

Group/Project

1 Customer Statement of Requirement (9 pts)

a Problem Statement	5.00	5.00
b Glossary of Terms	4.00	4.00

2 Systems Requirement (6 pts)

a Enumerated Functional Requirements	2.00	0.00
b Enumerated Non-Functional Requirements	2.00	1.00
c On-Screen Appearance Requirements	2.00	2.00

3 Functional Requirement Specifications (30 pts)

a Stakeholders	3.00	3.00
b Actors and Goals	3.00	3.00
c Use Cases		
i. Casual Description	3.00	3.00
ii. User Case Diagram	6.00	1.00
iii. Traceability Matrix	3.00	1.00
iv. Fully-Dressed Use Case Description	6.00	3.00
d System Sequence Diagrams	6.00	3.00

4 User Interface Specifications (15 pts)

a Preliminary Designs	10.00	8.00
b User Effort Estimation	5.00	5.00

5 System Architecture (15 pts)

a Identifying Subsystems	3.00	0.00
b Architecture Styles	3.00	3.00
c Mapping Subsystems to Hardware	3.00	3.00
d Connectors and Network Protocols	2.00	2.00
e Global Control Flow	2.00	2.00
f Hardware Requirements	2.00	2.00

6 Plan of Work (5pts)

a Plan Description	5.00	5.00
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7 Project Management (10 pts)

a How Project was managed by group	10.00	9.00
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PENALTY FOR LATE SUBMISSION

(-5)

PENALTY FOR NO REFERENCE

(-5)

Total Value/ Points 90.00 68.00

REPORT#1: VALUE/ GRADE 10.00 7.56

76%

Report #1

Berthing Plan/Scheduling Application



Team Members:

- Osborn Collins
- Mark A. Pascual
- Kevin Godoy
- Daniel Garcia
- Driane Perez
- Justin Chuc



CMPS3141 Software Engineering
Submitted to Mr. Manuel Medina
Submission Date: 27th February, 2022

Distribution of Work

<u>Signature Block</u>			
Statement	<i>I did my share of the work, and have a general understanding of the contents of the assignment.</i>		
<u>Team Member</u>	<u>Contribution</u>	<u>Signature</u>	<u>Date</u>
Osborn Collins	<ul style="list-style-type: none"> • Customer Statement of Requirements • System Requirements • UC 8 • Small part of Stakeholders • Small part of actors and goals • Glossary • Domain Model • Part of UI Development 	O.C.	27th February, 2022
Driane Perez	<ul style="list-style-type: none"> • 93% of the Casual Description • 100% of the Traceability Matrix • 95 % of the Use Case Diagram • 100% of the work plan • Fully - Dressed Description review and added about 5% 		27th February, 2022
Daniel Garcia	<ul style="list-style-type: none"> • System architecture • Architecture Styles • Mapping Subsystems to Hardware • Connectors and Network 		27th February, 2022

	<ul style="list-style-type: none"> • Protocols • Global Control Flow • Hardware requirements 		
Justin Chuc	<ul style="list-style-type: none"> • Connectors and Network • Use Case • Use Case Diagram Dressed/ Fully Dressed 	<i>J. Chuc</i>	27th February, 2022c xq
Kevin Godoy	<ul style="list-style-type: none"> • Mapping subsystems to hardware • Client Requirements • Preliminary Designs • User Estimation • Website 	<i>Kevin Godoy</i>	27th February, 2022
Mark Pascual	<ul style="list-style-type: none"> • Plan of work • References • Some editing • 2 Fully Dressed Use Case • Actors and Goals • Some Casual Description 	<i>Mark A. Pascual</i>	27th February, 2022

Distribution of work

Note: See point allocations in the table below.		Team Member Name					
R e s p o n s i b i l i t y	See point allocations in the table below.	Osborn Collins	Mark Pascual	Daniel Garcia	Kevin Godoy	Justin Chuc	Driane Perez
✓ Le v e l	Project management (10 points)	10%	90%			7	100
	Sec.1: Customer Statement of Requirements (9 points)	100%				2	100
	Sec.2: System Requirements (6 points)	100%					100
	Sec.3: Functional Requirements Specification (30 points)	10%	40%				90
	Sec.4: User Interface Specs (15 points)				100%		100
	Sec.5: System Architecture (15 points)			100%			100
	Domain Model ?	100%					100
	Sec.6: Plan of Work (5 points)						100

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Customer Statement Requirement

Ports are incredibly complex industries that thrive on efficient operations and supply chains. By ensuring that there is no lag between the vessel entering the port, having its cargo loaded or unloaded, refueled and inspected, cleared to depart, and finally pushed out of the berth, these ports allow countries all around the world to bring in vital trade and commerce to the region.

Most ports these days have the latest technology in order to reduce this turnaround time. For instance, the Port of Rotterdam which is the largest port in Europe and 11th worldwide is renowned for the immense importance it has placed on technological advancements. This port is supported by world class machinery such as specialized truck trailers, automated loading system and advanced loading crane. These improvements are a handful of common features implemented throughout a port. However, this technology can only speed up the process once the ship enters the port.

How do ports efficiently process ships waiting to enter or leave the port? This is where the concept of a berthing plan is introduced. Berthing Plans are detailed documents drawn up regarding the complete resource allocation for a port and surrounding facilities. It implements a supply chain and operation plan for all vessels that will dock or berth at the port at least a month before and may go up to 6 months. They are integral in the allocation of a port's resources for both incoming and outgoing vessels by planning ahead.

We have been using an excel sheet to basically plan for our berth. Due to limitations with this option, we are interested in sourcing a more modernized system that will phase out this tedious manual process. The system should help to optimize the Port operations for arriving and departing vessels. This system will be used by a wide variety of employees, for example, employees from the operations department right down to the persons from the mechanical department and as a result it will need to be very user friendly and easy to learn. Due to the fact we will have a wide range of employees using the application, we just want to emphasize that we don't need a system with a ton of features and complexity that will make the learning curve be so high that it's a burden to be use by an employee, while they are doing the jobs, they were tasked with doing.

First, we have been operating by just sending out a weekly ship schedule in PDF format, which basically only shows the estimated arrival and departure time of a vessel. This gets the job done, but it causes different delays because we are only planning one week at a time when we could be planning up to 6 months in advance. Managing vessels' arrival and departure time is very important because vessels cannot be scheduled to dock simultaneously at our berth because we only have one berth and we wouldn't have the adequate facilities for it. The schedule should be staggered so that ships are able to minimize their waiting times. This by default improves efficiency and reduces strains on the port resources. The main thing we are trying to avoid is a bottleneck.

Secondly, the ship schedules in our current process aren't dynamic. Another important objective of the port is a reduction in the unexpected arrival or departure of a ship. This throws the entire system into disarray, as it may further delay other ships. For instance, if a ship arrives earlier than expected, it will have a large idling and waiting time that reduces its efficiency. On the other hand, if a ship arrives late, it will also depart late, which creates a propagating delay that spreads to other ships in the port. So, since the schedule is fixed and is not being updated in real time, there is really no way to minimize early or delayed arrival and departure of a vessel.

Thirdly, since the schedule is a PDF, the only notification we can send is an email and it makes it very difficult to notify people who aren't around a computer regularly. For example, employees working in a crane or a stacker won't be able to be notified about any changes made in the schedule until they come out of the machinery and go around their computer, or phone and by that time there will be delays already. So, it's important that everyone working a vessel is notified immediately of any changes made to the schedule.

With these issues in mind, we are requesting for your organization to provide some feedback and present some solutions VIA a system that would help to solve these issues we have described. We would like to be assigned a project manager to help convert this manual archaic process to a more automated system. The ship schedule should be the main dashboard and the starting point for all operations. This basically means that the ship schedule will need to be dynamic and

showing any changes made in real-time, for example, by changing the estimated arrival time of one vessel all other vessels following will be adjusted by either moving up to an earlier time or down to a later time. With this in place this will help to have all resources used in an optimized way.

We expect the system to provide us notification of any changes made in the system, for example if a supervisor, boat-man, foreman and stevedore is scheduled to work on a vessel, they will be sent a notification of when the ship should arrive and what time work needs to begin. If the vessel's time was adjusted and it is showing that it will reach later or earlier, they will get a notification.

One last thing we didn't mention initially but we would like you to keep in mind, is that the system should have some level of intelligence where it should track different delays happening in real time and send notification so that everyone knows what's happening and to ensure delay is at a minimum. From that point all data should be compiled into a report. The main objective of working a vessel is to unload and load a vessel as quickly as possible. Therefore, tracking delays would help to show where it went wrong and how to improve for the next vessel.

At the end of the day, the overall objective of the berthing plan app is to efficiently create a timetable of ship arrival and departure, and a list of facilities and services that will have to be provided to a berthed vessel. By optimizing this timetable, the port can achieve the most efficient turnaround time for each vessel.

Glossary

Terms	Definition
Berth	A ship's allotted place at a wharf or dock
Vessel	A ship or large boat.
Anchorage	An area that is suitable for a ship to anchor in.
Stacker/Crane	A machine that stacks containers in a Port Yard Space.
Port	A town or city with a harbor where ships load or unload, especially one where customs officers are stationed.

System Requirements

Ranking Scheme: From 1 -4 with 1 having the most priority and 4 having the least priority.

Functional Requirements

ID	Priority	Requirements
Req1	1	The system shall provide digital instances of all vessels that will berth for up to 6 months.
Req2	1	The system shall have all ships in a queue for up to 6 months.
Req3	1	The system should allow the ship schedule to be dynamic and easy to update.
Req4	3	The system will allow user management.
Req5	2	The system shall notify designated users of any changes.
Req6	2	The system should allocate all persons, and equipment for working the vessel.
Req7	2	The system will keep track of operations, and always ensure that operations are working as optimized as possible.
Req8	3	System should keep as much data as possible to analyze trends and for reporting.
Req9	4	System should track and show the different status a vessel that is at the port is currently in.
Req10	3	System should be able to be manipulated through the graphical portion and through a manual back end screen.

I am failing to see the actual functional requirements that will be initiated or interacted with by user?

Enumerated Nonfunctional Requirements

ID	Priority	Requirements
Req11	3	Only authenticated users will be able to access the system.
Req12	3	The user access will be determined by the user roles and permissions associated with the role.
Req13	1	The system should have some level of intelligence where it is able to track information and report data accurately.
Req14	3	The system will allow user management.
Req15	1	Must be easy to learn and user friendly.
Req16	1	System should not allow any clashing of vessels berthing at the same time.
Req17	2	System should have an auto schedule feature.
Req18	2	Movement in the system should be very easy to follow

On-Screen Appearance Requirements

ID	Priority	Requirements
Req19	1	The system should be user friendly with a small margin for errors.
Req20	1	The system should display the ship schedule as the main dashboard for the system.
Req21	2	Each vessel listed to berth will display voyage number, vessel name, ETA, ATA, ETD, ATD, operations personnel working and stevedore gang working the vessel.
Req22	3	Notification will be displayed as a message showing up in an inbox like tab.
Req23	4	Vessels will be displayed in various colors to differentiate between ships in the queue.
Req24	3	The system should display delays in minutes on the main dashboard.
Req25	3	The system should be optimized for touching because the schedule would operate similar to a grid in excel.

Stakeholders

1. System Administrator
2. CEO & Senior Management
3. Operations Manager
4. Operations Supervisor
5. Operations Team
6. Gang Foreman
7. Gang(Stevedore)
8. Machine Operators
9. Marine Team
10. Pilot
11. Shipping Agents
12. Technical Team (Mechanical, Maintenance, Electrical, Welding etc)

Actors and Goals

Actors	Roles	Types	Goals
System	<ul style="list-style-type: none">• Providing <u>login</u> for the various stakeholders (System Administrator, CEO & Senior Management, Operations Manager, Operations Supervisor, Operations Team, Gang Foreman, Gang(Stevedore), Machine Operators, Marine Team, Pilot, Shipping Agents, Technical Team)• Provide a tailored dashboard for the various users allowing them to see status of ships, report incidents and initiate delay timer.• Provide a weekly/monthly calendar and schedules of ships scheduled to berth.	Participating	<ul style="list-style-type: none">• <u>Allow login</u> of the various users to the application once their credentials are accurate.• Update calendar and berthing schedules in real time• Allow administrators to make adjustments• Display accurate schedules.

	<ul style="list-style-type: none"> • Allowing admin to add users, update status and modify ship schedules • Track delays and inform appropriate personnel. • Access will be determined on the role you have. Example an agent should only see schedules, and make changes to the ETA and ETD. 		<div>these are all features that are functional but not listed in first table above</div>
System Administrator	<ul style="list-style-type: none"> • Log into the system • Log of from the system • Input relevant data about shipping schedules • Update the application • Create user accounts and provide access 	Initiating Initiating Initiating Initiating Initiating	<ul style="list-style-type: none"> • <u>Log on to</u> from the system • <u>Log off</u> from the system • Allowed to <u>populate</u> the system with relevant information as it pertains to shipping schedules. • Allowed to <u>update</u> the application. • Allowed to <u>create user</u> accounts and grant access to various levels of users.
CEO, Senior Management	<ul style="list-style-type: none"> • <u>Log</u> into the system • Log off from the system • View Ship schedule and ship details • Gets notification on when a ship starts working and when it is completed. • Gets regular updates on a ship's status(arrival, departure, currents status, delays) 	Initiating Initiating	<ul style="list-style-type: none"> • <u>Log on to</u> from the system • <u>Log off</u> from the system • Allowed to view shipping information on the dashboard of the application.

Operations Manager	<ul style="list-style-type: none"> Log delay in operation whilst <u>off</u> loading of vessel Log into the system Log <u>off</u> from the system Ensure the system is working properly <u>Update</u> the log and schedules of ships at the port Mark <u>delay</u> as resolved User Setup and Access Get <u>notification</u> on when a vessel starts working and when it completes. Gets <u>notification</u> of when a delay goes over target. 	Initiating Initiating Initiating Initiating	<ul style="list-style-type: none"> Log on to from the system Log off from the system Report a delay in operations Update the the system with current information Keep maintenance log of the system and perform frequent maintenance of the the system
Operations Supervisor	<ul style="list-style-type: none"> Log delay in operation whilst <u>off</u> loading of vessel Log into the system Log off from the system Ensure the system is working properly <u>Update</u> the log and schedules of ships at the port Mark <u>a</u> delay as resolved <u>Get</u> <u>notifications</u> on which ship they are supposed to work. <u>Get</u> <u>notification</u> on when a vessel starts 	Initiating Initiating Initiating Initiating	<ul style="list-style-type: none"> Log on to from the system Log off from the system Report a delay in operations Update the the system with current information Keep maintenance log of the system and perform frequent maintenance of the the system





	<p>working and when it completes.</p> <ul style="list-style-type: none"> ● Gets notification of when a delay happening ● Gets a notification of when the delay time goes over target. ● Create, Update and Delete working schedule of crane operators, stevedore gang, Drivers, Gang foreman, Stacker Operators. ● Report Delays 		
Operations Team	<ul style="list-style-type: none"> ● <u>Log delay</u> in operation whilst off loading of vessel ● Log into the system ● Log off from the system ● Ensure the system is working properly ● <u>Update</u> the log and schedules of ships at the port ● <u>Mark a delay</u> as resolved ● Get notifications on which ship they are supposed to work. ● Get notification on when a vessel starts working and when it completes. ● Gets notification of when a delay happening ● Gets a notification of when the delay time goes over target. 	<p>Initiating</p> <p>Initiating</p> <p>Initiating</p> <p>Initiating</p> <p>Initiating</p> <p>Participating</p> <p>Participating</p> <p>Participating</p> <p>Participating</p>	<ul style="list-style-type: none"> ● Log on to from the system ● Log off from the system ● Report a delay in operations ● Report delays ● Update schedules ● Get various reports
Gang Foreman	<ul style="list-style-type: none"> ● <u>Log delay</u> in operation whilst off loading of vessel ● Log into the system ● Log off from the 	<p>Initiating</p> <p>Initiating</p>	<ul style="list-style-type: none"> ● Log on to from the system ● Log off from the system ● Report a delay in operations ● Update schedules ● Allowed to view various






	<ul style="list-style-type: none"> system Get notifications on what vessel is to be worked View working schedule of gangs for a particular 	Initiating Participating Participating	reports
Gang (Stevedore)	<ul style="list-style-type: none"> Log into the system Log off from the system View working schedule. Get notification of when they are supposed to work 	Initiating Initiating Participating Participating	<ul style="list-style-type: none"> Log on to from the system Log off from the system Allowed to view working schedule
Machine Operators	<ul style="list-style-type: none"> Log on to the system Log off from the system See which ship he scheduled to work Get notifications on what vessel he is to work. 	Initiating Initiating Participating Participating	<ul style="list-style-type: none"> Log on to from the system Log off from the system See schedule assigned to working gangs
Marine Team	<ul style="list-style-type: none"> Log on to the system Log off from the system View schedules of vessels <u>Make changes to ship schedule and ship details</u> 	Initiating Initiating Participating Initiating	<ul style="list-style-type: none"> Log on to from the system Log off from the system See schedule assigned to working gangs Allowed to make changes to ships' schedules and details.
Pilot	<ul style="list-style-type: none"> Log on to the system Log off from the system <u>View schedules of vessels</u> Get notification of what ship they are scheduled to pilot and when. 	Initiating Initiating Participating Participating	<ul style="list-style-type: none"> Log on to from the system Log off from the system Track the progress of the loading and off loading of a vessel
Shipping Agents	<ul style="list-style-type: none"> Log into system Log off of the system 	Initiating Initiating	<ul style="list-style-type: none"> Log on and off from the system

	<ul style="list-style-type: none"> • See the status of the loading and off loading of vessels • Make changes to to <u>ETA and ETD</u> 	Participating Initiating	<ul style="list-style-type: none"> • Track the progress of the loading and off loading of a vessel • Allowed to make changes to ETA and ETD
Technical Team	<ul style="list-style-type: none"> • Log into system • Log off of the system • Report delay • Get notification of individuals from various departments scheduled to work. 	Initiating Initiating Initiating Participating	<ul style="list-style-type: none"> • Log on and off from the system • Report a delay •

Casual Description

Name	Description	Requirements Covered
UC - 1 Create Account	Account that will be created depending on the type of user you are. Different account roles will be set depending on what type of stakeholder you are. The administrator for your workplace will be able to create a different user for the roles.	Req 4, Req 11, Req 12
UC - 2 Login to system	Login to see any changes that were made to the table Login to access the system	Req20, Req 11
UC - 3 View Main Dashboard	Accessing the main dashboard to see any changes that were made by users Allowing specific users to change the planning depending on what user you are. Once logged into the system a	Req1, Req2, Req3, Req5, Req25, Req 23

	<p>notification should pop showing what recent changes were made to the system.</p> <p>Allowing designated users to make changes dynamically through the dashboard while also notifying the other users.</p>	
<p>UC - 4 Add vessel</p> 	<p>Adds a vessel to the dynamic table</p> <p>Add the attribute and information of the vessel</p>	Req. 3, Req. 11, Req. 14
<p>UC - 5 Update vessel</p> 	<p>Allows the designated user to update all the attribute and information of the vessel</p>	Req. 3, Req. 11, Req. 14
<p>UC - 6 Add delay</p> 	<p>Allows the designated user to enter a delay on the ground whilst a vessel is being loaded or unloaded.</p> <p>Delay added to the system to accommodate vessels that will be affected by the delay</p> <p>Delay will be tractable to be later used to make better decisions by the designated user when adding delays or loading and unloading vessels.</p>	Req 5, Req 7, Req 8, Req 22
<p>UC - 7 Verify the user</p> <div style="border: 1px solid red; padding: 2px; display: inline-block;">VerifyUser</div>	<p>Function use case that will verify that the user is in the correct dashboard, main page.</p> <p>Also will be responsible to determine which table will be assigned to the different users.</p> <p>Will designate specific pages that will be only accessed by designated user.</p>	Req 11, Req 18, Req 19
<p>UC - 8 View Schedule (table)</p> 	<p>Allows users to view schedules that are relevant to them and other individuals working along with them.</p> <p>Allow user that should not be allow to edit the table to view an see what was change on a tabular form</p>	Req 2,Req 1, Req 11,Req 12, Req 20, Req 24

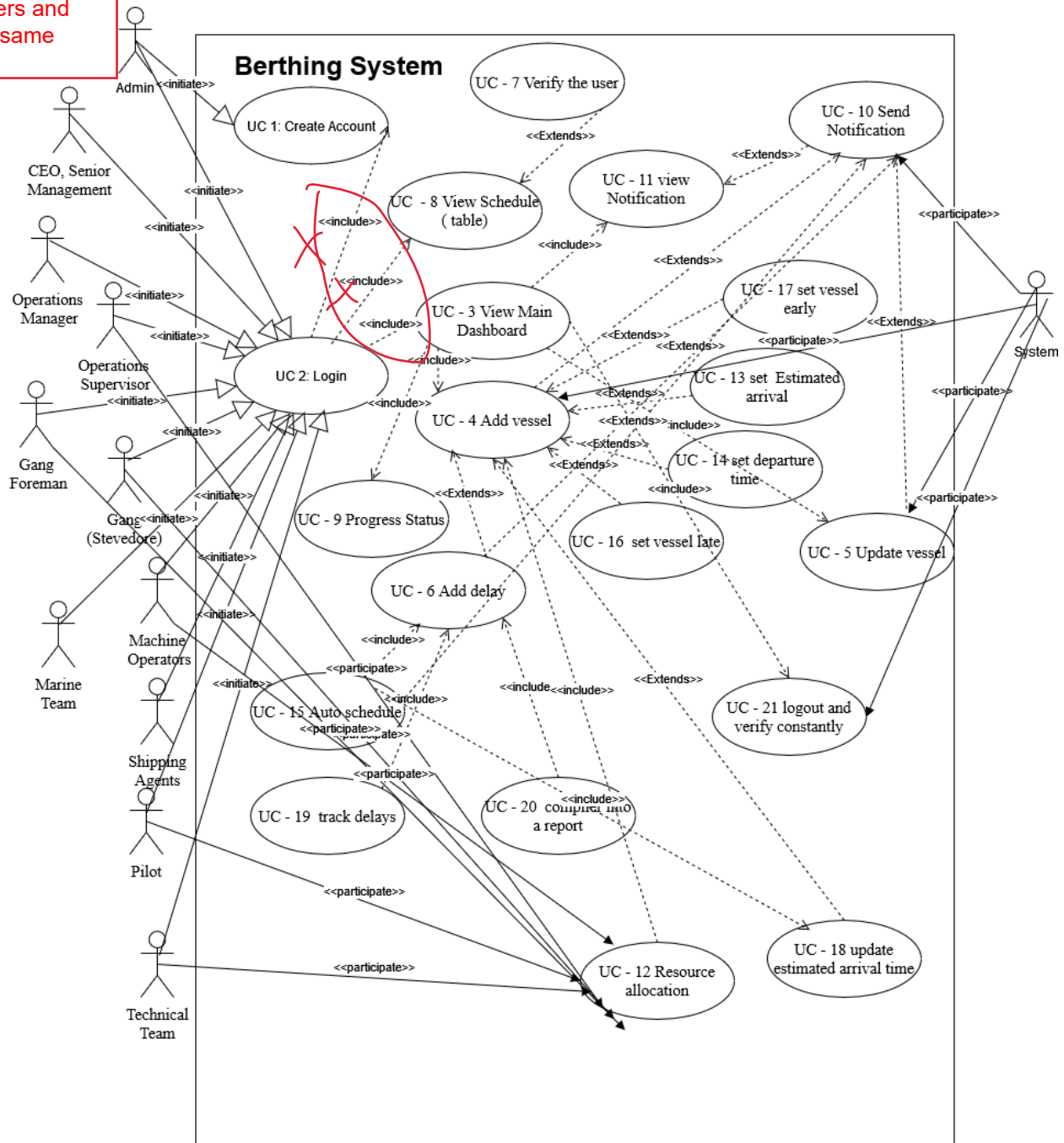
	Designated role will login and will be able to see this in the main dashboard along the changes that were made	
UC - 9 Display Progress Status 	<p>From the moment a vessel is berthed the status as it relates to loading and unloading is tracked. Delay, if any, are also displayed as part of the progress status</p> <p>The time that is left to arrive or departure time left of the vessel.</p> <p>Will display the progress for each vessels with a friendly user pop up that will be easily learnable and understandable</p>	Req. 4, Req. 9, Req 15, Req 19, Req 21
UC - 10 Send Notification 	Notification sent to a designated user after a change is made by the user that updated the vessel information or any attribute of it.	Req 5, Req 19
UC - 11 view Notification 	<p>A pop up specific to only see changes in a more orderly and understandable manner.</p> <p>Will be a friendly user to make them understandable to the reader.</p>	Req 5, Req 19, Req 15, Req 18, Req 22
UC - 12 Resource allocation 	<p>The relevant personnel and equipment needed in the process of loading and unloading a berthed vessel is allocated in order for the process to be completed as efficiently as possible.</p> <p>Designated Users will be notify that a vessel needs resources allocation</p> <p>If vessel enter at a earlier state resources will be allocated immediately to avoid delays in the berth planning system</p>	Req 5, Req 6, Req 7, Req 9,
UC - 13 set Estimated arrival 	<p>Set the estimated time of arrival.</p> <p>It will also be part of the attribute of a vessel.</p>	Req 3, Req 7, Req 9, Req 13, Req 21

UC - 14 set departure time ✓	Set an estimated departure time for a vessel.	Req 3, Req 7, Req 9, Req 13, Req 21
UC - 15 Auto schedule ✓	Reschedule the vessels when changes are made to the attributes of a vessel. If the vessel will arrive late it will auto schedule the vessels again. Same	Req 3, Req 5, Req 10, Req 13, Req 16, Req 17
UC - 16 set vessel late ✓	Will allow the designated user to add a late attribute to the vessel. Calculation will be made by the system once this is changed. It will update the others estimated times to avoid delays in the system Will also inform the users that a change was made to the system to be prepared and allocate resources.	Req 3, Req 5, Req 9, Req 14, Req 16
UC - 17 set vessel early ✓	Will allow the designated user to add a late attribute to the vessel. Calculation will be made by the system once this is changed. It will update the others estimated times to avoid delays in the system Will also inform the users that a change was made to the system to be prepared and allocate resources.	Req 3, Req 5, Req 9, Req 14, Req 16
UC - 18 update estimated arrival time ✓	updates the estimated time of arrival. It will also be part of the attribute of a vessel and allow you to update it. Will also update the notification	Req 3, Req 5, Req 9, Req 16
UC - 19 track delays ✓	Tracking all delays to be later used. Tracking delays would help to show where it went wrong. To improve for the next vessel and improve the system to reduce the delays	Req 5, Req 7, Req 16

	between vessels.	
UC - 20 compiler into a report	Compiles a report to be used later to better the system.	Req 4, Req 8, Req 13,
UC - 21 logout and verify constantly <i>split</i>	Logout of the system and verify that every change was reported to the designated user. Notify and verify that every notification is sent, if one or more changes was not notified by the system during the updating or changing phase of the system it will check the notification table and send them once more.	Req 11, Req 12, Req 13

Use Case Diagram

Split this diagram since you have many users remember you can generalize once you find similarities between users and they initiate same usecase



Traceability Matrix

P W	Requirements	U c- 1	U c- 2	U c- 3	U c- 4	U c- 5	U c- 6	U c- 7	U c- 8	U c- 9	Uc -1 0	Uc -11	Uc -1 2	Uc -1 3	Uc -1 4	Uc -1 5	Uc -1 6	Uc -1 7	Uc -1 8	Uc -1 9	Uc -2 0	Uc -2 1
1	Req1			X					X													
1	Req2			X					X													
1	Req3			X	X	X								X	X	X	X	X	X			
3	Req4	X								X											X	
2	Req5			X			X				X	X	X			X	X	X	X	X		
2	Req6												X									

2	Req7						X						X	X	X					X		
3	Req8						X														X	
4	Req9								X				X	X	X		X	X	X			
3	Req10															X						
3	Reqq11	X	X		X	X		X	X													X
3	Req12	X							X													X
1	Req13													X	X	X					X	X
3	Req14				X	X											X	X				
1	Reg 15									X		X										

1	Req16															X	X	X	X	X		
2	Req17															X						
2	Req18							X				X										
1	Req19							X		X	X	X										
1	Req20		X						X													
2	Req21									X				X	X							
3	Req22							X				X										
4	Req23			X																		
3	Req24								X													

3	Req25			X																		
	Max Value	3	3	4	3	3	3	3	3	4	2	3	4	4	4	3	4	4	4	2	3	3
	Total Weight	9	4	12	7	7	10	6	12	11	3	9	10	10	10	10	11	11	8	5	7	7

Fully - Dressed Description

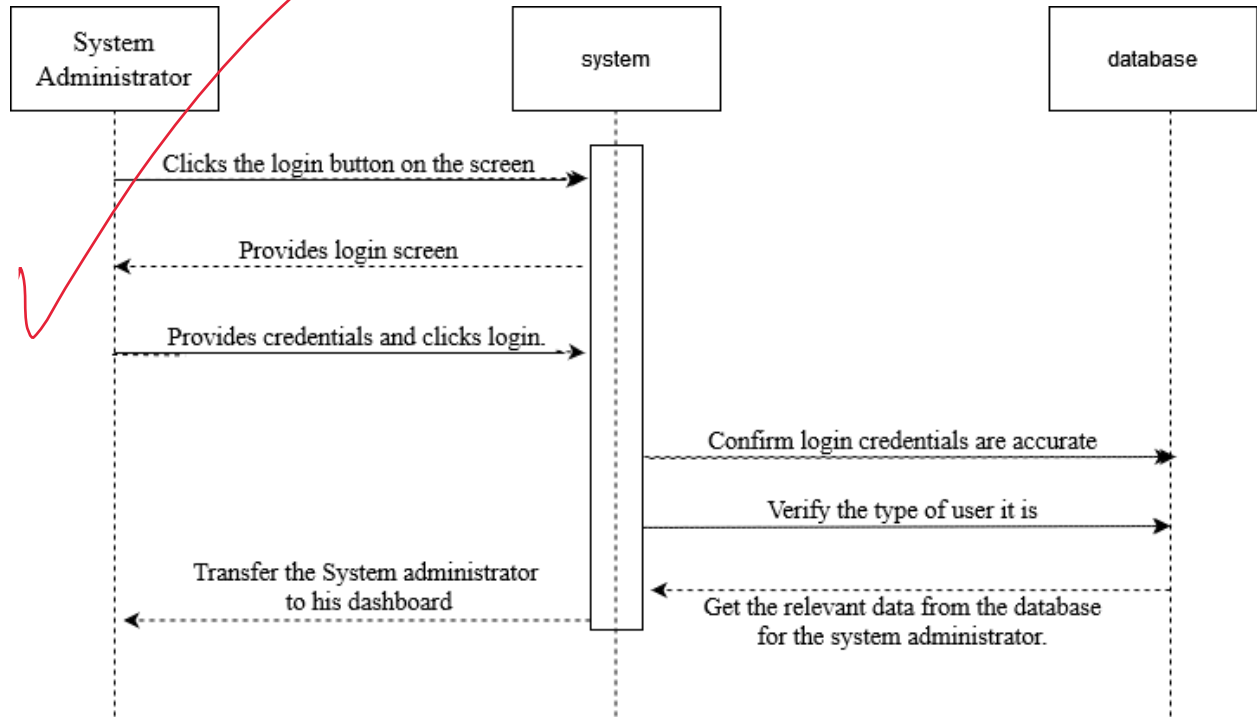
USE CASE #3: View Main Dashboard		
Initiating Actor:	System Administrator	
Actor’s Goal:	View Dashboard	
Participating Actor	System	
Preconditions	The system has been initialized and the database is updated with the latest information.	
Post conditions	Able to make changes and propagate throughout the system for all users.	
Flow of Event for Main Success Scenario		
Step	Actor	Action Description
=>	System Administrator	Clicks the login button on the screen
<=	System	Provides login screen
=>	System Administrator	Provides credentials and clicks login.
<=	System	Confirm login credentials are accurate
<=	System	Verify the type of user it is
<=	System	Get the relevant data from the database for the system administrator.
<=	System	Transfer the System administrator to his dashboard

USE CASE #8: View Schedule		
Initiating Actor	Operations Team, Technical Team, Gang Foreman, Machine Operators, Pilot	
Actor’s Goal	To view/read schedules, they can't create, update or delete.	
Participating Actor	Operations Team, Technical Team, Gang Foreman, Machine Operators, Pilot, System.	
Preconditions	There needs to be at least one vessel with a schedule in the system.	
Post conditions	None, it's just viewing.	
Flow of Event for Main Success Scenario		
Step	Actor	Action Description
=>	Operations Team, Technical Team, Gang Foreman, Machine Operators, Pilot	Taps on screen to view dashboard
<=	System	Display the dashboard with the most updated/current version of the list of vessels that will arrive for the week.
=>	Operations Team, Technical Team, Gang Foreman, Machine Operators, Pilot	Taps on “Vessel Icon” to view vessel details
<=	system	Displays the most updated/current version of the vessel details such as ETA, ETD, gang working, pilot working, Supervisor on shift, gang foreman.

USE CASE #9: Display Progress Status		
Initiating Actor		Operations Manager
Actor’s Goal		To view the status of a berthed vessel at the sea port.
Participating Actor		Operations Manager, system
Preconditions		The system database is updated and a vessel is currently berthed and is being loaded or unloaded. Actor is logged in.
Post conditions		Status of vessel reported and relay to the relevant/interested parties.
Flow of Event for Main Success Scenario		
Step	Actor	Action Description
<=	System	Operations manager is provided with his/her related dashboard.
=>	Operations Manager	Clicks the image representing the berthed vessel
<=	System	Provides a status button of the user along with other options to the user.
=>	Operations Manager	Clicks the status button for the berthed vessel.
<=	System	Displays the latest logged information from the database as it relates to the status of the berthed vessel.

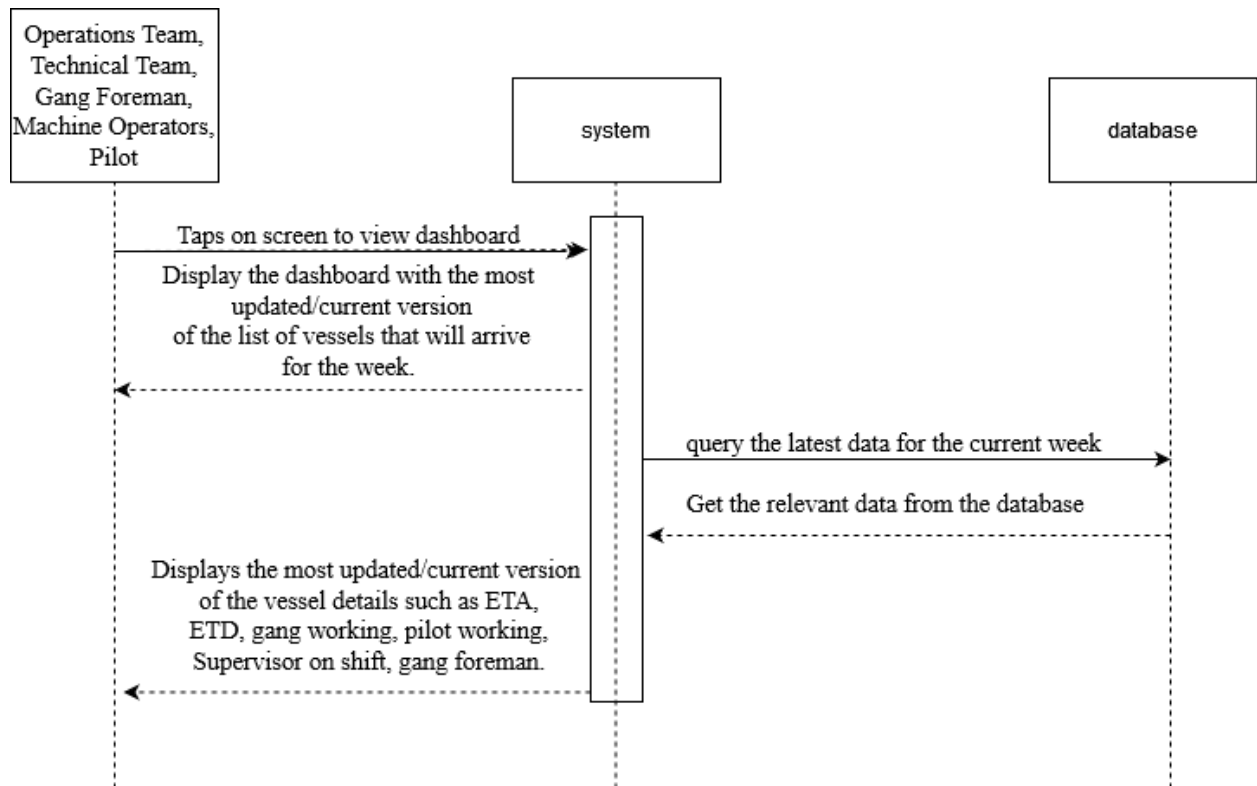
System Sequence Diagrams

USE CASE #3: View Main Dashboard

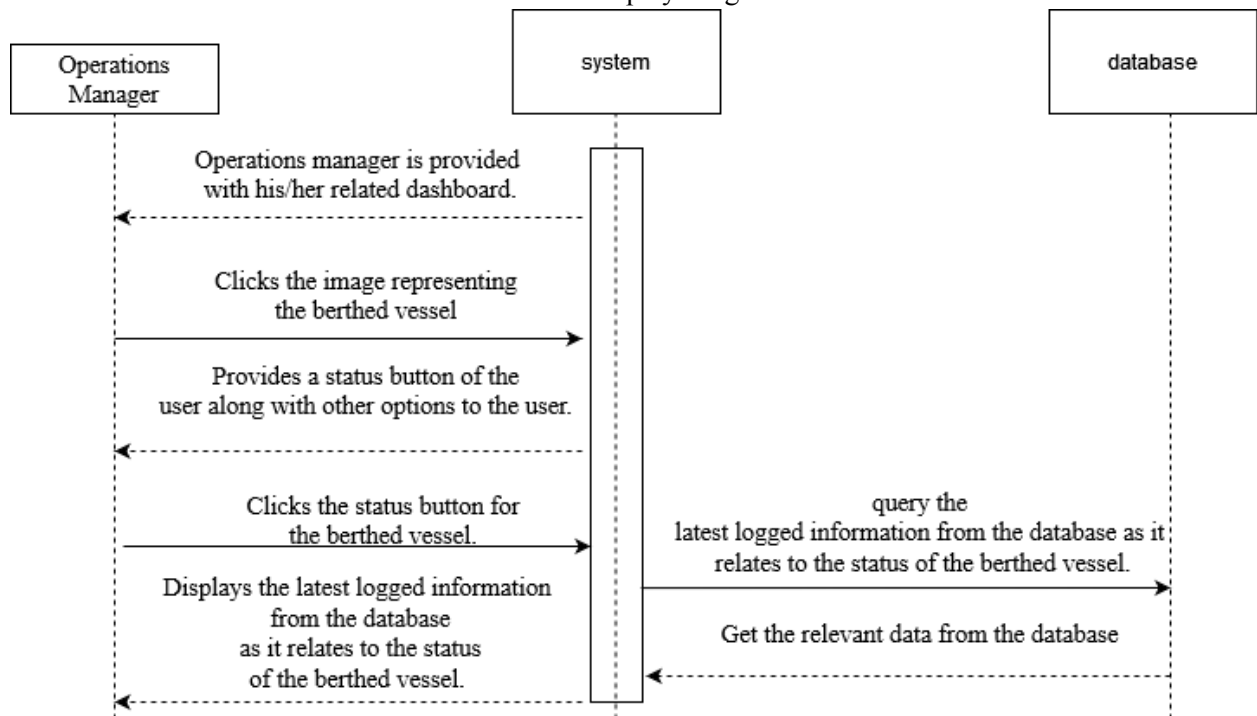


Again these UML notation are correct but changes will be made or removed when you fix the requirements and priority of those in yellow

USE CASE #8: View Schedule



USE CASE #9: Display Progress Status



Preliminary Designs

User Interface Specification

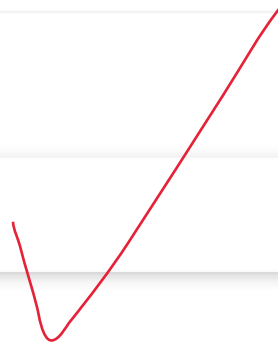
Any changes to fully
dress use case may
affect changes you UI

margin

ETA *

 / /  :

ETD *

 / /  : 

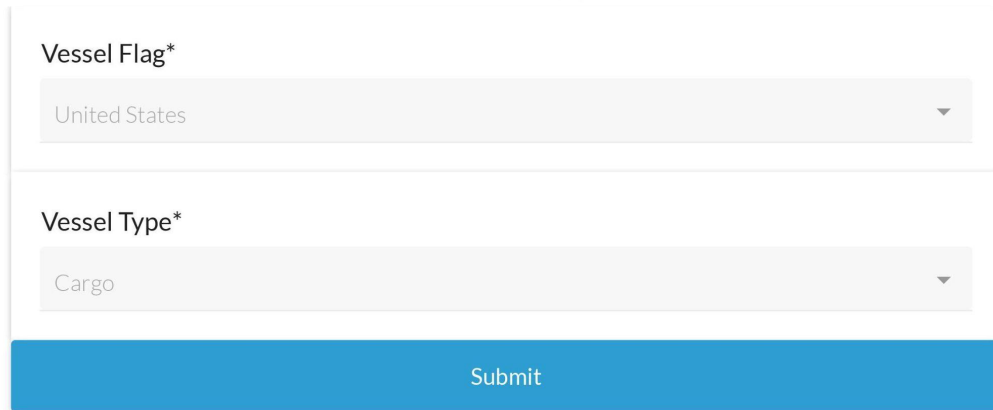
Agent*

 ▼

Voyage*

Vessel Name*

 ▼



The image shows a web form titled "Voyage Information". It contains two dropdown menus. The first is labeled "Vessel Flag*" and has "United States" selected. The second is labeled "Vessel Type*" and has "Cargo" selected. Below these fields is a blue "Submit" button.

Figure 1 *showing the form for the voyage information*

When the user clicks on "Voyage Information," this form will pop up. They will be prompted to fill out several fields. The first two are the "Estimated Time of Arrival" and the "Estimated Time of Departure." In these fields, the user will enter the date and time for the expedited arrival and departure of the vessel. Next, they will enter the number of voyages that the vessel has made to the port in the "Voyage" field. Then they will choose a company for the "Agent" field, which will specify who owns the vessel. Afterwhich, they will choose which vessel is berthing in the "Vessel Name," field. Lastly, they will fill out the "Vessel Flag" and "Vessel Type" which represent the nationality of the ship and the type of ship that it is. In the end, they will store the file by clicking "Submit."

ATA *

26 / 02 / 2022

HH : MM

PM

ATD *

26 / 02 / 2022

HH : MM

PM

Pilot*

Peter Hanson

Operation Supervisor*

John Doe

Stevedore Gang*

Chris Hank

Gang Foreman*

Mike Nickels

**Crane Operator***

Josh Black

**Stacker Operator***

Henry Smith

**Drivers***

Banana Joe



Chris Pratt



John Doe



Ethan Miles

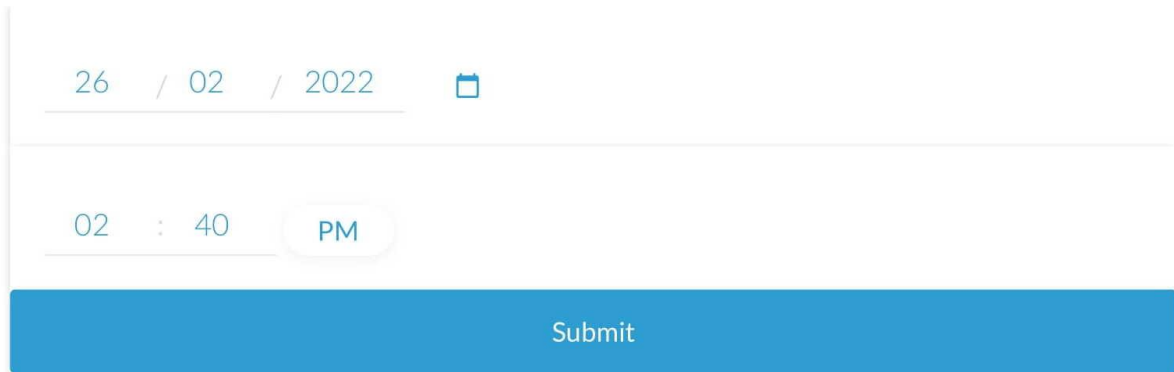


Other

**Delay***

Flat Tire





26 / 02 / 2022

02 : 40 PM

Submit

Figure 2 *showing the Operation Detail Form*

When the user clicks on “Operation Detail,” they will be shown a form that goes over the crew details. They will first have to fill out the “ATA” and “ATD” which are the real time date and times that the ship arrived and left. Next they will choose who the pilot of the ship is from the list available in the “Pilot” field. After that they will choose who the team supervisor is in the “Operation Supervisor” field. After that they will choose who the “Stevedore Gang,” “Gang Foreman,” “Crane operator” and “Stacker Operator” are by choosing who in the drop list. Furthermore, the user will choose who all will be the designated drivers for the operation in the “Drivers” field. Finally, the last field is optional but the user will choose a delay, if any, that occurs. A qualifying delay will be in the drop down list and then the user will enter the date and time of when it occurred.

B1

DELAYS	TIME OF DELAY	TIME SPENT(MINS)	COMPLETION TIME
WEATHER_DELAY	1:00 PM	60	2:00 PM
CRANE_DELAY	9:35	120	11:35
FUELING_CRANE_DELAYS	8:00 AM	15	8:15 AM
EQUIPMENT_DELAYS_IN_COMPOUND	4:18 PM	7	4:25 PM

Figure 3 *Showing Delay Table*

In this table, the user is shown the Delays

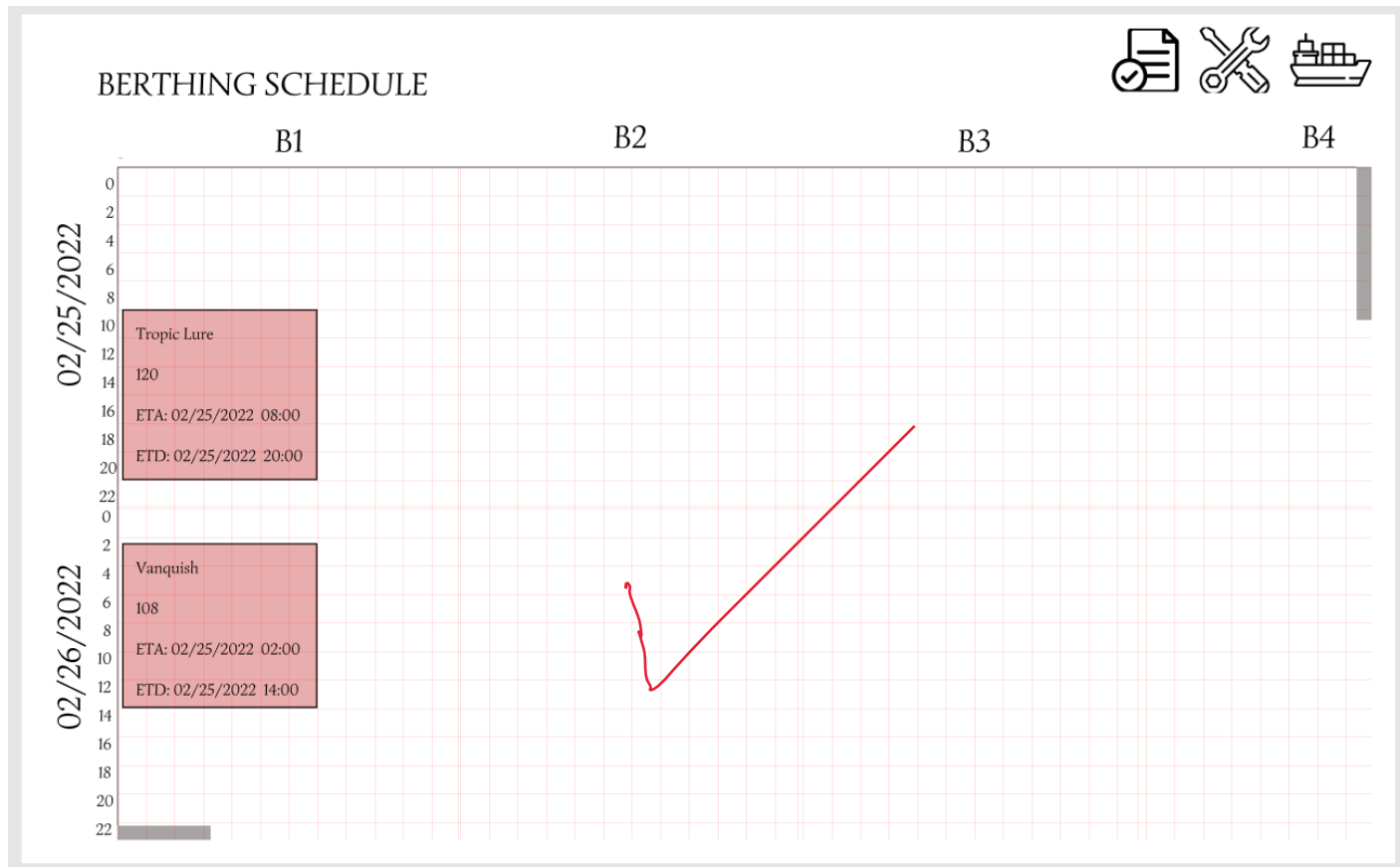


Figure 4 *Showing the Berthing Schedule*

Here the user is shown a schedule that they will be able to manipulate. The user has the ability to drag the form around the table. By doing so, the timer will change depending on where the user drops the form in respect to the time axis. The forms within the schedule show the Vessel Name, the Voyage and the estimated arrival and departure times. By clicking on the ship icon in the top right, a new “Voyage Detail,” as shown in figure 1, which will become a new form on the schedule. Next, clicking on the tool icon will show the “Operations Detail” and a form will open up as shown in figure 2. By clicking on the documents, the user will be shown a screen for the delay table as shown in Figure 4. Finally, double clicking on the schedule form will also bring up the “Voyage Detail.”

Domain Model

Form Report#2

UC - 3 (View Main Dashboard)

Extracting Responsibilities

Responsibilities Description	Type	Concept Name
RS.1 Coordinate actions of concept associated with the use case and delegate the work to other concepts	D	Controller
RS. 2 System displays login screen	D	LOGIN_SCREEN
RS. 3 Enters login credential and click login	K	USER_INFO
RS. 4 System Verifies credentials	K	LOGIN_CONFIR MATION
RS. 5 If logins are correct,this is a successful login and main dashboard is displayed	D	DASHBOARD
RS. 6 If logins are incorrect user gets a prompt that logins are incorrect and to try again	K	PROMPT_MESS AGE

Extracting Association

Concept Pair	Association Description	Association Name
Controller ↓◇ Login Menu	Controller passes request to login form and gets login page displayed	Login Form Request
Login Menu ↓◇ Interface	Login form is prepared for interface page	UI Preparation
Interface ↓◇ Controller	Login form is displayed	Displays
Controller ↓◇ Login Menu	Enters User Credentials	User Input
Controller ↓◇ Login Menu	Submits the credentials in the form	Login
Login Menu ↓◇ Database	Database searches for a match with what was inputted	Data Search
Database ↓◇ Login Menu	Logins match one in DB	Data Comparison.

Login menu ⇓◇ Dashboard Menu	Login menu switches to Dashboard Menu	Dashboard Menu
Dashboard Menu ⇓◇ Interface	Dashboard Menu is being prepared for interface	UI Preparation
Interface ⇓◇ Controller	Dashboard is Displayed	Displays

Extracting Attributes

Concept	Attributes	Attributes Description
GET_LOGIN_MENU		
ENTER_LOGIN_INFO		
VALIDATE_LOGIN		
GET_DASHBOARD		
DISPLAY_DASHBOARD		

User Effort Estimation

Figure 1 - Voyage Detail

Navigation - 1 Click

Click ship icon on schedule

Data Entry - 13 Clicks 5 keystrokes

Click on "ETA" date

Keystroke date in field

Click on "ETA" time

Keystroke time in field

Click on "ETD" date

Keystroke date in field

Click on “ETD” time

Keystroke time in field

Click on “Agent”

Click agent name from list

Click on “Voyage”

Keystroke number of voyages

Click on “Vessel Name”

Click vessel name from list

Click on “Vessel Flag”

Click vessel flag from list

Click on “Vessel Type”

Click vessel type from list

Based on changes for
UI and new priority use
cases these will need
updated

Figure 2 - Operation Detail

Navigation - 1 Click

Click tools icon on schedule

Data Entry - 12 Clicks (Potentially 16 depending on Drivers) 6 Key Strokes

Click on “ATA” date

Keystroke date in field

Click on “ATA” time

Keystroke time in field

Click on “ATD” date

Keystroke date in field

Click on “ATD” time

Click on “Pilot”

Click pilot name from list

Click on “Operation Supervisor”

Click Operation Supervisor name from list

Click on “Stevedore Gang”

Click Stevedore Gang name from list

Click on “Gang Foreman”

Click Gang Foreman name from list

Click on “Crane Operator”

Click Crane Operator name from list

Click on “Stacker Operator”

Click Stacker Operator name from list

Click on “Drivers”

Click (several) driver name(s) from list

Click on “Delay”

Click delay type from list

Click on Delay Date

Keystroke date in field

Click on Delay Time

Keystroke date in field

Figure 3 - Delay Table

Navigation - 1 Click

Click on document icon

Date entry - 1 Click 1 keystroke (Multiple clicks and keystrokes depending on how many delays)

Click on blank Completion Time cell

Keystroke the time

Figure 4 - Berthing Schedule

Data Entry - 3 Clicks 1 Drag 1 double-click

Drag schedule form to change time

Double click on form to bring up the "Voyage Detail"

Click on ship icon to bring up a "Voyage Detail" form

Click on tools icon to bring up "Operation Detail" form

Click on documents icon to bring up "Delay Table"

System architecture

Identifying Subsystems

Architecture Styles

The architecture styles that will be used are Event-driven architecture, Database centric and client server architecture. The use of event driven is because of the way the Berthing system works that depending on an event happening it sends a notification to the users depending on what change happened to the ships arriving and departing. This will also be database centric because all data will be stored in a database so that it can be displayed in real time to the users and also sending notifications to them if an event is to change. All of this will be done with the help of the server client architecture so that all users will be connected too.

Mapping Subsystems to Hardware

The system will be able to function on multiple functions. Tablets, phones and computers will be able to run the application. Since the system requires an online connection, all devices must have a stable internet connection before they are able to view the updated schedules. On the user side, they will be able to drag and drop the forms within the schedule.

Connectors and Network Protocols

This system will be able to communicate between many devices and for this reason we will use HTTP so all devices can communicate to each other using a database, PHP and mysql. In order for this to work the page should refresh every 5 seconds. Javascript script will be used to refresh the parts of data on the web application.

The notifications on the mobile devices will use the **web push protocol**. This protocol works by using your server to send a push protocol to the push service then the service sends the desired notification to the mobile devices.

Global Control Flow

Execution orderliness: This will be an event driven system because every time the berthing database is updated by any of the users that have the privilege to do so. It will trigger an event depending on the user and the user case they initiated.

Time dependency: This system will be using both event response and real time system. For the event response it will send notifications to the users when an event is about to happen or an event is changed. This aims to facilitate the users to be aware of new updates like if a ship arrives early or if there is an push back on the departure of a cargo. The system will be updating in real time and refreshing the data every 5 seconds so that users using the web application will always have the most updated data from the database.

Hardware Requirements

Client Requirements:

- Laptop/Desktop/Tablet/Mobile Phone - 1.8 GHz processor, RAM: 2GB

Mobile:

- Web browser, iOS or Android operating system, stable Internet connection

Server:

- CPU: Intel Xeon 2.4GHz, 6GB ECC ram memory, 2 TB HD storage, 30Mbps Internet connection.

Project Management & Plan of Work

1. Merging contribution from individual team members

Going forward from here after submitting report #1, the team will continue with the database design, implementation and testing for the application. This application will rely heavily on a robust database, hence, it is rather important to have the database rigorously tested. Kevin and Osborn have done some of the initial research and design of the user interfaces. The intent is to make other iterations of the UIs. Another key component of our application is the programming which will be the main thread tying everything together. These tasks and others will be assigned to group members who are relatively good in the various areas to get done. All members of the team are responsible to be cognizant of what is taking place as frequent meetings will take place for updates to be provided. The gantt chart below lists a time of the task we hope to accomplish by the specified dates.

2. Project coordination and progress report

No part of the Berthing plan system has been developed apart from the UIs. The team as is shown below have specific members leading various aspects of the Berthing plan. As was previously mentioned the leader of the section is supposed to ensure that the specified tasks get complete by the date stipulated. Regular report will be provided at our scheduled Zoom meeting. As the project progresses and enters into the final phase the various components will be all tied together and final testing will be carried out.

3. Plan of work

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1						feb			march				april				may	
2	Task	subtask	resource name	start	finish	1	2	3	1	2	3	4	1	2	3	4	1	2
3	proposal		osborn	1-Feb-22	5-Feb-22													
4	report 1 - system			1-Feb-22	28-Feb-22													
5	part 1																	
6		proposal statement	osborn	1-Feb-22	5-Feb-22													
7		glossary of terms	mark	5-Feb-22	28-Feb-22													
8		update Requirments	osborn & mark	21-Feb-22	28-Feb-22													
9		on-screen appearance		15-Feb-22	28-Feb-22													
10	part 2			1-Feb-22	28-Feb-22													
11		stakeholders, actors goals	osborn & Mark	1-Feb-22	15-Feb-22													
12		casual description	Driane & Mark	15-Feb-22	28-Feb-22													
13		use case digram	Driane	15-Feb-22	28-Feb-22													
14		traceability matrix	Driane	15-Feb-22	28-Feb-22													
15		fully dressed description	Drinae	15-Feb-22	28-Feb-22													
16		system sequence digram	Driane	15-Feb-22	28-Feb-22													
17		preliminary design	kevin	15-Feb-22	28-Feb-22													
18		user effort estimation	kevin	15-Feb-22	28-Feb-22													
19	part 3			1-Feb-22	28-Feb-22													
20		domain analisis		15-Feb-22	28-Feb-22													
21		plan of work	Driane	21-Feb-22	28-Feb-22													
22		mathematics model		15-Feb-22	28-Feb-22													
23	report 2 system		Justin	1-Mar-22	21-Mar-22													
24	demo 1		Driane & Daniel	24-Mar-22	13-Apr-22													
25	report 3		Daniel	13-Apr-22	29-Apr-22													
26	demo 2		Driane & Daniel	21-Apr-22	12-May-22													

4. Break Down of Responsibility

<u>Task</u>	<u>Team members</u>
Database Design, implementation and testing	Mark Pascual and Justin Chuc
Programming	Daniel Garcia and Driane Perez
User interface design and testing	Kevin Godoy and Osborn Collins

References

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