CargoSail Solutions

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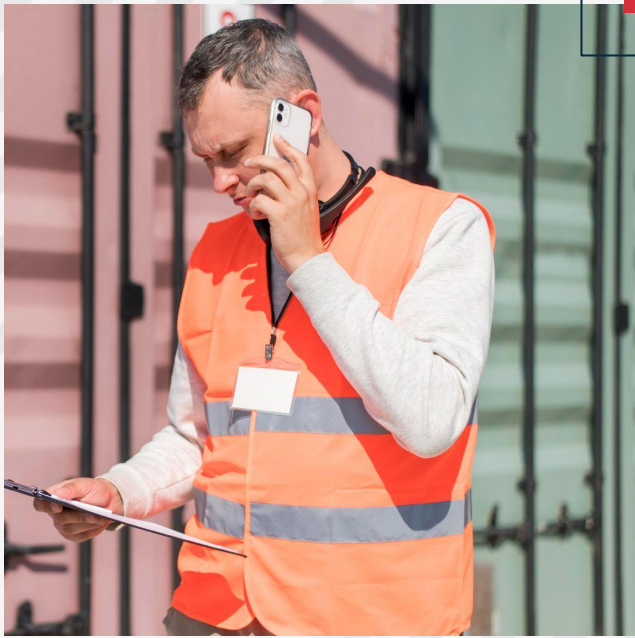
01

Our basic understandin g

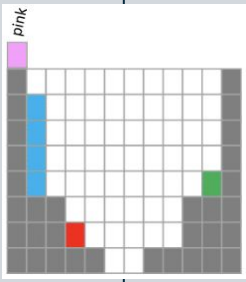


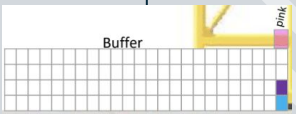
Our Basic Understanding

- Physical Properties of your Port
  - You own a single port in Long Beach, CA where a single container ship may arrive and dock in your port. [a]
  - Your port has a single crane that can load containers on the ship, unload containers off the ship, and move containers around on the ship one container at a time. [a]
  - Your port has a truck holding area where empty trucks that can carry a single container or loaded trucks that have a single container can park and wait. [a]
  - Your port has a loading/unloading area near the crane where a single truck can park for the crane to load a container on the truck or unload a container off the truck. [a]
  - Your port has a Tannoy broadcast system. The crane operator can can control the broadcast system to announce a truck in the truck holding area to drive to the loading/unloading area. [a]
  - It takes 10 seconds for a truck to move between the truck holding area and the loading/unloading area near the crane. [a]
  - Your port has a buffer area where containers can be stored for future use. [a]
  - A special truck can arrive within 10 seconds to the loading/unloading area when a truck is inoperable. [a]
  - Employees pass through security to get to the your port. [a]
  - There is no chance of unauthorized access. [a]

Our Basic Understanding

- Physical Properties of the Ship
  - Every ship that docks on your port is X2 class and has 1 bay that can store at most 96 containers in a 8x12 grid layout. [a]
  - However, some cells may not be able to store containers due to the ship's structure. [a]
  - To move a container on the ship or off the ship, it must go through the pink highlighted cell. [a]
- Physical Properties of the Buffer Area
  - The buffer area can store at most 96 containers in a 4x24 grid layout. [a]
  - To move a container in the buffer area or out of the buffer area, it must go through the pink highlighted cell. [a]
- Physical Properties of the Crane
  - The crane can move containers between: ship ↔ truck, ship ↔ buffer, buffer ↔ truck. [a]
  - The time it takes for the crane to move a container within the ship is the Manhattan distance between the origin cell and the destination cell x 1 min. [a]
  - The time it takes for the crane to move a container within the buffer area is the Manhattan distance between the origin cell and the destination cell x 1 min. [a]
  - It takes 4 minutes for the crane to move a container between the ship and the buffer area. [a]
  - It takes 2 minutes for the crane to move a container between the ship and the truck in the loading/unloading area or between the buffer area and the truck in the loading/unloading area. [a]





Our Basic Understanding

- Employees
  - All employees have at least a high school education [a]
  - All speak and read basic English [a]
  - There is always someone in the cabin 24/7, except during Christmas holidays. [a]
  - Employees work 8-hour shifts, from 12 to 8, 8 to 4, 4 to 12 [a]
  - Sometimes employees can work double shifts [a]
- Manifest
  - The manifest is a structured legal document that's always 100 percent correct from the incoming ship that details the containers its carrying [a]
  - The name of the manifest file contains the name of the ship. [a]
  - The manifest is edited if we move any containers and its required to be returned to the captain for them to legally leave [a]
  - The manifest contains the weight, position, and description of the container [a]
  - The manifest is emailed from the ship captain a few hours before the ship arrives to your port.[a]
  - The manifest always come in the same format.[a]

Our Basic Understanding

- Log file
  - The log file is required for legal purposes and should never be directly edited by a human [a]
  - Should contain any events that occur in the program with a timestamp that's written to a simple text file [a]
  - Every year should only have one Log file that starts on the first weekday of the year at 8am and ends right before Christmas [a]
  - The log file will be in plain ASCII text [a]
- Transfer List
  - The head office sends a transfer list to the crane operator [a]
  - The software will not read the transfer list [a]
  - The transfer list can be ambiguous but the operator will manage that or ask the head office for clarification if needed [a]

Our Basic Understanding

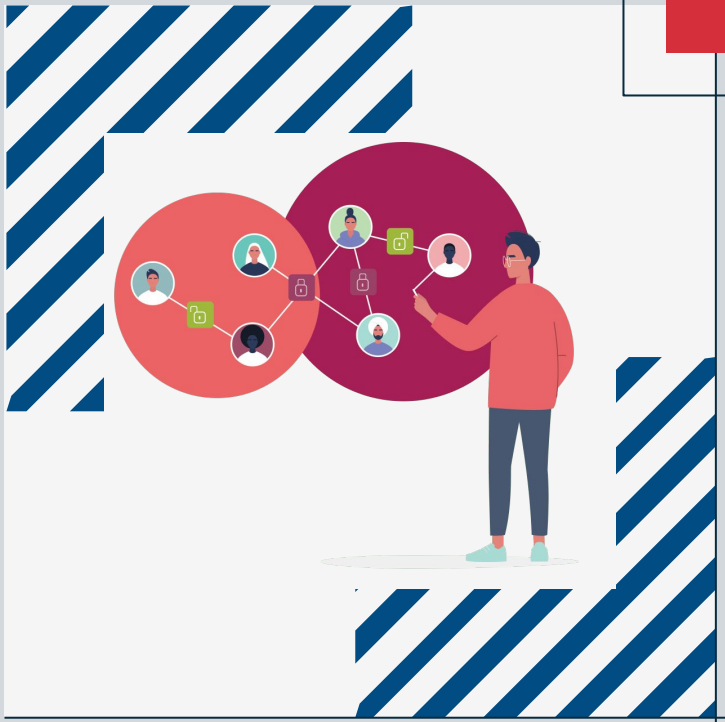
- Hardware
  - Computer will be barebones, All-in-One [a]
  - The computer's operating system is Windows 10 [a]
  - The computer will be contained within the crane cab and nearby crane operator [a]
  - The three applications in the computer is chrome web browser, the notepad text editor, and pre-installed calculator [a]
  - Hardware must be cost efficient to minimize theft-related damage [a]
  - There is an ethernet cable available in the crane operator's cab [a]
  - Power outages do happen from time to time [a]
- Container
  - Each container is 40 ft and weighs 4.2 tonne when empty [a]
  - Containers have no unique characteristics to determine its origins or name [a]

Our Basic Understanding

- The Program you want
  - You want a program that specifies to the user the most efficient sequence of steps to load,unload, and/or balance the ship's containers [a]
  - Currently your employees do this process by hand which leads to time inefficiency because they may not choose the most efficient sequence of actions, thus costing you money [a]
  - Crane operator will receive the transfer list detailing when a ship will come, the containers to unload/load, and/or whether to balance the ship [a]
  - Balancing and unloading/loading are two separate actions and are never done at the same time [a]
  - Our program will never read from the transfer list, but rather it will determine the input the operator will give to our program [a]
  - Out program will automatically read and write to the Manifest while also logging events automatically in the Log file [a]

02

Stakeholders



Stakeholders

- Mr. Keogh
- Crane Operators
- Truck Drivers
- Head Office (handles the transfer lists)
- Port of Long Beach (sends truck to move container to another location when truck is down)
- Ship captain and crew
- Container warehouse owner and workers
- Consumers
- Trucking businesses
- Port Security
- Container Manufacturers
- Product Companies and Insurance Agencies
- US Customs and Border Protection

03

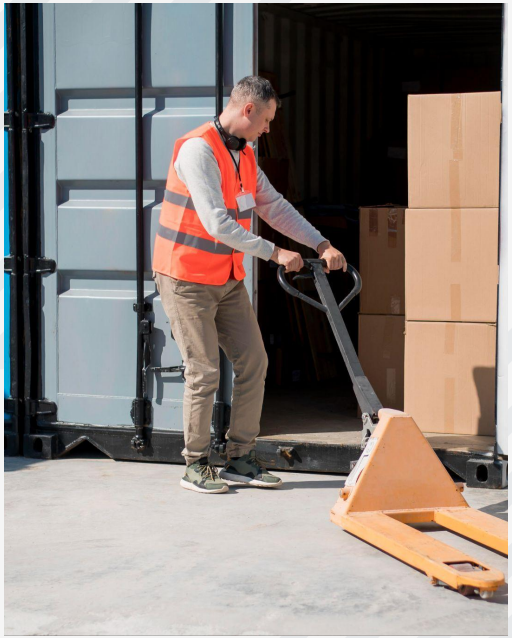
Assumptions

Assumptions

- Employees know how to use a mouse and keyboard
- There won't be any problems with the mouse or keyboard
- Users have basic knowledge of computers
- Users can read basic English
- The time it takes for trucks to move between the loading and holding area is 0 for our purposes [a]
- The manifest is 100% correct
- Every container has a name in the manifest
- There is no problems with weather since the port is located in California [b]

04

Inputs/Outputs



Inputs

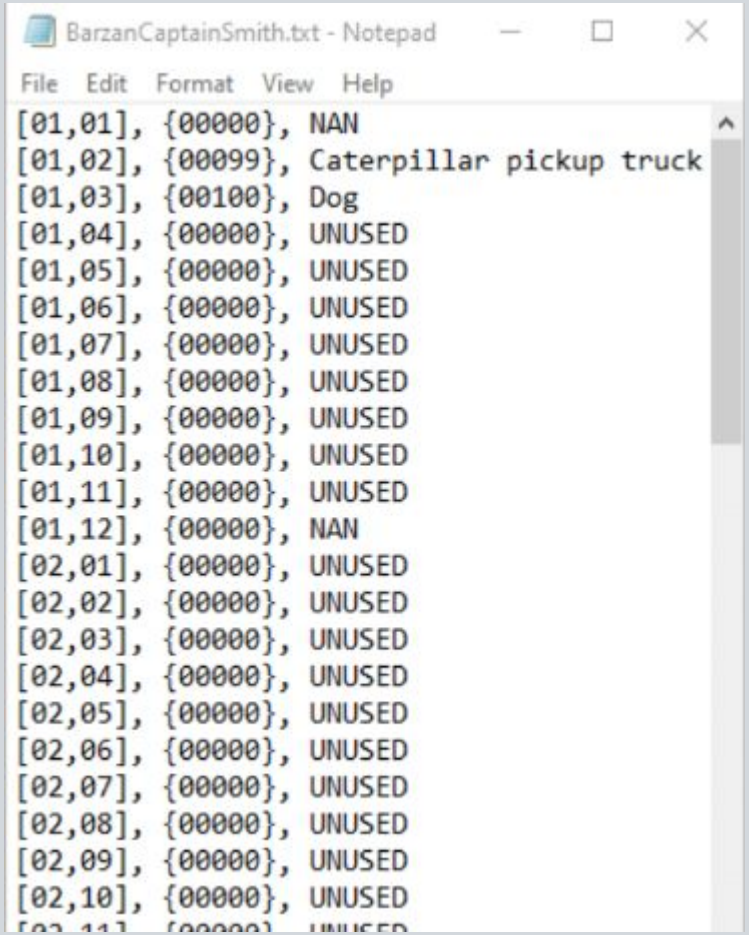
- **Manifest**
  - Type of document
    - .txt file
  - Format of Manifest
    - ASCII text. [b]
    - Title of document contains the ships name. [a]
    - Each line represents a container slot. [a]
    - Each field is separated by a comma and space “, ”, besides the last field which has a new line instead. [a]
    - The first field has the location on the boat where the container is located
      - The format of the first field is as follows: an opening bracket “[“, followed by two numbers indicating the x-coordinate location of the container, a comma “,“, then two numbers representing the y-coordinate location of the container, and finally a closing bracket “]”. [a]
      - The max coordinates are 8 on the y-axis and 12 on the x-axis. [a]
      - The coordinates start at [01,01] and the x-axis coordinate increases by one until it reaches 12, then the y-axis coordinate is increased by one and the y-axis goes back to 01. It continues this pattern until it reaches the max location which is [08,12]. [a]

Inputs

- **Manifest (cont.)**
  - Format of Manifest (cont.)
    - The second field contains the weight of the container
      - The format of the second field is as follows: an opening curly brace “{“, followed by 5 digits representing the weight of the container, followed by a closing curly brace “}”. [a]
      - The weight is represented in kilograms. [a]
      - The max weight a container can be is 99999 kilos. [a]
      - The weight cannot be negative and it cannot be fractional. [a]
    - The third field contains the name of the container
      - The format of the third field is as follows: if the spot is blocked because of the structure of the ship, a “NAN” is placed. If the spot is unused, “UNUSED” is placed. If there is a container, the name of the container is placed. [a]
      - Multiple containers can have the same name. [a]
      - Every container has a name. [a]
    - The manifest will always have spots [01,01] to [08,12] on the document. [a]
    - There are no other lines on the document besides the locations of the containers with the format as described. [a]

Inputs

- **Manifest (cont.)**
  - Format of Manifest (cont.)
    - Example picture: [a]



Inputs

- **Log File**
  - The log file will be stored in the file location: C:\Users\"keogh"\AppData\Local\CargoSail
  - When the software is first opened, the system will show the user the name of the log file and they will be able to click continue to move forward.
  - If no log file is detected it will create a new one automatically and tell the user. The user will also then click continue to move forward.
- **Transfer List**
  - Type of document
    - Free text document. [a]
  - Information about the document
    - The transfer list comes from the head office and is read by the crane operator. [a]
    - The software does not read the file, instead, the crane operator will read it and tell the program what to do based on the transfer list. [a]
    - The transfer list does not say the order of moves, that is the softwares job to figure out. [a]
    - The transfer list will say if it wants a load/unload or balancing and the crane operator will input that into the software. [a]

Inputs

- **User Inputs a Name**
  - When the user opens the program for the first time or clicks the login button, they will be taken to the login screen.
  - In the text field, only the English alphabet and spaces “ “ will be allowed. [b]
  - The field cannot be blank. [b]
  - It is our suggestion that It will accept a max of 30 characters.
  - Once the user is done, they can click the “Login” button or press “Enter” on their keyboard.
  - If there is a power outage or crash, the user will automatically be logged back in.
- **User Adds Manifest**
  - After the user clicks Load/Unload or Balance, the software will open the computer’s file explorer.
  - ~~When the user clicks on input manifest, the software will open the computer's file explorer.~~
  - In the file explorer, the user will click on the manifest they want to open.
  - A popup will then appear with the file name to make sure the user chooses the right file. They can click “Yes” to proceed or “No” to choose a different file ~~be able to click on “Input Manifest” again~~.
  - If the user enters a file that’s not a manifest, the system will warn the user to input a manifest file.

Inputs

- **User Clicks Login**
  - After one user first logs into the system, a login button will appear in the corner of the screen.
  - The login button will appear at all times.
  - If a user clicks the “Login” button, the current user that is signed in will be logged out and the system will go back to the login screen asking for a new name.
- **User Clicks Add Note**
  - Once the manifest is opened, there will be a button that the user can click to add a note.
  - The button will be there at all times after the manifest is opened incase the operator wants to make a note of something.
  - If the user clicks “Add Note”, there will be a popup with a text box that only accepts ASCII characters.
  - The limit to the amount of words a user can add in a note is 2000 characters.
  - Once the user is done adding the note they can click the “Add” button and the note will add to the log file with the correct datetime format.
- **User Clicks Balance Ship**
  - While there is a user logged in, there will be an option on the screen to either start a transfer or balance the ship.
  - If the user clicks “Balance Ship”, the software will open the computer’s file explorer for the user to input the manifest.

Inputs

- **User Clicks Load/Unload**
  - If the user clicks on “Load/Unload”, they will go to a new screen with an input to load a container, a view of the whole ship, and a list of all the moves.
  - In the input field to load a container, it will ask for the user to input a name for the container.
  - In the name field, the user can input any ASCII characters. The max length of the name field will be 255 characters. The user cannot input a container with no name. [b]
  - Once the name field is populated with correct values, the user will be able to click the submit button.
    - If the name input is empty, “UNUSED”, or “NAN”, there will be a pop-up if the submit button is clicked telling the user the field that has a problem.
    - If the number of containers exceeds the ship’s load capacity, the system will warn the user and not allow any more loads

Inputs

- **User Clicks Load/Unload (cont.)**
  - The user will be able to input the weight later on in the operations view.
  - On the ship view, the user can click on a container if they want to unload it. They can also click on it again to deselect the unload or click the “x” explained in the next point.
  - ~~On the right of the screen,~~ the changes that the operator chose will be displayed on the screen. There will be a “x” that the user can click to remove that load or unload operation.
  - The software will not allow the user to click on “UNUSED” or “NAN” containers. If the user does click on them, nothing will happen.
  - If the user loads more containers than the ship can handle, the system will warn the user that they cannot add any more containers.
  - There will be a “Finish” button on the screen for when the user is done loading and unload. When the user clicks it, it will take them to the operations.

Inputs

- **User Clicks Next on Move Screen**
  - After the user is done with load/unload or balancing, the next screen will show the moves the crane operator has to do one at a time.
  - Once the crane operator is ready to go on to the next move, they can click “Next Move” to continue
  - If there is a load operation, there will be an input for the crane operator to input the weight of the container. The input will only accept a max value of 99999 and will not accept 0 or less. The value is in kilograms. The user will not be able to click next until the value is filled.
  - Once the software is on the final move, the “Next Move” button will turn into a “Finish” button. When the user clicks it, they will be reminded to send the new manifest to the ship captain and the system will redirect them to the input manifest screen.

Outputs

- **Log File**
  - Type of document
    - .txt file
  - Format of Log File
    - ASCII text. [a]
    - Contains all events that happen on the program with a time stamp. [a]
    - There won't be a line on the document without the date and time.
    - Contains date and time in the format YYYY-MM-DD HH:MM. [c]
      - There is a single space " " in between the date and time. [c]
      - This format should always be followed even if there is a 0 in one of the spots. [c]
      - The seconds are floored so they are irrelevant to the time on the log. [c]
      - The time is in military time. [c]
      - The time is in PST. [c]
      - It supports daylight savings time. [c]
      - The software will find the current PST and date using an API from WorldTimeAPI.org
    - After the date and time, there is a tab " ", and a specific message is placed after it. [c]

Outputs

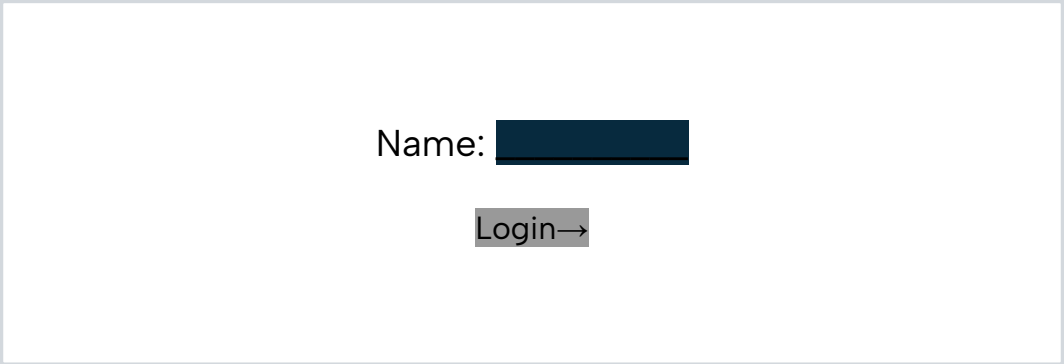
- **Log File (cont.)**
  - Format of Log File (cont.)
    - The different messages after the date and time are:
      - ~~A specific user signing out in the format: “‘user’ has signed out”. [c]~~
      - A specific user signing in in the format: “‘user’ has signed in”. [c]
      - A manifest being opened in the format: “Manifest ‘shipname’ opened, there are ‘x’ containers on the ship” where x is the amount of containers. [c]
      - A container is offloaded: ““‘containername’” is offloaded.”. [a]
      - A container is onloaded: ““‘containername’” is onloaded.”. [a]
      - A manifest is opened: “manifestname” has opened. There are “numberofcontainers” on the ship.
      - A cycle is finished: “Finished a Cycle. Manifest ‘shipnameOUTBOUND.txt’ was written to desktop, and a reminder pop-up to operator to send file was displayed.”. [a]
      - Balance operation has started: “Starting balance operation for the ship.”
      - Balance operation has ended: “Finished the balance operation. Manifest ‘shipnameOUTBOUND.txt’ was written to desktop, and a reminder pop-up to operator to send file was displayed.””

Outputs

- **Log File (cont.)**
  - The software will be writing to the log file in the format described.
  - When the user opens the software, the system will check if a log file exists with the current year.
  - It will not inform the user about anything related to the log file

Outputs

- **Login Screen**
  - When the user clicks the “Login” button on screen or first opens the program, they will go to the login screen.



* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

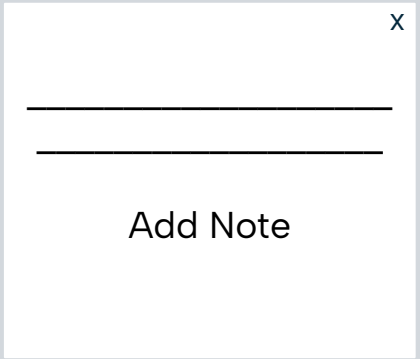
~~Outputs~~

- ~~Choose Manifest~~
  - ~~The format of the manifest will be the same as described in the inputs.~~
  - ~~The user will be prompted to input their manifest and select it from the file explorer.~~

* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

Outputs

- **Add Note**
  - Once the manifest is inputted by the user, the “Add Note” button will appear.
  - When the user clicks it, a pop up will appear with a text box where the user can type in a note.
  - While the pop up is there, the user will not be able to click the software unless they add a note or close the window.
  - When the user clicks “Add Note” or “x” in the pop up, the pop up will close and the user will be able to continue the operations.



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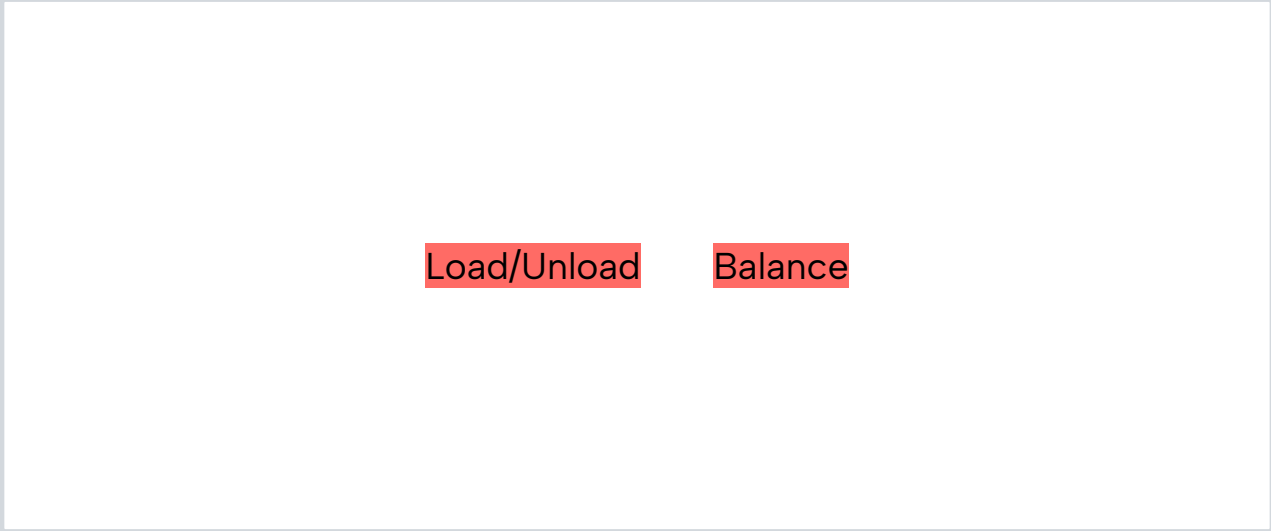
Outputs

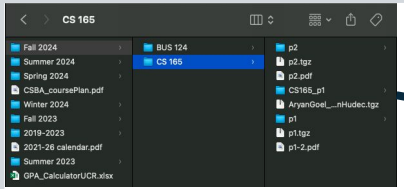
- **Load/Unload or Balance**
  - While there is a user logged in, the user will be able to choose if they want to load/unload or balance the ship.



* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

Outputs

- **Choose Manifest**
  - When the user selects load/unload or balance, the software will open the file explorer for the user to input the manifest
  - The format of the manifest will be the same as described in the inputs.
  - The user will be prompted to input their manifest and select it from the file explorer.



Load/Unload

Balance

Is “filename.txt” the correct manifest list?

Yes No

OR

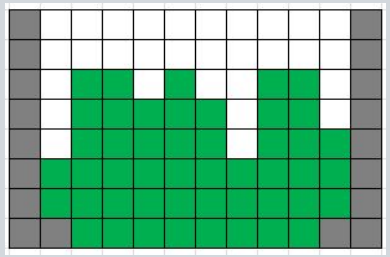
Warning: Please upload a manifest list

Dismiss

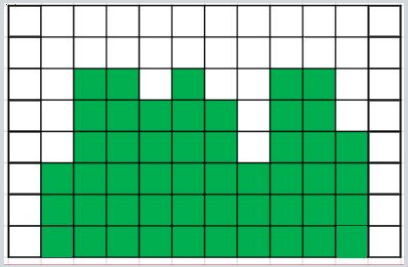
* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

Outputs

- **Container View**
  - If the spot on the manifest contains “NAN”, the view of the spot on the ship will be grayed out.
  - If the spot is accessible but there is nothing there, it will be white.
  - If there is a container in the spot, it will be green with a the first 7 characters (including spaces) of the container on it. NOTE: the views of the ship do not have the 7 characters representing the container name.
  - If the user hovers over the container, the full name will be displayed on the screen for the user to see. The max container name length can be 255 characters so the view will be adjusted to be able to handle that.



Or



Container view

* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

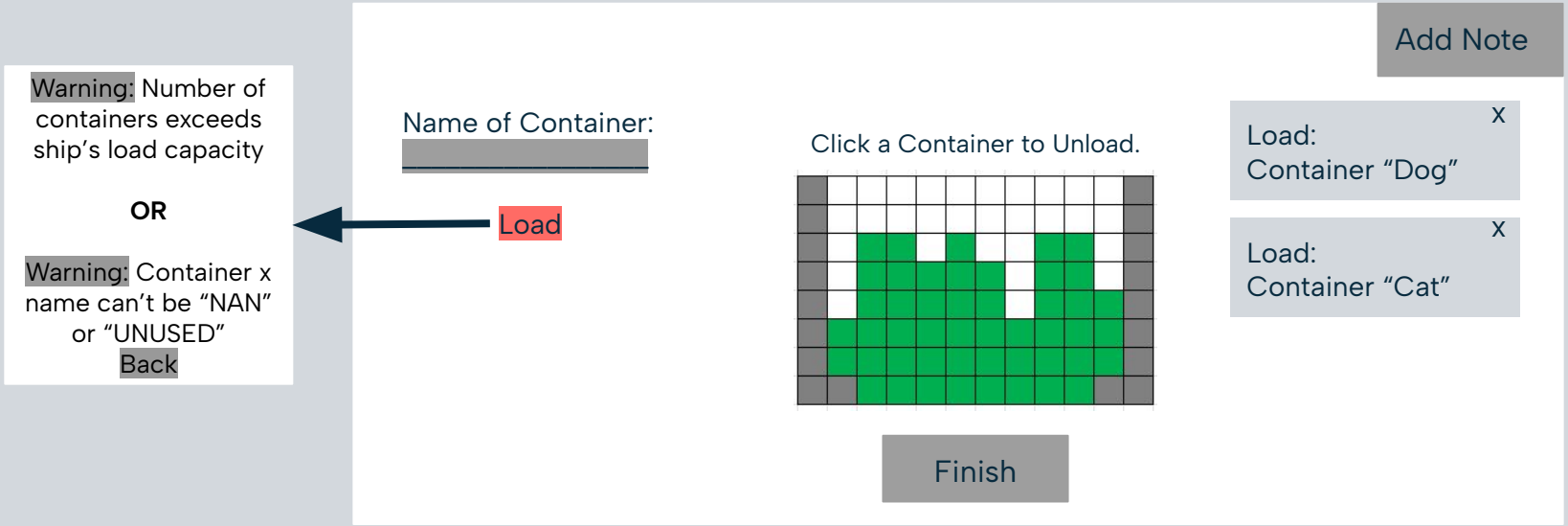
Outputs

- **User Hovers over Container**

* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

Outputs

- **User Chooses Load/Unload View**



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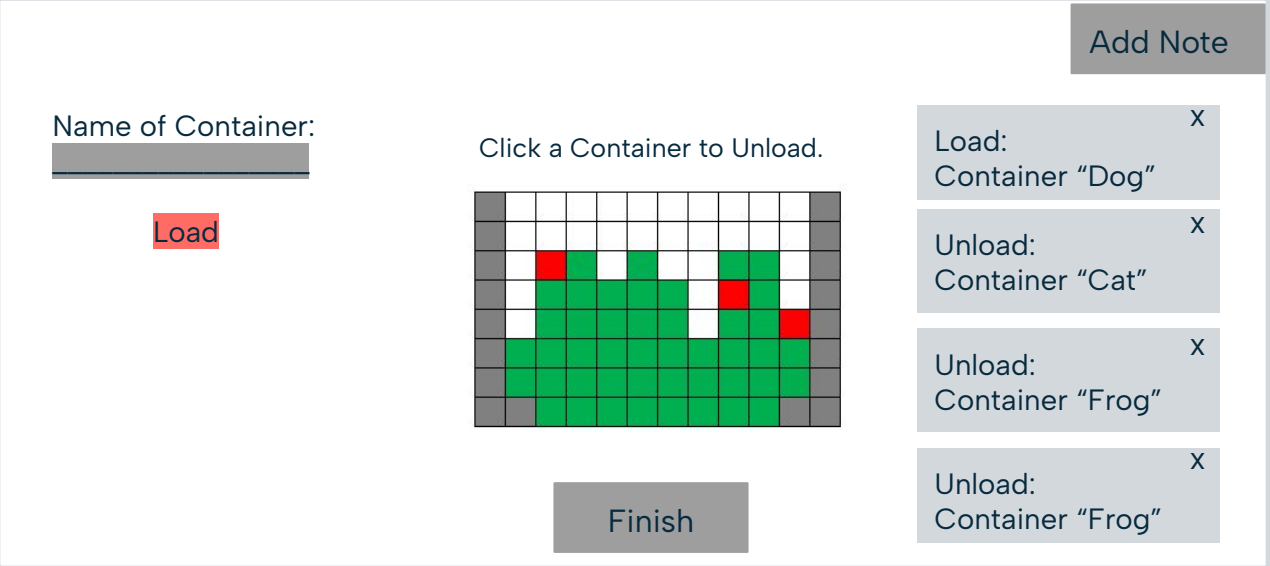
Outputs

- **User Chooses Load/Unload View with Unload**



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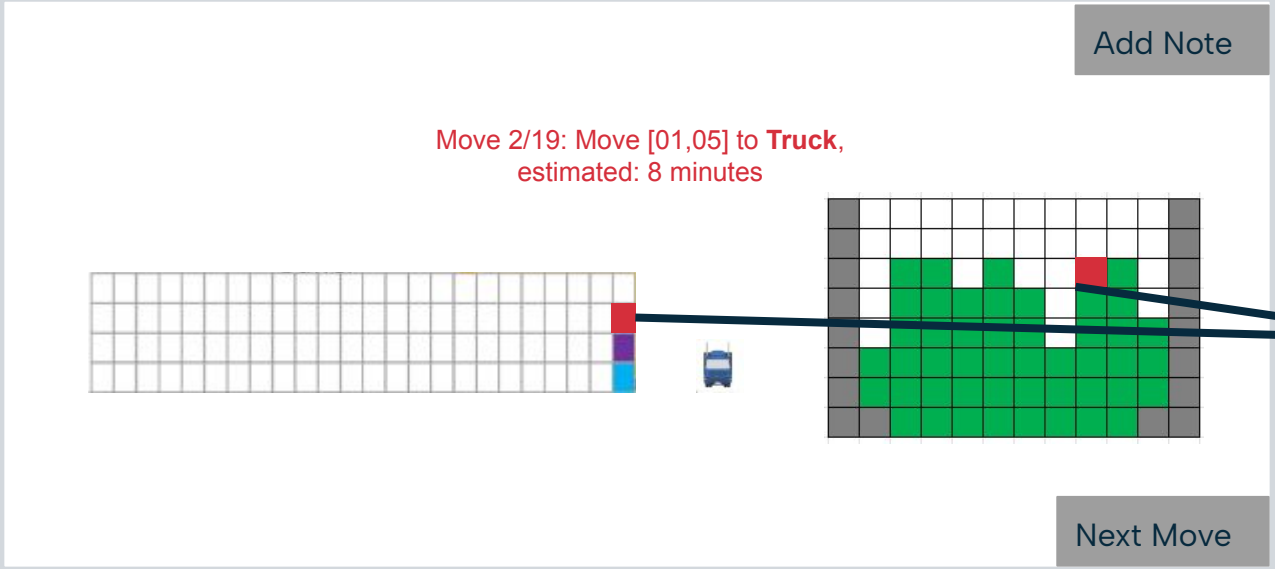
Outputs

- **Operations View**
  - In the operations view, the move that the users on will be displayed and it will show how many more moves they have left.
  - There is a view of a truck, the holding area, and the ship.
  - For the container that is supposed to move, the container and the spot that it is supposed to go to will slowly flash red back and forth twice per second. The move will also be displayed on the screen.
  - The full name of the container will be on screen for the user to easily identify which container the software is talking about.
  - If the container is moving to the holding area or the truck, the names will be bolded so the user is not confused.
  - If it is moving to the holding area, the name will be "**Holding** 'ContainerName' [xx,xx]". If it's moving to the truck it will be "**Truck**". If it's moving to a regular spot, the name will be "'ContainerName' [xx,xx]"
  - If it is a load operation, there will be an input at the bottom of the screen to input the weight.
  - It will also have a next button when the user is ready to go to the next move.
  - When the steps are complete, the "Next Move" button will turn into a "Finish" button.
  - The format of the operation will be: Move i/j: Move [k,l] to Truck, estimated time: x minutes

Outputs

- **Operations View**



The ship tile [01.05] will be labeled as "source" and the truck as "target"

Both of these flashing red at a rate of 4–8 Hz (cycles/second) which NASA states is sensitive to human eyes and brings attention.

Source: https://colorusage.arc.nasa.gov/flashing_2.php#fl

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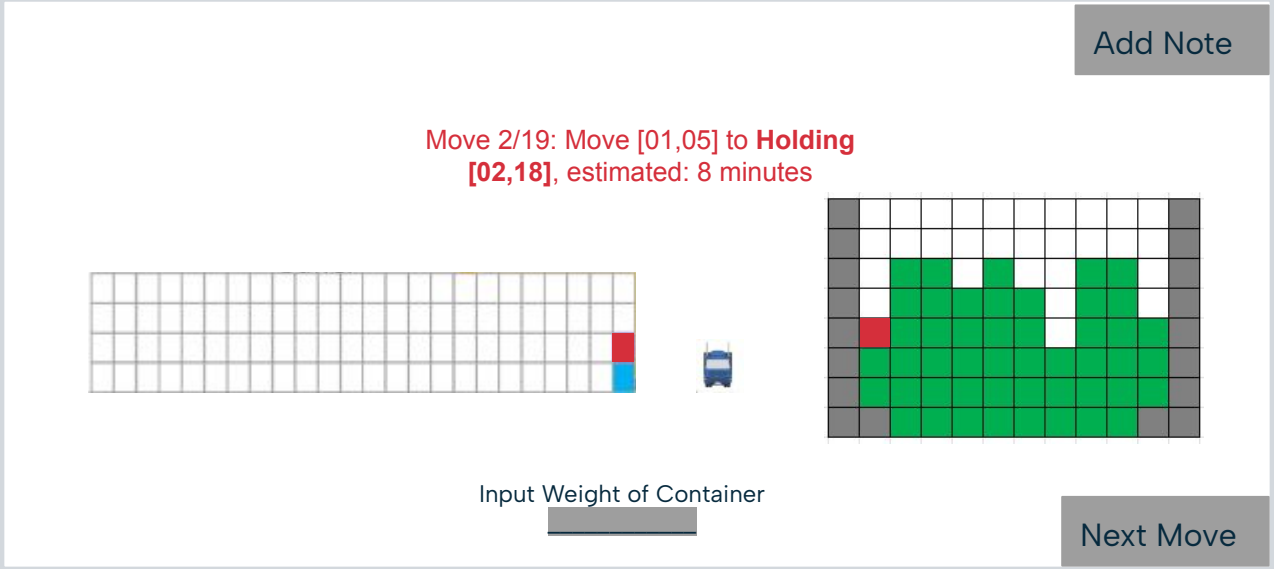
Outputs

- **Operations View for Load**



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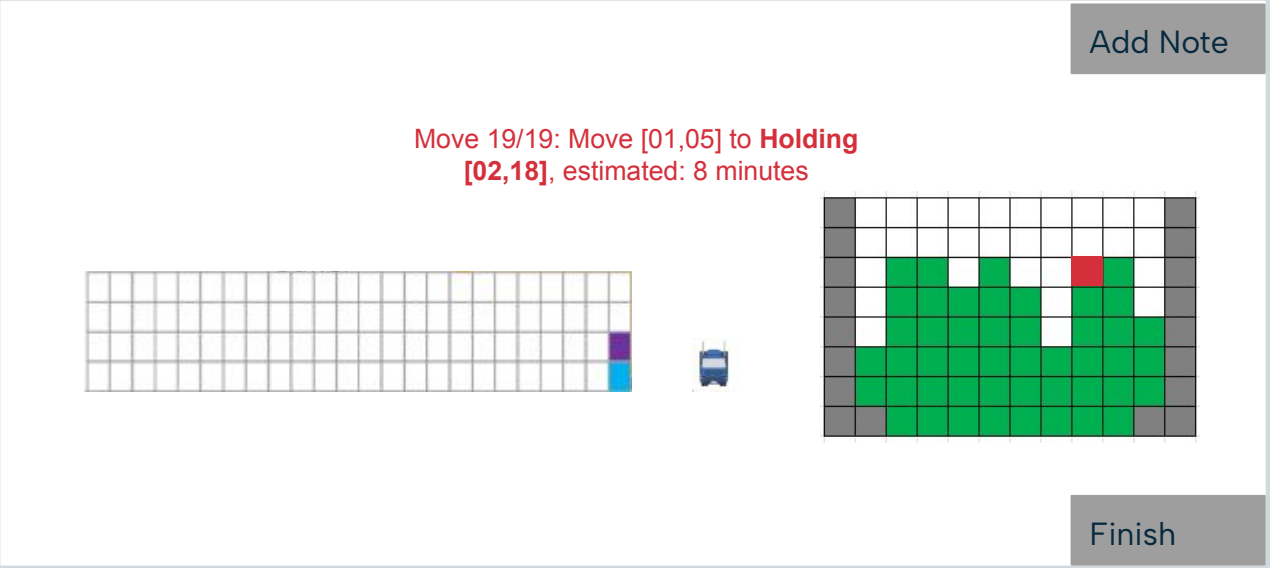
Outputs

- **Operations View on Last Move With Truck**



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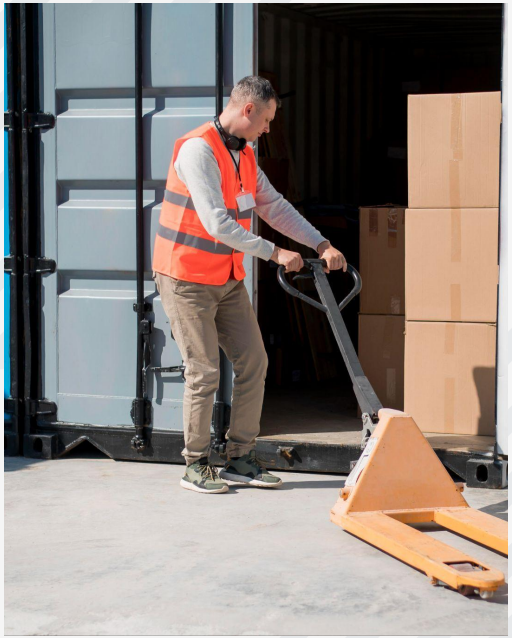
Outputs

- **Manifest Outbound**
  - When the user gets to the order of operations for moving the containers and starts clicking through the steps, the manifest will be updating the container list accordingly by changing the spots of the containers step by step.
  - After the operations are complete, the system will tell the user that the new manifest has been written to their desktop and will remind them to send it back to the ship captain.
  - The new manifest will have the word “OUTBOUND” in all capital letters appended to the manifest name.
  - After they click continue, they will be redirected to the input manifest screen

* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

05

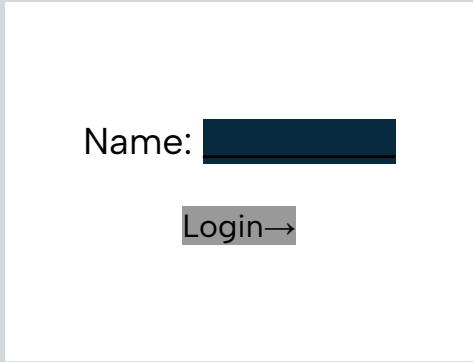
Scenarios



Scenario 1 – Loading

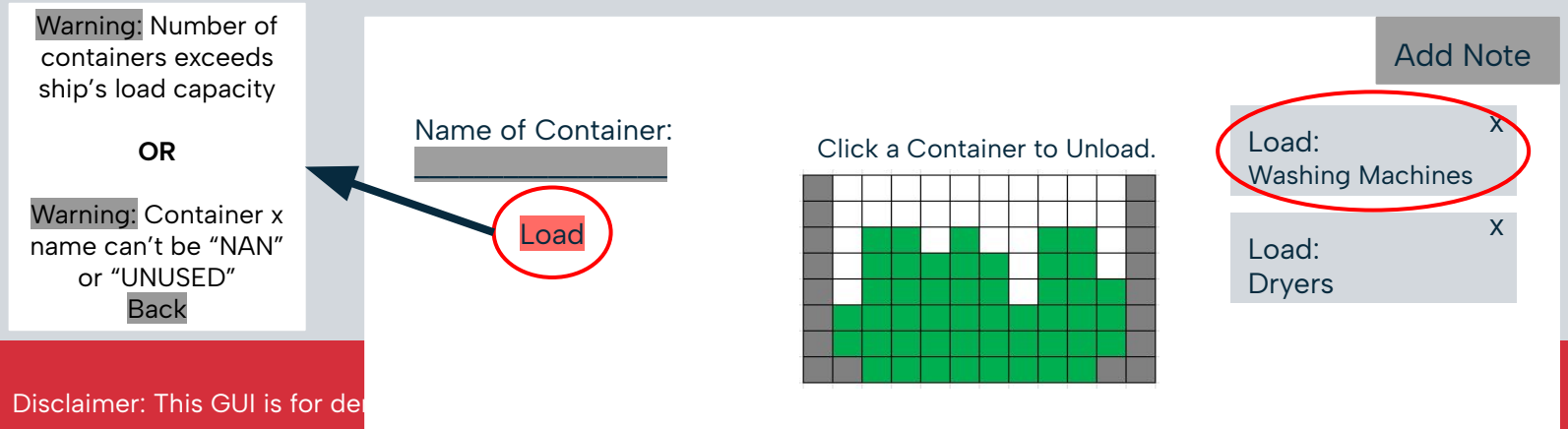
Scenario 1-1

- John Smith is an employee with 2-years of experience working for Mr. Keogh as the crane operator
- He has a High School Diploma and never went to college
- He works Monday through Friday from 8am to 4pm PST
- John arrives at 7:50am before the start of his 8am shift
- He climbs up into the tower and clicks the sign in button and signs into the program
- Around 8:08am he receives the transfer list from the head office for a loading of Costco Washing Machines and Dryers onto the Canada Moat
- Around 8:22am the truck for the Washing Machines arrives and the driver steps out for a morning smoke
- Around 8:24am the truck for the Dryers arrives and the driver heads out for a bathroom break
- About 7 minutes later at 8:29am John receives a email from the Canada Moat that includes the manifest



Scenario 1-2

- The manifest suggests that the ship is quite packed and there are few spots available for the Washing Machines and Dryers
- John uploads the manifest named CanadaMoatCaptainDavid.txt into the software
- At 9:02 am the Canada Moat arrives and docks
- The containers appear in the software and John selects the Washing Machine load
- John broadcasts to the truck driver of the Washing Machine to start moving into place
- While the driver is doing this John moves the crane to the correct position above where the truck load would be



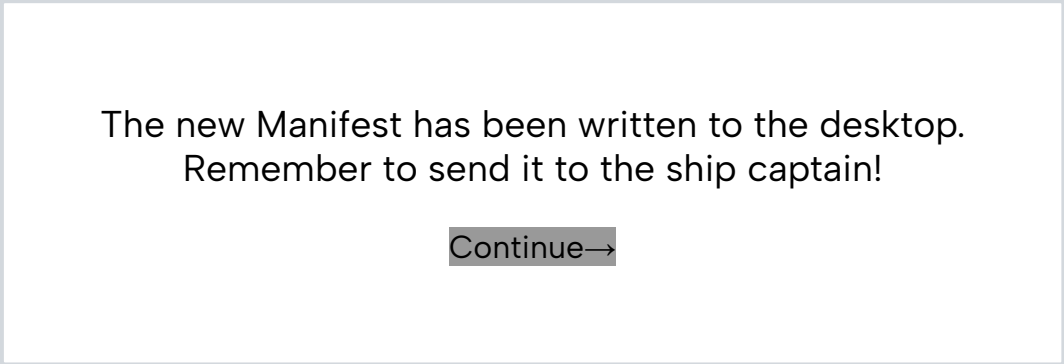
* Disclaimer: This GUI is for de

Scenario 1-3

- The truck gets into position and John picks up the Washing Machines with the crane
- The truck leaves as soon as the container is lifted up by the crane
- While the crane is moving the container, it weighs it as 1043 kilos which appears on a digital display
- John enters this weight down in the software
- The software selects spot [03, 06] and John loads it in that position
- John clicks load “Dryers” in the software
- John broadcasts to the driver of the Dryer Truck to move into place
- Again when John picks up the Dryer container from the truck it leaves immediately
- The weight for the dryers is 549 kilos and John enters it in the software
- The software selects spot [03, 06] and John loads it in that position
- The “next move” button turns into “Finish” John clicks the “Finish” button and the software automatically updates the manifest

Scenario 1-4

- The software renames the manifest to CanadaMoatCaptainDavidOUTBOUND.txt
- A popup appears in the software to email the manifest to the ship captain which John does
- The ship departs



* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

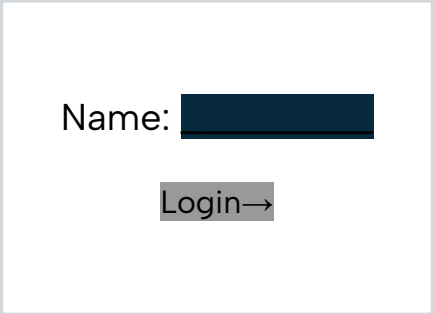
Scenario 2- Balancing

Scenario 2-1

- Timothy lee peterson has been a crane operator for Mr. Keogh for a year
- He has a high school diploma, but did not pursue any higher education
- He works a full-time schedule under Mr. Keogh
- He works the morning to mid day shift (8am - 4pm)

Scenario 2-2

- Timothy arrives at 7:45 am for his shift and climbs up to the top of the tower
- He gets to his computer at 8 am, taps on Johns shoulder to let him know he can leave, and sits down. He sees that a transfer list has been sent to him
- He sees that the transfer lists tells him to balance the ship, so he begins interacting with the software
- He clicks the Login button
- He is prompted to enter his name, so he does so and pushes the enter button (seen below)



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Scenario 2-3

- The program takes him to a screen prompting him to choose which operation he wants to perform and he clicks on balance
- The program then allows him to upload the manifest list to the software, which he does so

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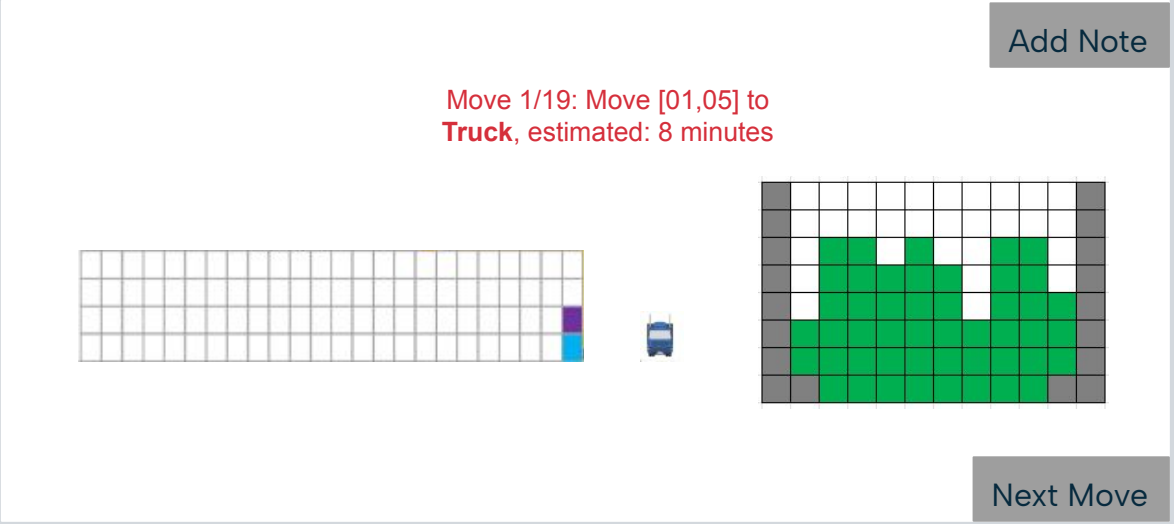
Scenario 2-4

- The software takes him to the screen shown below, here the program starts by showing him the first move done to ultimately balance the ship
- Timothy presses “Next Move” until all operations are shown then the program takes him to a screen where he can choose to do another operation



* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

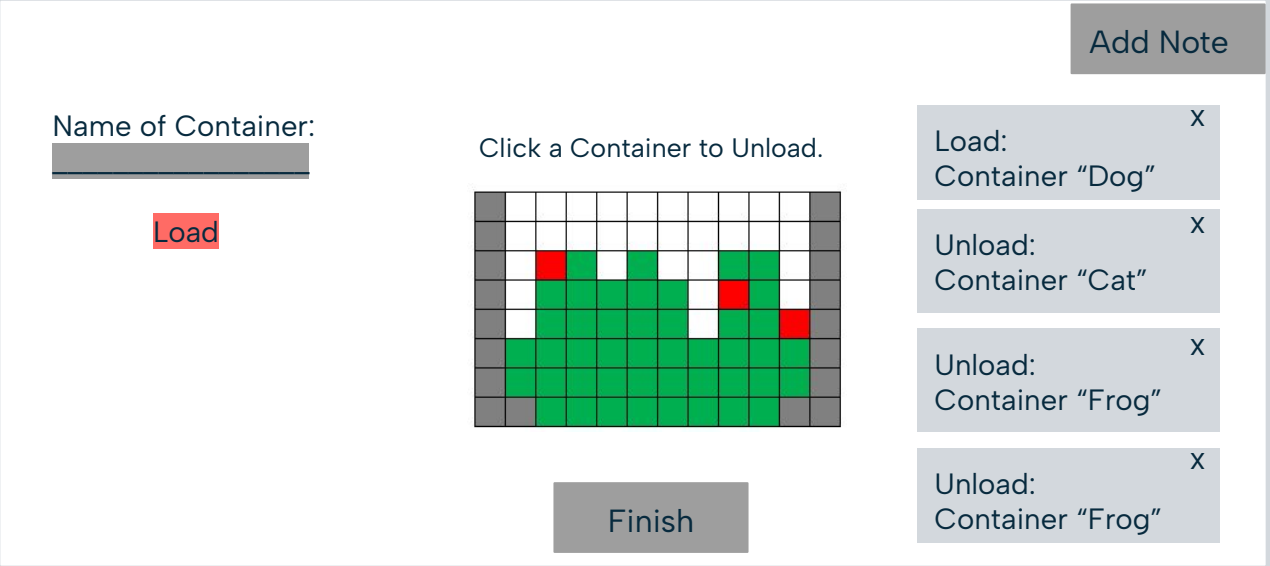
Scenario 3 – Loading and Unloading

Scenario 3-1

- John Smith is still working his 8am to 4pm shift when at 2:13pm, he receives a transfer list from the head office and a manifest from the ship captain
- On the software, he clicks the Load/Unload option and is prompted to input the manifest
- He inputs the manifest and is brought to the Load/Unload screen
- The transfer list tells him to load a container named “Dog”
- He inputs the container name into the load text field and clicks load
- He then sees that he has to unload 2 containers named “Frog” and one named “Cat”
- He finds the containers on the view and clicks them

Scenario 3-2

- John looks at the side view to make sure he selected everything on the transfer list then clicks finish

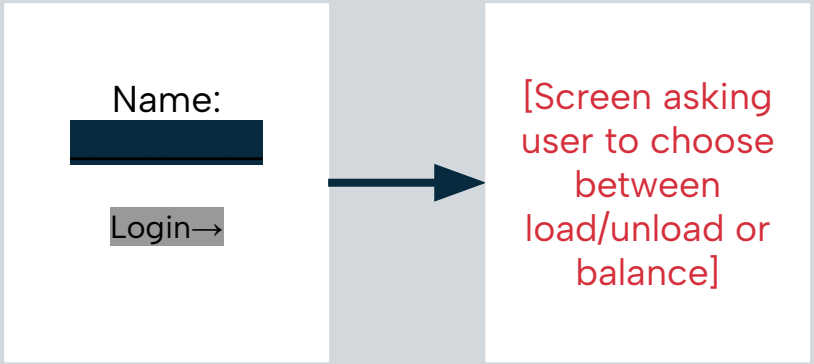


* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

Scenario 4 – Start of Year (No Log File)

Scenario 4-1

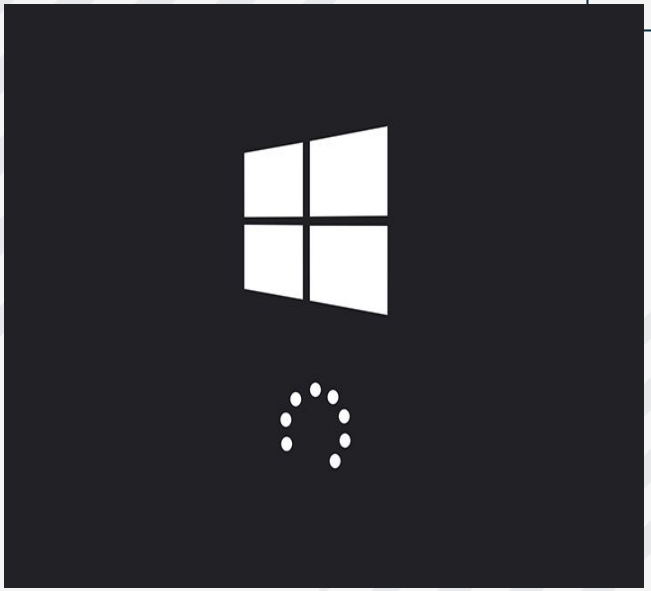
- The date is Wednesday, Jan 1st 2025.
- The file path C:\Users\"keogh"\AppData\Local\CargoSail has log files named “KeoghsPort2023.txt” and “KeoghsPort2024.txt”.
- Michael opens the software at 8am.



- The Log File is updated

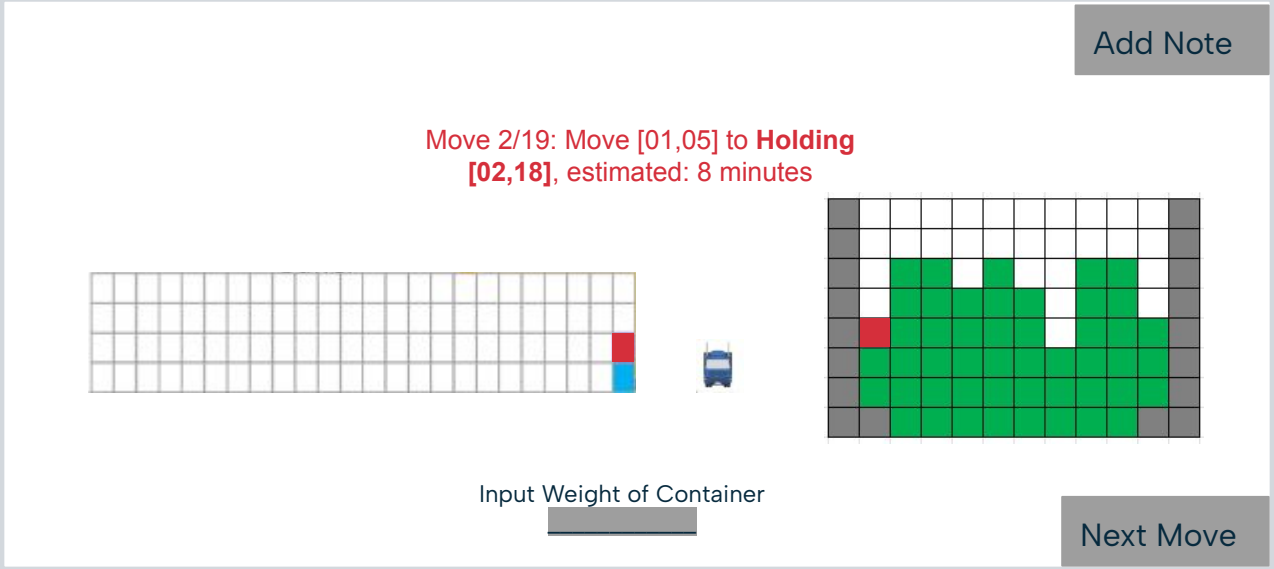
* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

Scenario 5 – Power Outage During Balance or Load/Unload



Scenario 5-1

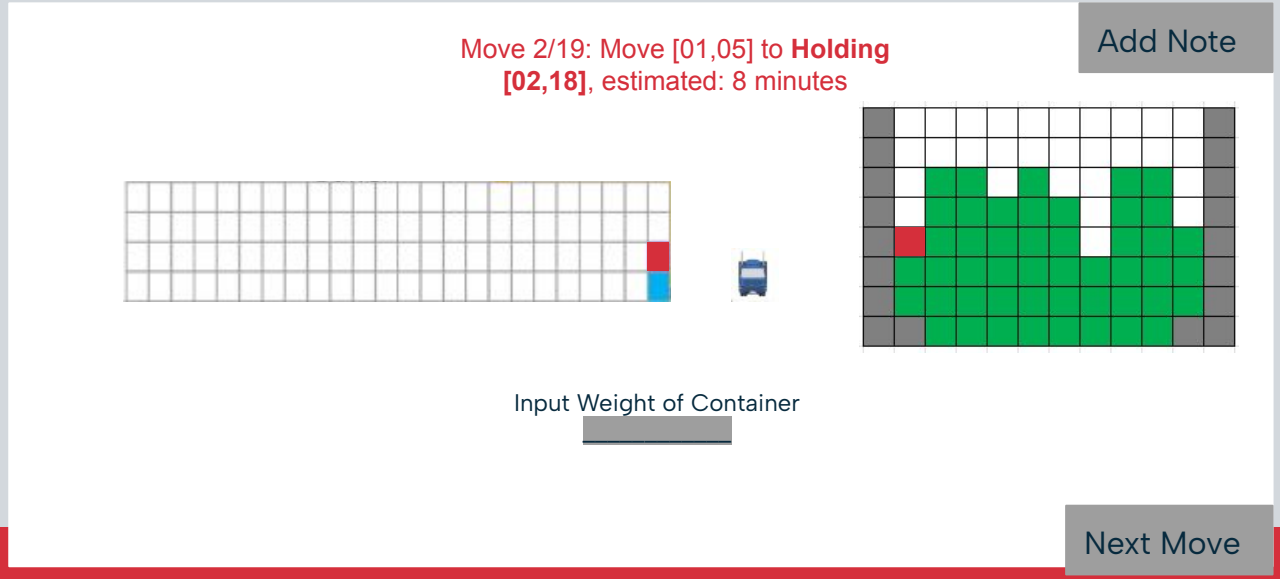
- The date is July 23rd 2025. While Michael is working
- He is currently in the middle of an operation shown here:



* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

Scenario 5-2

- Suddenly, the power cuts out and the computer he is working on turns off
- Michael turns the computer back on and waits for it to fully turn on
- He gets into the computer and opens the software
- When he opens it, he sees that the software opened to the same location he was before
- He then continues the movement as he was doing before



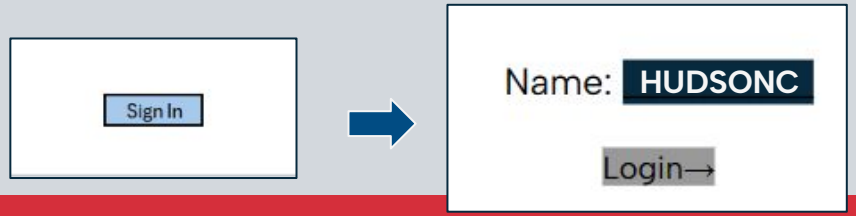
Scenario 6

Unloading

Good Case

Scenario 6-1

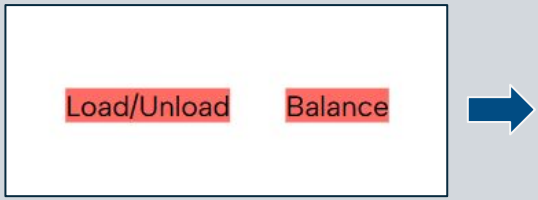
- Hudson Collin is 43 years old
- He has been working at the Long Beach Port for 19 years as a crane operator and 7 of those years spent at Mr. Keoghs port.
- He works full-time from 4pm - 12am, Wednesday to Sunday
- He has a associate degree in Global Logistics and Supply Chain Management
- He has some experience working with computers such as basic office applications and email
- He arrives to the Mr.Keogh's port parking lot at 3:45pm
- He passes through a security gate heading towards the crane cab
- He climbs up a ladder into the crane cab at 4:00pm
- He sits at the crane operator chair and looks at the computer screen with the software loaded and searches for a "Sign in" button
- He clicks the "Sign In" button signs into the program enters his username "HUDSONC"

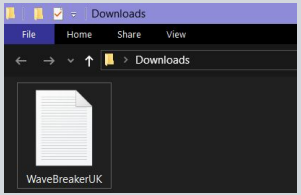


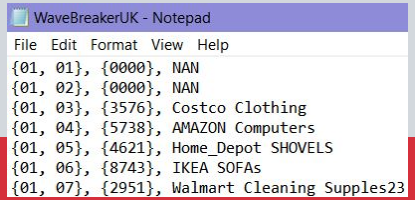
* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

Scenario 6-2

- He receives an email from the a arriving ship's captain containing a the manifest in a file called WaveBreakerUK.txt and downloads the manifest file into the computer.
- He also receives and reviews the transfer-list sent from the head office through the company email
- He goes back to the program showing a prompt "Load/Unload" or "Balance"
- He clicks the "Load/Unload" button
- He sees the open file manager
- He searches in the download folder and uploads the manifest WaveBreakerUK.txt to the program



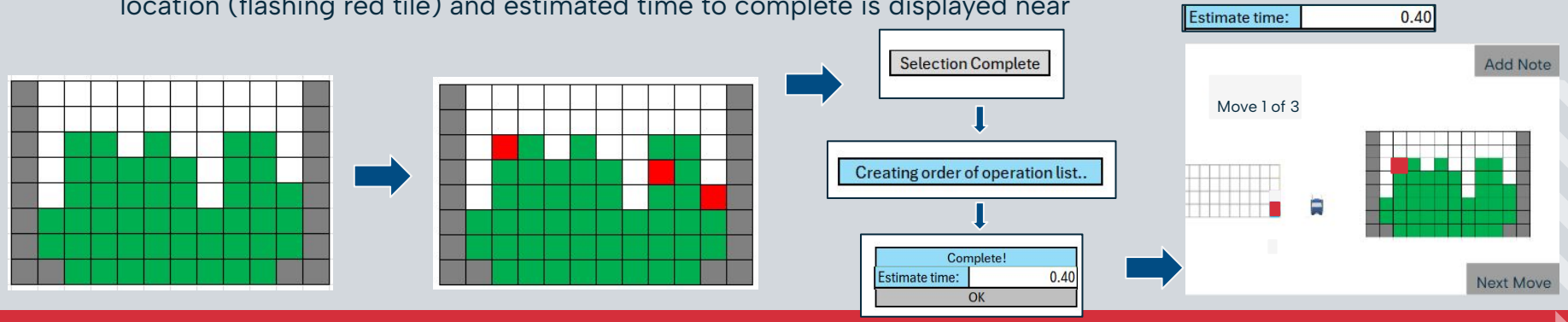




* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

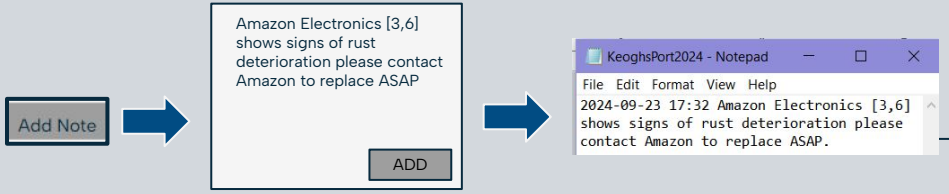
Scenario 6-3

- He notices a 8x12 grid displaying a visual manifest on the computer screen with all the containers and their locations on the ship from manifest file WaveBreakerUK.txt
- After reviewing the transfer-list it states to unload 3 containers and there no containers to load
- He selects each container tile to unload (red = unload) base on their xy coordinate location [3,6], [9,5], [11,4]
- He clicks a button that states “Selection complete”
- He notices a prompt that says “Creating order of operations list”
- He then spots a prompt showing “Complete” and and estimated time to complete with a “OK” button Estimate time: 40min
- He clicks “OK”
- He is now looking at the 8x12 grid with one highlighted origin container (red tile) to another destination location (flashing red tile) and estimated time to complete is displayed near



* Disclaimer: This GUI is for demonstration purposes and may not represent the final product.

Scenario 6-4



- He broadcasts to the holding area for truck associated with the “Amazon Electronics” container at [3,6] to come to loading area
- He waits for the truck to arrive in 10 seconds
- He unloads “Amazon Electronics” container from ship onto designated truck which takes 2 minutes since nothing is on top of container and writes a note by clicking “Add note” writing on a dialog box “Amazon Electronics [3,6] shows signs of rust deterioration please contact Amazon to replace ASAP” then clicks “Add”
- He clicks “Next Move” and continues previous unload procedure for the other 2 containers which takes 2 minutes plus time spent to obtain container by placing other containers in the buffer or within the ship
- He completes the operation list and emails a new manifest to ship captain titled “WaveBreakerUKOUTBOUND.txt”
- He finishes the one ship for the day
- He looks at the computer monitor with the software still displayed on the computer
- He leaves crane operator cab at 12:00am with software loaded for next shift
- He returns to the parking lot to find his car and drives off home

Maintenance Plan

- We did not find any anticipated changes that will affect the software and you mentioned that you also could not think of any [b]. However, we are willing to handle any changes for free within two years of delivery for if there are any legal changes regarding the balancing of a ship.
- We will make any changes to handle the following for a nominal fee within five years, not to exceed 10% of our original asking:
    - If the boat sizes increase greater than 8x12.
    - If there are format changes to the dock such as size changes to the holding area
    - If there are changes to the manifest or log file regulations
- We will also be pushing out regular updates for the first 2 years of the program being utilized

Training and Documentation

- We will be providing a training video that is approximately 10 minutes long of the software that demonstrates how to use each feature of the program
    - The software should be easy enough for anyone with a basic level of computer usage to use without much trouble
- We will also maintain documentation on setting up the software on your systems and the features on the software's Github repository

Compliance with Regulation

Software following the following law and regulations..

Record keeping and documentation:

Code of Federal Regulation: Title 19 Chapter Part 163 - Record Keeping

- Ports must maintain a accurate record of container information ensuring compliance with the laws and regulations administered or enforced by U.S Customs. [d]

Equipment compliance:

OSHA: 1917.71 - Terminals handling intermodal containers or roll-on roll-off operations.

- 1917.71(c) No container or containers shall be hoisted if their actual gross weight exceeds the weight marked as required in paragraph (a)(2) of this section, or if it exceeds the capacity of the crane or other hoisting device intended to be used.
- 1917.71(a)(3) The sum of the weight of the container and the cargo, in pounds.
- 1917.71(b)(2)(i) The actual gross weight shall be plainly marked so as to be visible to the crane or other hoisting equipment operator or signalman, or to every supervisor and foreman on the site and in charge of the operation [d]

OSHA: 1917.45 - Cranes and derricks

- 1917.45(f)(5)(i): “..tools and equipment shall be stored so as not to interfere with access, operation, and the operator's view”
- 1917.45(k)(2) A designated person shall thoroughly inspect all functional components and accessible structural features of each crane or device at monthly intervals [d]

Compliance with Regulation

Equipment compliance: (cont.):

OSHA: 1917.14 - Stacking of cargo and pallets.

> Cargo, pallets and other material stored in tiers shall be stacked in such a manner as to provide stability against sliding and collapse. [d]

Worksite compliance:

OSHA: 1917.27 - Personnel.

> Only those employees determined by the employer to be competent by reason of training or experience, and who understand the signs, notices and operating instructions and are familiar with the signal code in use shall be permitted to operate a crane. .. Exception: Employees being trained and supervised by a designated person may operate such machinery and give signals to operators during training. [d]

Acceptance Testing

- Expect our final deliverable on December 6th, 2024
- This is the testing criteria that we suggest:
  - 3 weeks before the final acceptance test send us 3 different scenarios(load, unloading, balancing) along with the necessary data files
  - The 3 scenarios will be tested live
  - Along with the 3 scenarios you can provide 2 scenarios on the day of acceptance testing that will also be done live
- Success criteria:
  - We guarantee that The order of operations calculation will be completed during the time it takes for a ship to dock in your port (15 minutes or less) if the amount of containers to move is 10 or less while also providing the ~~most~~ optimal solution
  - We guarantee that the order of operations calculation will be 2x faster than your best crane operator if the amount of containers to move is greater than 10 while also providing the optimal solution.
  - Software will run efficiently without lag to prevent losing time to complete a operation
  - In the event of an outage, software will be able to retrieve the modified manifest and continue its operation
  - Any errors will have a error handling solution that give clear directions and resume software with ease

Intellectual Property

- CargoSail Solutions acknowledges that Mr. Keogh will own all intellectual property (IP) rights arising from the software solution.
- This includes any and all designs, code, algorithms, documentation, and proprietary methods developed for this project.
- Our role is to act as a facilitator, creating a tailored solution while ensuring all IP is transferred to Mr. Keogh’s ownership upon completion.

Contract

- We propose to create a software system that will tell your crane operator the most efficient solution to balance containers on a ship that docks on your port or loads/unloads containers on/from a ship that arrives on your port.
- We will have a final deliverable on or before December 6th 2024 (or no more than 4 days after acceptance testing)
- We may require up to five hours of your time (or the time of a qualified proxy) to answer any additional questions. Questions should be answered within 48 hours.
- We will not honor any requests for any further features, at this price point and delivery date
- Signed (for CargoSail Solutions):
  - B Lum Date: 10-24-24
  - Anupam Goel Date: 10-24-24
  - Date: 10-24-24
  - Date: 10-24-24
  - Jude G Date: 10/24/24
- Signed (for Mr. Keogh): Date: OCT-29-24

References

[a]
Mr. Keogh lecture on 10/07/2024 at 5:00pm
https://www.dropbox.com/scl/fi/jmmuz02s9fzh2w4sgub4v/Problem_overview_by_Mr_Keogh.pptx?rlkey=ol9yff8pxh79gjlykepego2zb&e=1&dl=0

[b]
Elicitation interview with Mr. Keogh on 10/16/2024 at 7:00pm

[c]
Email from Mr. Keogh on 10/22/2024 at 8:07pm

[d]
Occupational Safety and Health Administration
https://www.osha.gov/laws-regs/regulations/standardnumber/1917#1917


slidesgo