecting the “Pie Chart” tab from the selector above the graphs.



**User Instructions:** The admin CSV manipulator tool allows administrators to control the backend node table used for pathfinding. Pressing the “Hide/Show Directory Preview” will toggle a dropdown listing all the entries in the table. Pressing “Clear Table” will remove all entries in this table. Pressing “Import CSV” allows you to select a CSV from your device and replace all entries in the node table with the contents of that file. Pressing “Export CSV” will download a CSV file of the current node table to your computer, similarly “Export JSON” will download a JSON file of the same contents to your computer.



**User Instructions:** From the admin page, clicking the “Map Editor” tab from the sidebar will route you to the Map Editor page. This page is dense with functionality and controls, most of which are explained within the website (through clicking the “?” button), but will be explained here as well for extra convenience. This page shows the 2D maps for all hospitals included in the application. To switch between these hospitals, click which hospital you wish to view from the blue selector on the right side of the page. The hospital abbreviations go as follows:

P1: Patriot Place Floor 1

P3: Patriot Place Floor 3

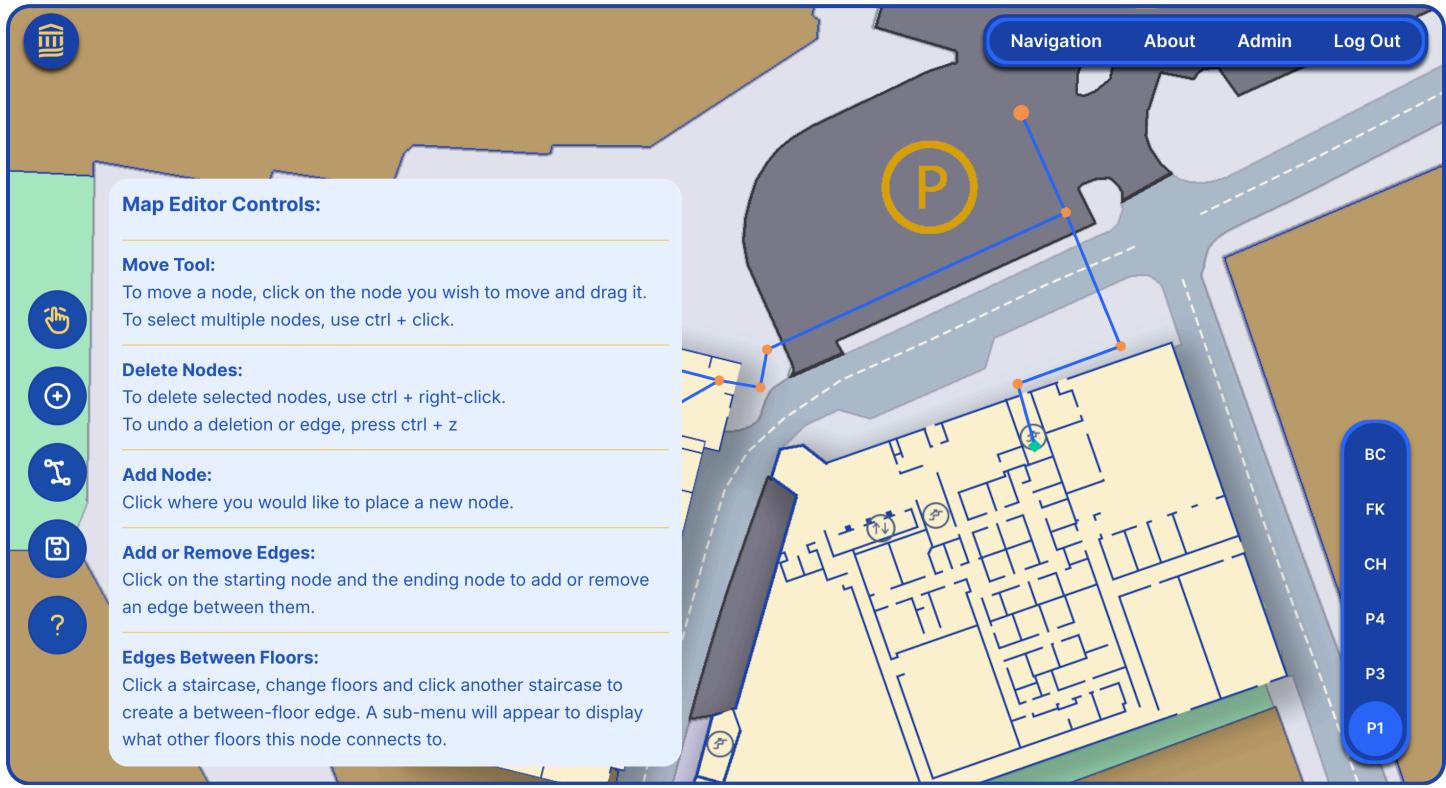
P4: Patriot Place Floor 4

CH: Chestnut Hill

FK: Faulkner Hospital

BC: BWH Main Campus

As for nodes on the map, orange circles represent regular path nodes, they are nothing particularly special, just a way to mark a direction on a path. The gray circles represent destination nodes, currently all at reception desks as per the project requirements. The green diamonds represent staircase nodes, which connect the path between floors.



**User Instructions:** As for controls of the map editor page, clicking the blue "?" button on the left side of the page gives a brief explanation of how to use each editor tool. The map page itself follows the same rules for zoom and pan as the indoor map navigation page (Drag to pan, scroll to zoom). Clicking the first blue button on the left, the finger icon, selects the Node Move Tool. Left clicking on one of the nodes while this tool is selected will change the node color (indicating that it is selected) and will allow you to drag the node around on the page, changing its position. Clicking on a node will also display a menu detailing more information about said node, such as its type and x and y coordinates. Clicking the second blue button on the left selects, the "+" icon, selects the Add Node Tool. With this tool selected, clicking anywhere on the map will add a node and auto-populate its x and y position. Node type can be specified in the previously detailed node menu. To delete a node, select the move tool, then hold the CTRL key and right click the node you desire to delete. Clicking the third button on the left, the vector icon, selects the Add/Remove Edge Tool. An edge is a valid connection between two nodes that our pathfinding algorithms can use to determine navigation routes. To add a node, simply left click one node, then left click another. An edge will be created between the two selected nodes. To remove an edge, repeat the same process on two nodes that already have a connecting edge. Doing so will disconnect the two nodes. To add an edge between floors, left click on a staircase node, switch floors using the selector on the right of the page, then left click the staircase node you wish to attach an edge between. A submenu will be displayed detailing the data about which floors the node is connected to. Finally, the fourth button on the left, the floppy disk icon, is the "Save" button. Clicking this button will save all changes made to

every map (not just the one currently being viewed) to the website's database. The navigation function will now be able to use these new nodes to navigate throughout the hospitals.

# About Page

The Brigham & Women's Hospital maps and data used in this application are copyrighted and provided for the sole use of educational purposes.

Navigation   About   Admin   Log Out

Thank you to Brigham and Women's Hospital and their representative, Andrew Shinn!



"How much of his voice would we need to make the tts him?"

[<](#) [>](#)

Liam O'Driscoll  
Project Manager

WPI Computer Science Department  
CS3733-D25 Software Engineering,  
Prof. Wilson Wong  
Team Coach: Matt Hagger

**User Instructions:** Upon clicking the “About” tab in the navigation bar, users will be routed to a page dedicated to thanking the wonderful staff of BWH and our WPI professors, as well as showing members of our group Team O and their respective roles. Hovering over a photo of a team member displays a popup of their favorite quote. Clicking the arrows below the photos cycles through each member and their respective roles and quotes.

The Brigham & Women's Hospital maps and data used in this application are copyrighted and provided for the sole use of educational purposes.

Project Owner   Navigation   About   Admin   Log Out

Onyx Onis' Software Credits

This project fundamentally relies on the PERN stack:



But this project wouldn't be what it is without:




Click an icon to learn more about the technology used in this project.

**User Instructions:** Scrolling down on the About page shows our list of software and libraries we used to make the project. Clicking any of the icons links the user to the software's respective website for more information. The user may also hover over the sphere of icons and click on specific ones to center it for better viewing.

# 404 Page



Navigation   About   Admin   Log Out

## 404: Page Not Found

Oops, we can't find the page you were looking for. Does it exist?

[Go Home](#)



**User Instructions:** Pretty standard of any website, a 404 page. If you reach this page, it means you tried routing to a page that does not exist. Don't worry though! Just click the home icon or the "Go Home" button to be routed back to our homepage to continue using the website as normal.

# RFID Reader Sign-In

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**User Instructions:** Our custom RFID scanner allows hospital staff to login to the website with the tap of an RFID tag. To operate, start by plugging the scanner into a USB port on your computer. Next, run our custom python script in the background of your computer. With these two steps running, simply tap your admin or staff RFID tag and you will be signed in to the corresponding account and routed to the home page of the website.