CS 422 Fall 2020 Semester Project

Group Members:

Krzysztof Para
Mustafa Habeeb
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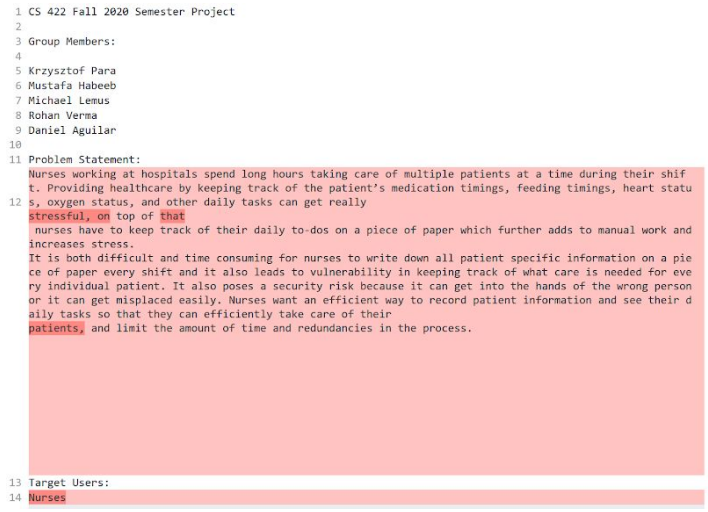
GR0-



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Problem Statement:
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It is both difficult and time consuming for nurses to write down all patient specific information on a pie
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Target Users:
Nurses
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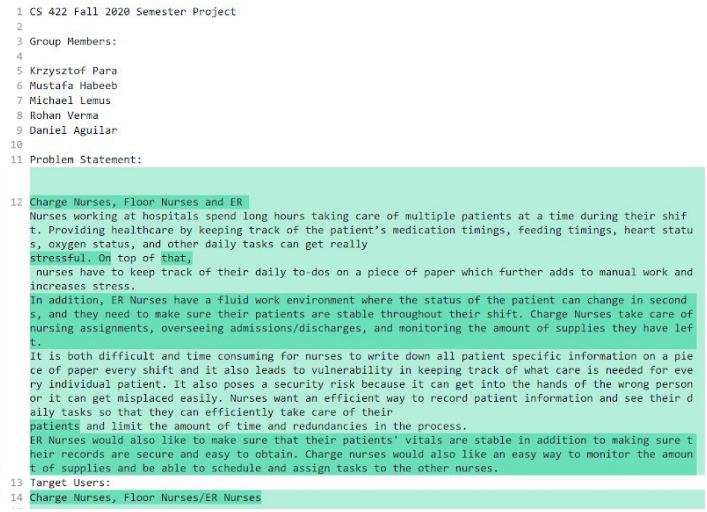

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Problem Statement:

Charge Nurses, Floor Nurses and ER
Nurses working at hospitals spend long hours taking care of multiple patients at a time during their shif
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t of supplies and be able to schedule and assign tasks to the other nurses.

Target Users:
Charge Nurses, Floor Nurses/ER Nurses
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Problem Statement:

Nurses working at hospitals spend long hours taking care of multiple patients at a time during their shift. Providing healthcare by keeping track of the patient's medication timings, feeding timings, heart status, oxygen status, and other daily tasks can get really stressful, on top of that nurses have to keep track of their daily to-dos on a piece of paper which further adds to manual work and increases stress. It is both difficult and time consuming for nurses to write down all patient specific information on a piece of paper every shift and it also leads to vulnerability in keeping track of what care is needed for every individual patient. It also poses a security risk because it can get into the hands of the wrong person or it can get misplaced easily. Nurses want an efficient way to record patient information and see their daily tasks so that they can efficiently take care of their patients and limit the amount of time and redundancies in the process.

Target Users:

Nurses

GR1-

Problem Statement:

Charge Nurses, Floor Nurses and ER Nurses working at hospitals spend long hours taking care of multiple patients at a time during their shift. Providing healthcare by keeping track of the patient's medication timings, feeding timings, heart status, oxygen status, and other daily tasks can get really stressful. On top of that, nurses have to keep track of their daily to-dos on a piece of paper which further adds to manual work and increases stress. In addition, ER Nurses have a fluid work environment where the status of the patient can change in seconds, and they need to make sure their patients are stable throughout their shift. Charge Nurses take care of nursing assignments, overseeing admissions/discharges, and monitoring the amount of supplies they have left. It is both difficult and time consuming for nurses to write down all patient specific information on a piece of paper every shift and it also leads to vulnerability in keeping track of what care is needed for every individual patient. It also poses a security risk because it can get into the hands of the wrong person or it can get misplaced easily. Nurses want an efficient way to record patient information and see their daily tasks so that they can efficiently take care of their patients and limit the amount of time and redundancies in the process. ER Nurses would also like to make sure that their patients' vitals are stable in addition to making sure their records are secure and easy to obtain. Charge nurses would also like an easy way to monitor the amount of supplies and be able to schedule and assign tasks to the other nurses.

Target Users:

Charge Nurses, Floor Nurses/ER Nurses

User Analysis

We have two classes of users: Charge Nurse, Floor/ER nurses.

Characteristics

Charge Nurse Characteristics -

- Technology Experience - Basic understanding of how to use applications and other software.
- Tasks/Patient related activities - Discharge patients, assign new patients, monitoring and administering medication, and keeping track of patient's vitals
- Administrative tasks - Should be able to schedule and assign tasks and modify the schedule.

Floor/ER Nurse Characteristics -

- Technology Experience - Basic understanding of how to use applications and other software.

- Tasks/Patient related activities - Monitoring and administering medication, and keeping track of patient's vitals.

Personas (All names have been changed)

Samantha (Floor Nurse at Kindred Children Hospital)

Observation:

- Samantha is a charge nurse who works at Kindred Children Hospital. The nurse's main goals are to give the children the appropriate amount of medicine and keeping up with their therapy sessions and assigning nurses to different patients. Speaking to her, her daily routine changes by very little day by day due to her patients being the same each day (apart from discharging, accepting new patients, communicating with upper management when supplies are low and delegating nursing assignments). In order to get the supply list, Samantha checks the amount of medications within the locked medication cabinet. She does this on a weekly basis and has to write down any medications that are low, less than a 2 week supply).
- When Samantha explains the tasks she does every day, they are simple but mundane. The nurse must update the patient's records/vitals every day. The most surprising part is that she told me that the only way to record their vitals is through a notepad which has the previous vitals recordings. Although the data was formatted neatly, the sheet must be reprinted if the doctor has to prescribe a new medicine and the nurse has to rewrite all the previous vitals for the week. Keeping track of patient's other therapy sessions seems difficult as well. The nurses have to personally make either reminders on their calendars or on their phones. I asked how difficult it is to keep track of all of the medicine/sessions for each patient and she explained the most trouble comes when there is a new patient added to her rounds due to having to learn their entire schedule.

Interview:

- Samantha is a charge nurse who is 29 years old. Samantha spends about 10 hours each day within the hospital but loves it a great deal. Over the course of her being at the hospital, she learned some great techniques while caring for her patients. In order to get to know her patients better, she has some corresponding things within the room or makes up a word that rhymes with the room number that could remind her of the patient's situation.
- Due to the amount of patients Samantha sees each day, Samantha sometimes gets confused on the patients records when there is a high turnover rate. The most unfortunate

part is that she wants to connect with each child in order to give them a pleasant experience within the hospital. Samantha was surprised from the lack of resources that the hospital gives her, making it difficult to learn and observe patients' illnesses.

- The two things that Samantha found difficult were keeping track of the patient's records and associating the room number to the particular patients. The files are ordered by room number so once she finds the file, she can then learn the name and information. It would be easier for her to be able to search her patients by both names and rooms. Also when making the schedule, she would like to know if she is assigning too many or too little hours to each nurse.

Alexis (Floor Nurse at Sherman Hospital)

Observation:

- Alexis' struggle is attempting to get a hold of a doctor for attention on something that is important, but not so important that she needs to page him to go to the patient's room. Something else she finds herself struggling with is also communicating with other nurses in a similar way she attempts to get a hold of a doctor.
- She said she likes the charting feature and the way they're able to see their patient's history fast and it's pleasant to the eye to look at.
- One struggle she found in her day was that she was asked to forward some information of the patient to the patient's primary physician and was not able to get to that functionality until she asked another nurse to help her with that.
- What I found surprising is that there is no messaging system. The reason I say this is because I work for a small IT company for dental offices and one of the pieces of software that they use, gives them a chat room where they can communicate between dental assistants, front desk workers, and doctors. This is something that I imagined that would have already been implemented from the get-go.

Interview:

- Alexis has been working as a floor nurse at Sherman Hospital for a little over two years and has loved interacting with her patients. It's not until she turns around has to look at the screen of the computer where she starts to hate part of her job. "I thought the software we would use would become an extension of the amazing care and work we provide, and it feels like all it's good for is for records," she said.
- Alexis works most often with older senior citizens, so this means she doesn't have the mind to remember everything when they need a lot of help. She claimed that although there are some issues she's encountered with the program they use at Sherman, she's thankful it's not like the one at the hospital where she did some of her clinicals. She

claims that she would see the anger and frustration on the faces of the nurses she was shadowing and was worried about once she would go out into the field.
- The reason Alexis struggles to maneuver through the software is because she hates going through the "help" feature because of its lengthy and extensive instructions, so she usually spends more of the time trying to learn it herself rather than spending the time looking through the instructions.

<u>Jessica (Floor Nurse at La Rabida Children's Hospital)</u>

Observation:
- Jessica is a floor nurse. Jessica told me that one of her goals was to stay organized and save time at work. She offered to demonstrate to us how she goes about her day keeping track of her patient's medication timings, feeding times, heart status, oxygen status, and other daily tasks that can cause her day to be really stressful.
- When I observed her routine, I found that Jessica prints out a sheet of paper everyday so she can write down information about her patients. She told me that she made this paper by herself and she has also distributed it among her co-workers. I was surprised that they did not use modern day technology to keep track of their patient information. She also likes to be organized and that is another reason why she uses her custom paper. I asked her what would happen if she didn't have the paper to write down information about her patients. She told me it would be really stressful to keep track of all the information on the paper. She also mentioned that because some of this stuff is very important she does not want to rely on her memory to keep track of this information. She said the environment at the hospital gets so stressful sometimes she forgets things because she's constantly doing one thing after another. I asked Jessica if there was any other staff to help her on her busy day and she said no and also mentioned that it was just another stressful, unorganized day.

Interview:
- Jessica is a 23-year-old female. She spends most of her time working on projects at home while still maintaining a full time job as a nurse. She started working as a nurse about a year and a half ago. Over the course of that time, she has learned a great deal about caring for her patients and managing her time. To her surprise, she never thought it would be that unorganized in a hospital. When working at the hospital she needs to make sure she prints out her paper so she can keep track of all her information without having to worry about remembering all of it.
- Because of Jessica's busy schedule, she needs help with storing all of her patients' information and unfortunately for her, she is the only one who can do it.

- There are four main important things that Jessica found difficult to remember when taking care of her patients. The first thing was her patient's allergies. Having six patients a day you could easily mix up allergies between different patients. Second was her patient's medications because they vary from patient to patient and some patients could be on multiple medications. The third thing was feeding times. Each patient has a different status and their feeding times may vary. She can't just assume that everyone eats at the same time. The final thing is code status. The code status of the patient lets her know the level of medical interventions a patient wishes to have started if their heart or breathing stops.

Rocky (Floor Nurse at Elmhurst Memorial Hospital):

Observation:

- During her explanation of her clocking in, she seemed to sound displeased with having to keep track of the multiple different passwords that she uses at Elmhurst.
- She then heads to the nurses station where she awaits to read a paper document that is hung on a board to let each of the nurses know what patients they are assigned too and on what floor. Rocky mentions that due to Covid-19, the nurses try to not crowd up around the station and it becomes time consuming for everyone to figure out their assignments.
- As Rocky goes to check on patient vitals, she explains that the EPIC software they use requires the nurses and administration to login and go through different locations to find patient labs, previous track of their vitals, and records of medicines that were given to the patients.
- What really surprised me was that for patients who have similar last names, the software cannot seem to differentiate the patients and ends up updating both charts. To avoid this current situation, Rocky says that they add an ID number to separate those with the same last name, but issues have come up here and there. I am really shocked by this because Elmhurst Memorial Hospital is a newer type of hospital and they are using such archaic software.

Interview:

- Rocky is 23 years-old, who recently graduated and has worked at Elmhurst Memorial as a floor nurse for over a year now. Rocky's goal as a nurse is to care for her patients, check their vitals, update charts, and give prescribed medications. Rocky's day-to-day starts off with her clocking in by 5:30am.
- After struggling to clock-in for her shift, she heads to the Nurse's lounge where she stores away her personal items and waits in line to read what patients are assigned to her from a sheet of paper posted on the nurses bulletin.

- She then gets started with her patients, going to each room one-by-one and checking previous vitals by logging into the software they use and locate the different information such as, previous vitals, and patient labs. Rocky mentions that although it has been a year it has not gotten any easier using this software. She also described the software to have complications when it comes to updating charts for certain patients.
- With Rocky working 8 to 12 hour shifts, she explains how the day could be easier if some of the processes could be more user friendly. She talked about how all these processes take up loads of time away from other patients.

Kevin: (Neuro ER Nurse)

Interview:

- Kevin is a 32 year old male, a former Med-Evac in the US Armed forces, currently works as a neuro ICU nurse practitioner in a 12 bed ICU. His goal during his shift is to make sure the patient admitted in the ICU is stable throughout his shift so that the patient can be declared non-critical and moved into the general ward. It is a matter of life and death in the ICU.
- For each shift Kevin is assigned 2 patients for the duration of his shift by the charge nurse. At the start of every shift he and the ICU nurses coming in for their shift have a meeting with the charge nurse where they are informed about the doctors goals for the patients such as the blood pressure ranges of the patient that they want. Then they meet and relieve the nurse currently taking care of the patients and get an update sheet with the vital signs of the patient.
- After that Kevin checks the lab results for his patients so that he knows what he needs to monitor for his patient. The lab results are on a different sheet of paper or on the computer sometimes. They have a software called the EPIC where they have a section called the BRAIN that tells them the tasks such as labs they need to get done, hour by hour need, and what medication the patient needs and when, and what procedures need to be done. get really specific information related to the
- Kevin talks about how different it is from working as a floor nurse and working as an ICU nurse in terms of how they perform their tasks. Things in ICU are fluid i.e the patient status can change from stable to critical in a matter of seconds hence the nurses are more focused on keeping the patients stable as compared to the floor where the patients are non-critical and the task drive is more important.
- At the end of his shift he has to prepare a report and update the nurse coming in after him.
- Kevin says that the hospital is currently trying to find a good way to do nurse to nurse handoffs and some units are typing out their reports in the portion of the electronic chart which is basically a word document. He says it would be really nice if they had a

software that could ease this process of doing nurse to nurse handoffs so that they could get all information in one place instead of looking at the various different charts.

Observation:

- Working in an ICU is very different from working as a floor nurse, in terms of the work they do related to the patient and the information they handle.
- The ICU nurses have to keep track of a lot of information. The information is not available in one place but they have to access various different charts in-order to gather the information that they need which leads to more work and higher stress for the ICU nurses.
- The nurse to nurse handoff is an inefficient process, Kevin indicated that it would be better for the nurses to spend less time on gathering information and more time on working on the patient. Even though the EPIC software has the BRAIN feature but it doesn't have all the information that the nurses need. He indicates that the software isn't nurse friendly i.e to find a small but really significant lab test they have to go to different locations. Nurses that are not so tech savvy find it difficult sometimes to use the software.
- What really surprised me the most was in this time of technological advancements, there is no particular software that caters to all the needs that the nurses have to do their jobs efficiently and that they are still using Microsoft Word to prepare their reports for each patient during each shift i.e starting from a blank document.

Interview Results (User Goals and Potential Problems)

- Quick accessibility to assigned tasks
- Logging information for patients
- Be able to assign patients
- Be able to view/modify schedule (dependent on role)
- Be able to exchange information between nurses efficiently

Samantha's main goals are keeping track of the amount of supplies they have, scheduling the nurses, and assigning different tasks to the nurses. The problems she faces are the fact that she manually has to write down the amount of supplies she has, manually add the number of hours each nurse does, and she has to meet with all the nurses to assign tasks.

Alexis' goal is to be able to effectively communicate with other nurses and/or doctors when she needs to get their attention. The problem she faces is that she finds herself physically looking for

who she needs or having to page that person to get feedback on something that can be handled with a simple message.

Jessica's goal is to stay organized and keep track of her daily tasks so she can benefit the patients in the long run. The problem she faces is that she finds it difficult to keep track of all information that is bestowed upon her throughout the day.

Rocky's goals are to efficiently get her work done with ease and provide the best patient care. The problems she faces are dealing with inefficient software and having to revise her work multiple times throughout her day.

Kevin's goal is to make the process of information handoff between an incoming nurse and a nurse ending their shift easier and efficient. The problems he faces are of gathering information related to his patients from various different sources instead of just one source.

Task Analysis (Conclusion)

In conclusion we find that the ER and Floor nurses have the same problems when it comes to information exchange, recording/updating patient information, and keeping track of what tasks they need to do. Charge nurses need a better way to schedule and assign tasks to nurses, and keep track of inventory while nurses need a way to keep track of those tasks. In addition to helping nurses we will also be helping the hospital by reducing spending on resources like paper and other stationery needs.

GR2-

Scenario:

Alex is a 45 year old charge nurse who recently got transferred to a new hospital. Alex, being a charge nurse, wants to check the amount of medical supplies the hospital has stored, manage the schedule of the other nurses, and assign patients and tasks to the other nurses. In order to prepare for his shift at the hospital, he uses his computer to launch the hospital's new web application: "MediCheck". Alex opens the application where he selects "supplies and inventory" and can see the supply inventory. He can also assign/ delete tasks for other nurses such as Nurse A by using the add key "+" and subtract key "-". He finds that masks and syringes are not at the desired level, so he adds that to the order. He also wants to make a new schedule for next week and wants to schedule Cassie, Miguel and Isabelle. At the start of his shift, a new patient is admitted, and he logs in to his office desktop to assign a nurse by looking for the "patients" tab and scrolling through the list of nurses. Alex then adds the required tasks that need to be done for the patient by selecting the text box and adding notes. Also when he is needed someplace else in the hospital, he can grab a tablet to continue his work on the go.

Individual Sketches:

Mustafa Habeeb Sketches

Michael Lemus Sketches

Rohan Verma Sketches

Daniel Aguilar Sketches

Krzysztof Para Sketches

Final sketches:

Final Sketch 1
Storyboard for Final Sketch 1

Learnability: This design is really easy for the user to comprehend and recall functions from other experiences with different applications, making the learnability of this application a positive experience. Something that could be added would be more symbols that users could recall such as a house for going home. This would also make the UI look much cleaner by removing the wordiness.

Efficiency: This application has great features and buttons to navigate through quickly and get to where you need to go. With the Tab setting on the side, there is no need for the user to go back to the home page often and since tasks can be assigned quickly there is never a moment wasted. In order to improve efficiency we can have the user modify the quantity of supplies in the order form without going back to the individual item.

Safety: This application makes use of many functions such as the scroll function and predictive search engine. It also verifies any changes the user makes before committing. In order to improve safety this feature should be added for almost everything such as swapping nurses and assigning tasks as well. This way there is no room for human-error at all.

Final Sketch 2
Storyboard for Final Sketch 2

Learnability- Something that is good about the learnability is that the UI follows the concept of recognition to promote learnability instead of recall. Something that could be improved is adding more symbols that users could recall easily. This would reduce the wordiness in the application and make it much cleaner.

Efficiency - The application makes good use of shortcuts. There are tabs on the left that the user can use to navigate anywhere within the application. Something that could be added would be a search feature that the user can use in order to navigate through the page.

Safety - The application adds safety by preventing the user to assign another patient if the acuity level is above the threshold by disabling the button, shown in red in the drawing. Something that could be added to improve safety is adding a screen to make sure that the user is sure about their actions. For example, there should be a screen saying are you sure you would like to discharge patient x?

Final Sketch 3
Storyboard for Final Sketch 3

Learnability - One of the learnability components that is relevant in the design is the use of metaphors throughout the interface. As soon as the user logs in, they are able to see all of the circle menu options with a lot of the symbols that represent the options themselves (i.e. the calendar shows a calendar image), promoting recognition over recall. The options have the words written underneath the images themselves, but having the images be larger is easier for the user to identify right away. One bad point about the interface in terms of learnability, and could be improved, would be the use of better commands for expert leveled users. For the most part, the UI focuses on straightforward use for all users.

Efficiency - Fitts's law states that having a larger sized target area reduces time for the user to be able to reach the button target a lot quicker. Throughout the UI, this same idea was executed, where most of the clickable options and views were shown in a circular format, making it easier for the user to see and click. However, something to improve on is to add a search engine with a predictability feature so we can easily search up patients and other items that create lists.

Safety - This application adds safety by having easy-to-use buttons so that you don't click anything by mistake. Also there are error messages that users can recall such as Exclamation points, "!", which can tell you that there is an issue here that does need to be fixed. Something that can be changed is that pop-up confirmations can be included to aware users of any changes they make.

GR3-

The initial prototypes were built on powerpoint. The users are then able to do their assigned tasks while the "computer" can drag the elements that are added once the different actions are made.

Brief:

Thank you for agreeing to participate in Michael's, Mustafa's, Krzysztof's, Rohan's, and Daniel's study for their User Interface Design course at UIC. The test Facilitator/Observer will go over the following points, before we can begin the actual study:

1.) The purpose of this study is to test the functionality of an upcoming desktop application, in low fidelity form to get feedback on the layout and functionality, and be able to observe any difficulty the user may have while performing tasks.
2.) The purpose of the application is to help nurses better manage their tasks, view their tasks, and view their schedule. The charge nurses should be able to communicate better with the staff, view/order supplies, and assign tasks.
3.) Overview of Tasks: the facilitator will provide several tasks that the user must complete using the powerpoint shared.
4.) The User should "think out loud" when performing tasks so that the observer's would be able to take notes on any confusion or trouble the user may have.
5.) Duration of Tasks: the User will participate in the tasks for at most 30 minutes but usually takes about 20 minutes.
6.) These tests are about the website, not you. So, don't worry about mistakes, that's what we need to see.
7.) There will be several tasks to be completed and you can skip any tasks that you would not like to complete.
8.) You may stop this study at any time.

Overview

Assuming that the user has already gone through the login page, they will start from the Home Screen and continue the following list of steps to order masks, assign tasks to nurses, and edit nurses schedules.

List of Tasks:

1) Order a total of 25 more masks, confirm and submit the order. Remove medication from the order.
2) Assign patient Jessie Martinez to nurse Josie Jones

3) Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
4) Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.

Link to Iteration 1 here

Observations for Iteration 1:

User 1:

Task: Order a total of 25 more masks, confirm and submit the order. Remove medication from the order.
Outcome: The user was successful on being able to add 25 masks onto the new order after removing the 15 medications that were originally added, and then hit submit
Observations: User said they liked seeing the submit button but felt like it was too "flashy" due to the red color of the button.
Problem Points: No problems.

Task: Assign patient Jessie Martinez to nurse Josie Jones
Outcome: Took a bit longer than the first task, but was able to complete.
Observations: The user took a bit to find the patient that was missing an assigned nurse, but was able to successfully find the patient and assign Josie to the patient.
Problem Points: The user had a hard time to find which patient was missing a nurse because it wasn't easily noteable, they had to search for it, interfering with the user's goal in mind (learnability).

Task: Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
Outcome: Took time for the user to understand how to select the shift that Josie Jones needed to be assigned.
Observations: Struggled to identify how to update the schedule
Problem Points: The user was confused on what the two shifts were under the "remove button" and was also slightly confused on what the "remove" button was doing because mentioned that it made more sense to have it next to the confirmation button compared to the current system they use.

Task: Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.
Outcome: Was able to complete the task a lot faster
Observations: It seems like the user was able to complete the task a lot faster than the last one because they understood the functionality of all of the buttons in the interface to be able to make the schedule.
Problem Points: N/A

User 2:

Task: Order a total of 25 more masks, confirm and submit the order. Remove medication from the order.
Outcome: The user was able to add 25 masks to the order and was able to remove medication from the order as well.
Observations: While the user was able to add 25 masks and remove the medication, they commented on how there can be shortcuts to remove items from the order. They had a hard time looking for the masks and took a relatively long time to figure out the scroll bar.
Problem Points: In order to increase the efficiency of the application, there should be a search bar in the order page. There can also be a shortcut within the application to easily remove items from an order.

Task: Assign patient Jessie Martinez to nurse Josie Jones
Outcome: The user was able to successfully assign Josie Jones to Jessie Martinez.
Observations: The only issue that was encountered was that the columns were not labeled which in return caused the user to be confused as to which column was the patient and which column was the nurse.
Problem Points: In order to include learnability, there can be symbols to be added such as a doctor symbol and a sick patient symbol that user's could easily recall. There could also be efficiency improvements by adding a search bar so that a user can navigate to the user easily.

Task: Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
Outcome: The user was able to schedule Jessie Jones.
Observations: The user appreciated how there was a calendar and this increased efficiency of the application. The user was able to click on the calendar on the 19th and the application gave the user the shifts that Jossie Jones was assigned to.

Problem Points: A feature that could be improved would be adding a search feature to the list of nurses. This would increase the overall efficiency of the task.

Task: Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.
Outcome: The user was able to successfully modify the schedule but had trouble with the scrollbar due to the scrollbar being on the left.
Observations: The user was confused as to what the scrollbar was referring to and thought the scrollbar was referring to the menu options on the left.
Problem Points: The overall layouts of the application should be changed to have scrollbars to the right to make sure that the element that is scrollable should be on the right.

User 3:

Task: Order a total of 25 more masks, confirm and submit the order. Remove medication from the order.
Outcome: The user was able to submit the order for the masks, and remove additional medications that were not needed anymore.
Observations: The user did mention that there should be a search box to search medications, rather than scrolling through the list.
Problem Points: The application should be applying the scroll bar feature to be on the right hand side and also a search box above.

Task: Assign patient Jessie Martinez to nurse Josie Jones.
Outcome: Was able to assign Josie Jones, but once again confused.
Observations: Struggled to identify which patients needed to be assigned a nurse. Took a little bit longer to find and coordinate through it.
Problem Points: Was not clear which patient needs to be assigned a nurse to do the text being all the same. Need to include color coded text to help better understand the UI.

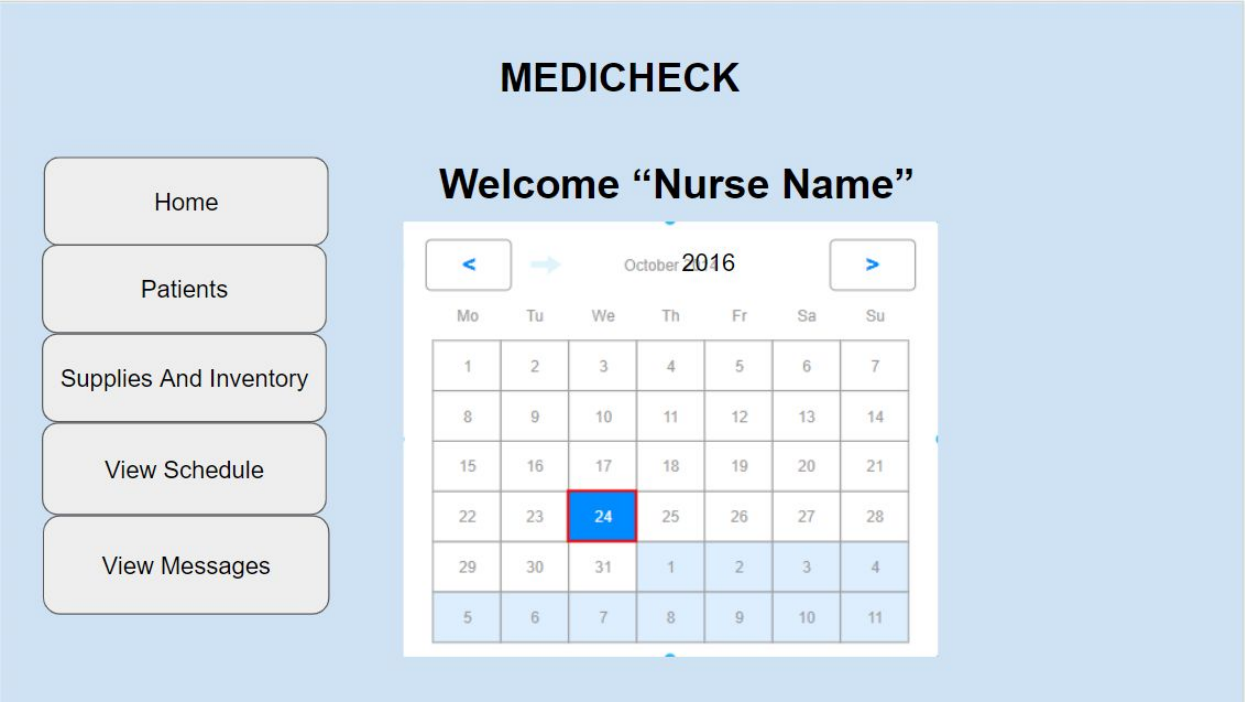
Task: Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
Outcome: User had no problems or issues updating the schedule.
Observations: The user understood that part of the UI really well.
Problem Points: None.

Task: Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.

Outcome: User became confused and was not able to complete the task.
Observations: The user could not understand the options that were given in order to change the times.
Problem Points: The user became really confused. I believe that we need to add less to the UI to make it easier to read and understand/recognize the features.

<u>Conclusion for iteration 1:</u>

- There were learnability issues as seen in users 1 and 2 by them having problems looking for the patients which were not labeled and tabs (nurses/patients) could not be found easily. These features will be in iteration 2. Other learnability issues were seen in user 3 where the user was extremely confused in the layout and they were not able to modify the schedule for Juan Smith.
- Some of the efficiency issues in some tasks seen in users 1,2 and 3 where user 1 was not able to find nurse Jessie fast, user 2 also mentioned that there should be shortcuts when looking for supplies and user 3 also mentioned the same issue. As a result there will be a search feature in iteration 2.
- Some of the safety issues we observed include how the users were not prompted if they were sure about their selections when they were



made, which could be added when modifying a schedule, selecting supplies, and assigning the patients.

MEDICHECK

SUPPLIES AND INVENTORY

- Home
- Patients
- Supplies And Inventory
- View Schedule
- View Messages

	Description:ihhnfevwjbcw Quantity on hand:xx Quantity to Order: 15
	Description:knejbwcbekw Quantity on hand:xx Quantity to Order:
	Description:erjhwbfbfui Quantity on hand:xx Quantity to Order:
	Description:jcbwecfbweufbc Quantity on hand:xx Quantity to Order:
	Description:cbheubwcwebcweficb Quantity on hand:xx Quantity to Order:

Submit Order

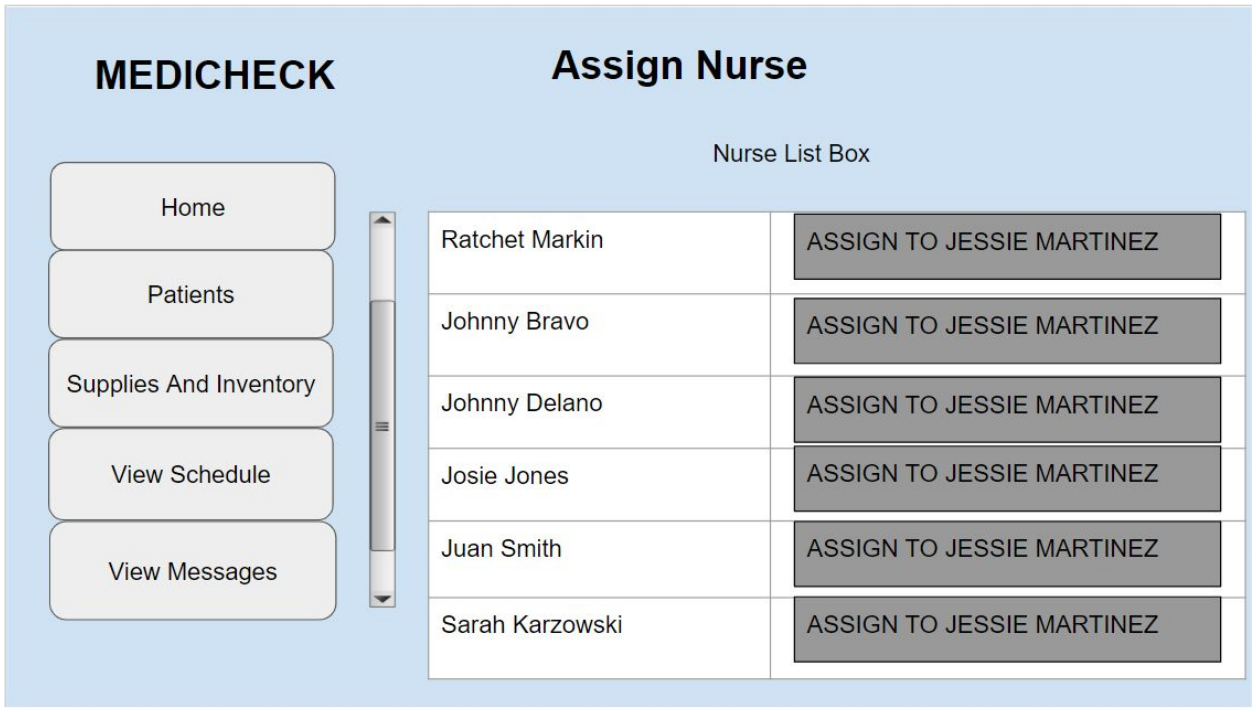
MEDICHECK

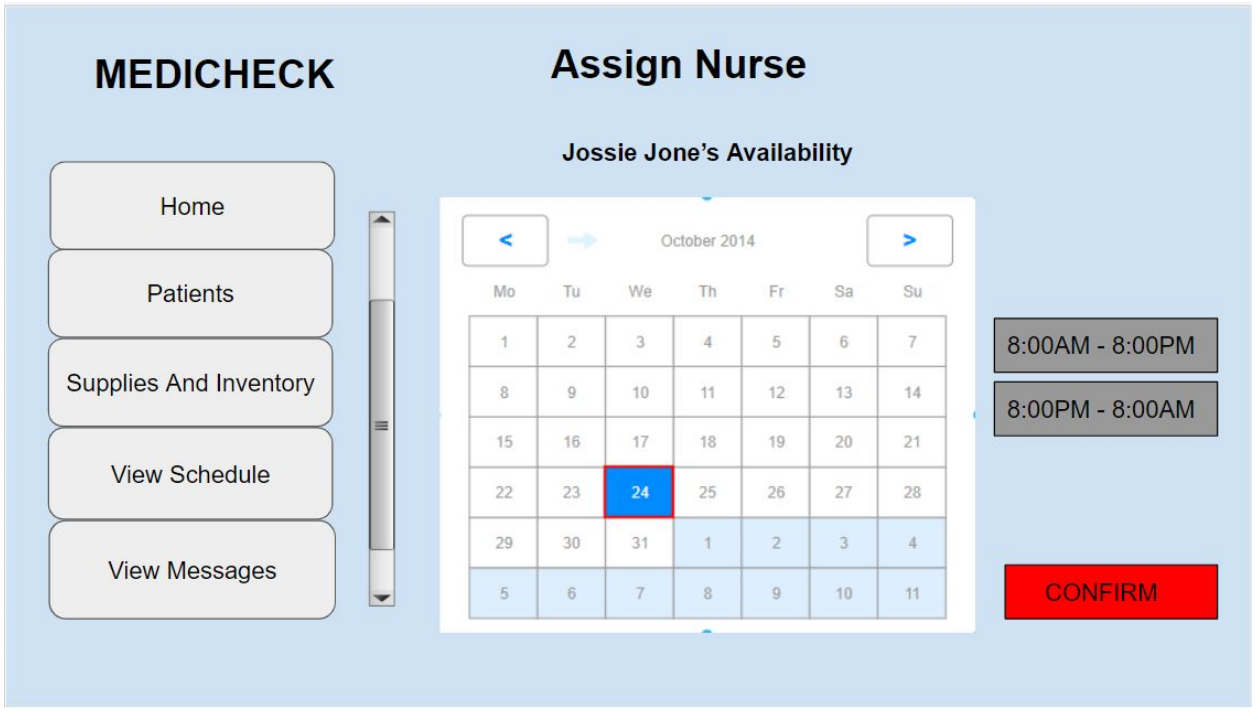
Patient List

- Home
- Patients
- Supplies And Inventory
- View Schedule
- View Messages

Patient List Box

Juan Smith	Johnny Delano	Patient Details
Jessie Martinez	Assign Nurse!	Patient Details
John Smith	Rachel Mendez	Patient Details
Janet Picket	Johnny Bravo	Patient Details
David Galloway	Ratchet Markin	Patient Details
Daniel Hernandez	Sarah Karzowski	Patient Details


MEDICHECK
Assign Nurse
Home
Patients
Supplies And Inventory
View Schedule
View Messages
Nurse List Box
Ratchet Markin
ASSIGN TO JESSIE MARTINEZ
Johnny Bravo
ASSIGN TO JESSIE MARTINEZ
Johnny Delano
ASSIGN TO JESSIE MARTINEZ
Josie Jones
ASSIGN TO JESSIE MARTINEZ
Juan Smith
ASSIGN TO JESSIE MARTINEZ
Sarah Karzowski
ASSIGN TO JESSIE MARTINEZ


MEDICHECK
Assign Nurse
Jossie Jone's Availability
Home
Patients
Supplies And Inventory
View Schedule
View Messages
October 2014
Mo Tu We Th Fr Sa Su
8:00AM - 8:00PM
8:00PM - 8:00AM
CONFIRM

MEDICHECK

View Schedule

Home
Patients
Supplies And Inventory
View Schedule
View Messages

< Today: October 24th >

Ratchet Markin	8AM-8PM	EDIT
Johnny Bravo	8AM-8PM	EDIT
Johnny Delano	8PM-8AM	EDIT
Josie Jones	N/A	EDIT
Juan Smith	8PM-8AM	EDIT
Sarah Karzowski	N/A	EDIT

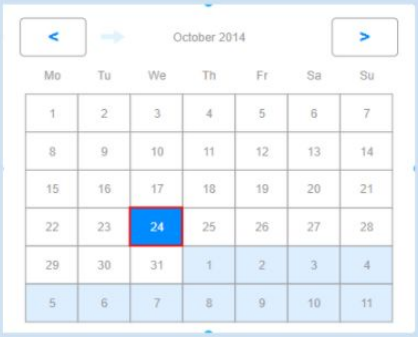
MEDICHECK

View Schedule

Home
Patients
Supplies And Inventory
View Schedule
View Messages

Josie Jone's Schedule

< Today: October 24th >



SCHEDULED | 8AM-8PM

REMOVE

8AM-8PM | 8PM-8AM

CHANGE TO | ADD

SAVE

Link to Iteration 2 here

Observations for Iteration 2:

User 1:

Task: Order a total of 25 more masks, confirm and submit the order. Remove medication from the order.
Outcome: The was able to remove medication from the order and search for masks and successfully add 25 masks to the order.
Observations: I noticed that the user was able remove the medication without any issues. From the pictures on the main screen the user could not find the masks so they used the search feature to quickly find the masks.
Problem Points: No problems were encountered by the user.

Task: Assign patient Jessie Martinez to nurse Josie Jones.
Outcome: User was able to successfully assign a nurse to the patient that did not have one.
Observations: I noticed that because of our update to our design the user was immediately alerted on the Patient List page that Jessie Martinez did not have a nurse assigned.
Problem Points: No problems were encountered by the user.

Task: Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
Outcome: User was able to complete the task.
Observations: I noticed that the user was a bit confused at first and tried clicking on the N/A field instead of clicking on the edit button.
Problem Points: It was not clear for the user what to click on the 'View Schedule' page. We should rename the EDIT button to 'EDIT SCHEDULE'. This would obviously help with learnability for the application.

Task: Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.
Outcome: User did not have any issues modifying Juan Smith's schedule.
Observations: User did not have an issue clicking the Edit button because of the previous task. User was able to learn how the UI worked.
Problem Points: Although the user learned the UI we can make the UI more clear by renaming the EDIT button to 'EDIT SCHEDULE'.

User 2:

Task: Order a total of 25 more masks, confirm and submit the order. Remove medication from the order.
Outcome: The user was able to complete the task without a problem, easily able to eliminate the medications that were originally there and ordered masks instead.
Observations: Complemented the implementation of the new search bar and mentioned that it was in a good place in the interface. Also complemented the color combinations used to know in what tab they are in.
Problem Points: N/A

Task: Assign patient Jessie Martinez to nurse Josie Jones.
Outcome: Was able to complete the task with no problem.
Observations: User didn't struggle in finding the patient who was missing a nurse assignment in comparison to the last design.
Problem Points: N/A

Task: Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
Outcome: Was able to successfully complete the task for scheduling.
Observations: It seemed natural to the user to be able to have the calendar on the left hand side and just click on the date where she was trying to schedule the nurse for that time on that day rather than clicking on the arrows next to the date (a secondary form of scrolling through the calendar).
Problem Points: The user questioned what the "change to" and "add" buttons are for. The first time she confused the "add" button to be the same as the "save" button.

Task: Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.
Outcome: Was able to complete faster than the previous because they had learned how to work with the calendar tab.
Observations: Able to find Juan Smith's name and seemed unsure if in order to change the schedule she had to press on the "Change to" button or just adjust where the time slot is located.
Problem Points: The "Change to" button seems to make the user second guess themselves if they are adjusting the scheduling correctly. After thinking about it though, they press on the button to find out if it's the correct one to press and then hit save.

User 3:

Task: Order a total of 25 more masks, confirm and submit the order. Remove medication from the order.
Outcome: Completed the task without any complications.
Observations: The user did not hesitate to use the search bar at the top, it almost seemed like a natural thought to search for the masks when they say that they were not on the same page.
Problem Points: None.

Task: Assign patient Jessie Martinez to nurse Josie Jones.
Outcome: Task was completed.
Observations: The user was able to see what patient was missing an assigned nurse and easily able to select the correct nurse.
Problem Points: None.

Task: Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
Outcome: Was able to complete the task but did not like the layout/form of getting to the nurse's schedule.
Observations: After the user clicked on the calendar tab from the left hand side, they were slightly caught off guard by not seeing a calendar as soon as they clicked.
Problem Points: User didn't seem to be too pleased with the fact that they had to search through the list of nurse names to be able to find Josie Jones. The user preferred seeing the calendar view first, click the date, and then add Josie Jones for a shift on that date.

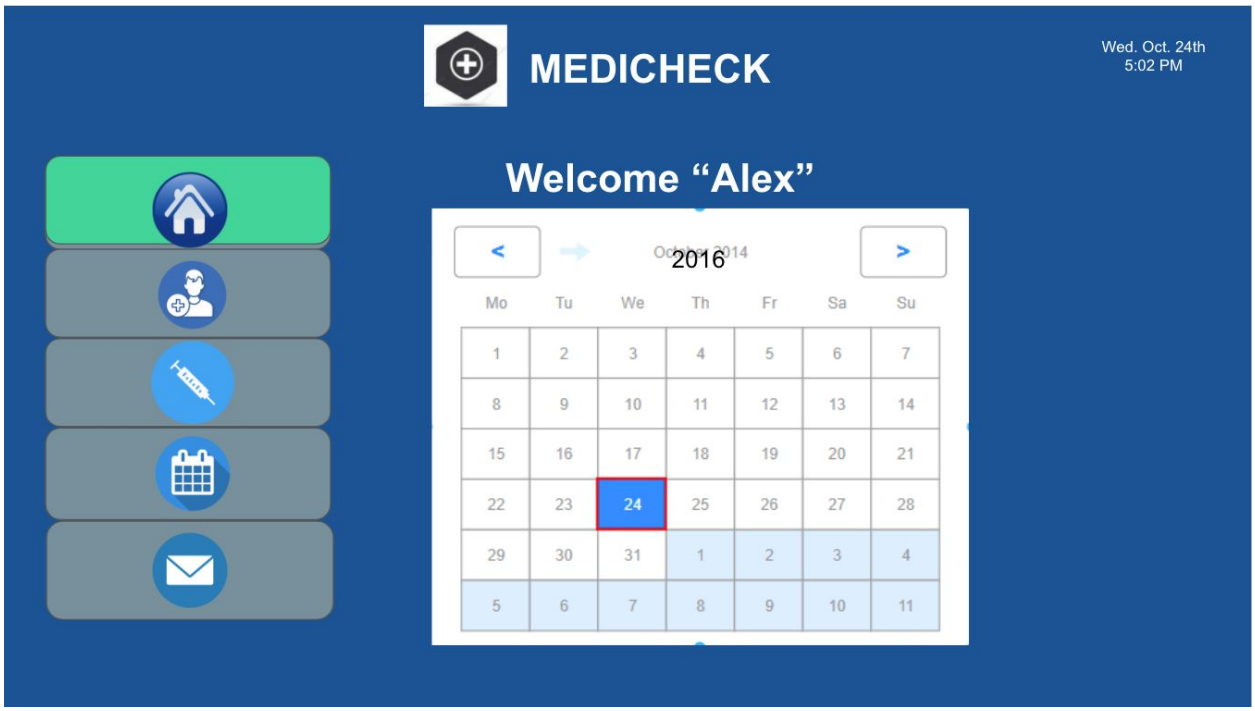
Task: Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.
Outcome: Completed the task in less time than the last task.
Observations: The user emphasized that they would like to
Problem Points: As mentioned in the last task, the user seemed annoyed/bothered because it felt to them like there was an extra step to the simple process.

Conclusion for iteration 2:

- Users enjoyed some of the features and the color scheme, which really assisted in the ability to navigate through the web application.
- Users also mentioned that they like the confirmation pop-ups because it helps them make sure they executed the right action and the safety of the application was also improved

because of this.

- There are some learnability issues as mentioned in user 1 where the user wasn't able to recognize the labels for editing the schedule.
- With the new button labels in iteration 2, it leads to reduced mistakes because it increased the learnability of the application.
- We added the remove buttons to the supplies and inventory list which made it easier for the users to remove items. We added the remove button as it uses recognition to promote learnability for the user.
- We also increased the button size and reduced the distance between buttons that are used together to complete a specific task to increase the efficiency by applying the concept of Fitts's law.
- We changed a lot of the visuals of the UI to improve learnability and make it easier for the user to navigate through.
- Add scroll features and search engines to make it more user friendly and easier to look up individuals.
- With the added feature of a search bar, the users completed the tasks such as finding a nurse and modifying the schedule much faster. This increased the overall efficiency in the application.
- Some users had difficulty with the scheduling feature because they couldn't recall from previous experiences

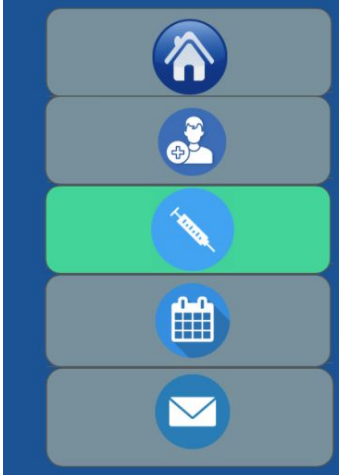


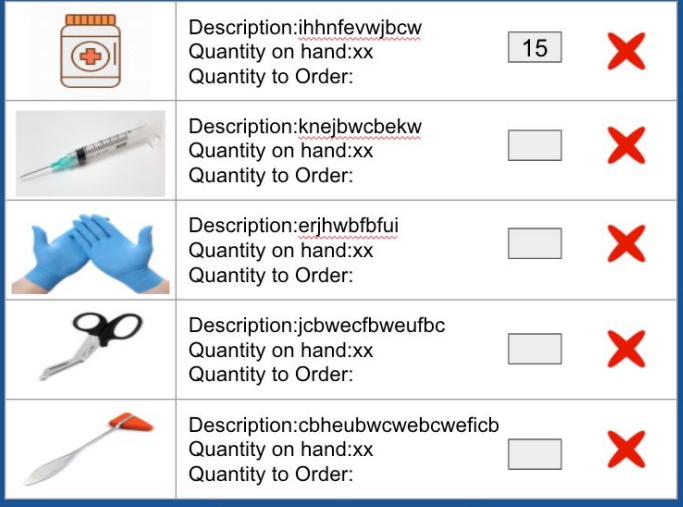
MEDICHECK

SUPPLIES AND INVENTORY

Wed. Oct. 24th
5:02 PM

Search Supply by Name





	Description:ihhnfevwjbcw Quantity on hand:xx Quantity to Order:	15	
	Description:knejbwcbekw Quantity on hand:xx Quantity to Order:		
	Description:erjhwbfbfui Quantity on hand:xx Quantity to Order:		
	Description:jcbwecfbweufbc Quantity on hand:xx Quantity to Order:		
	Description:cbheubwcwebcweficb Quantity on hand:xx Quantity to Order:		

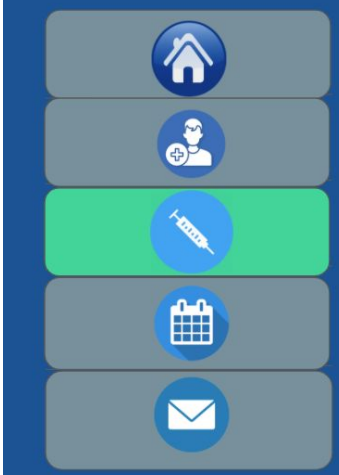
Submit Order

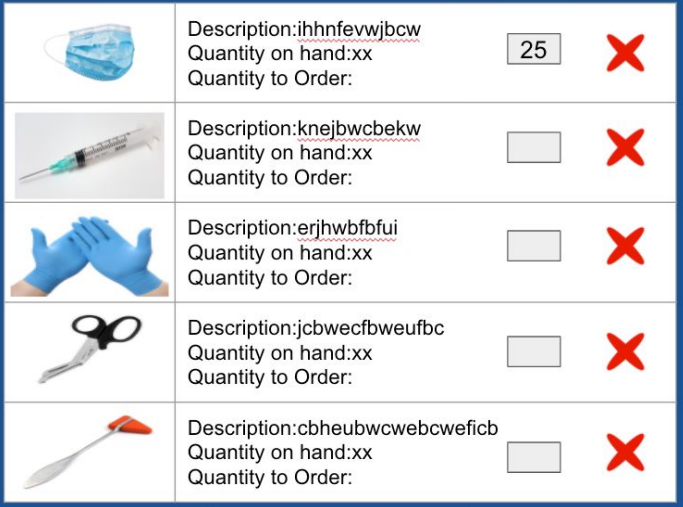
MEDICHECK

SUPPLIES AND INVENTORY

Wed. Oct. 24th
5:02 PM

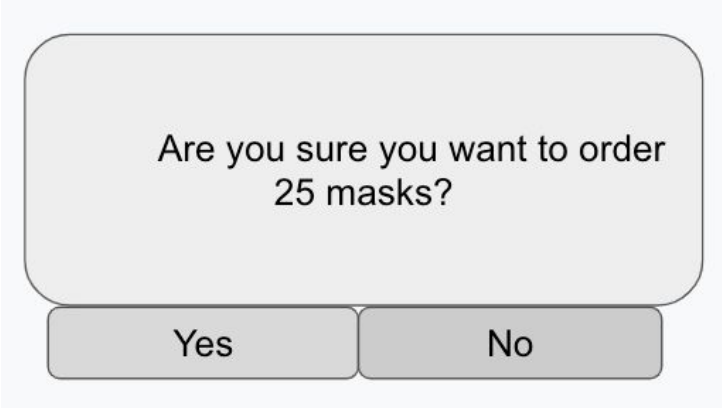
Search Supply by Name

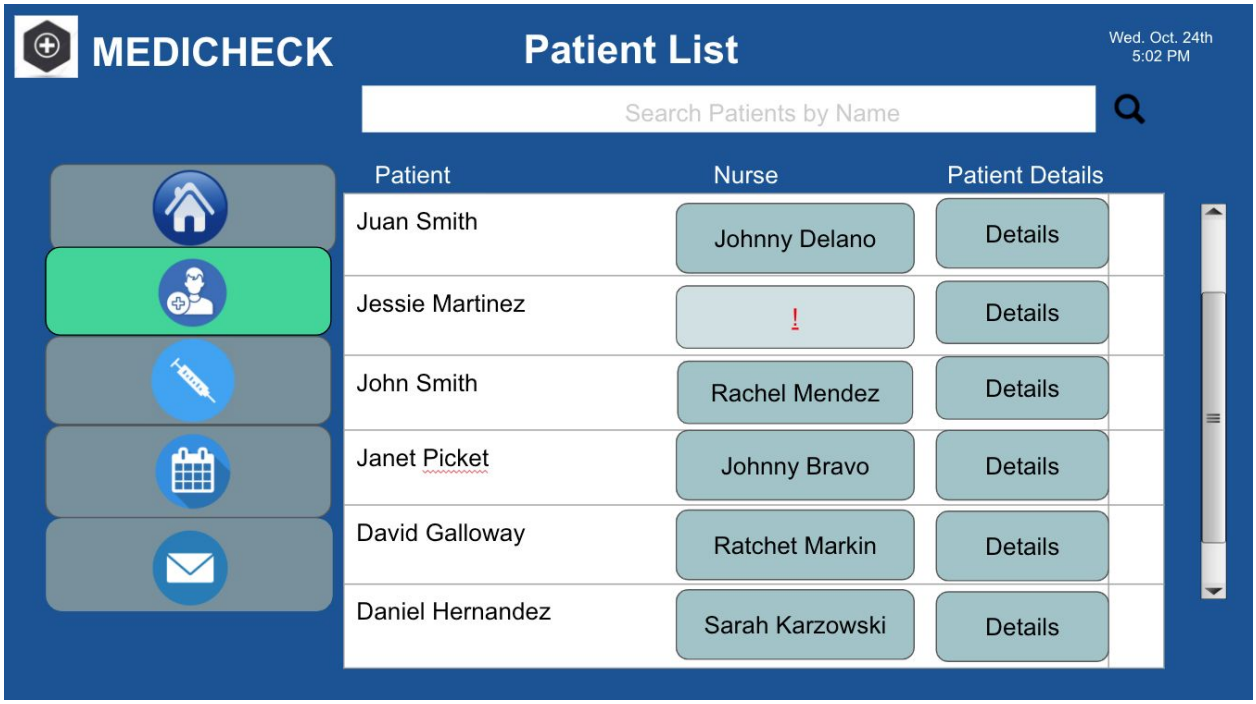


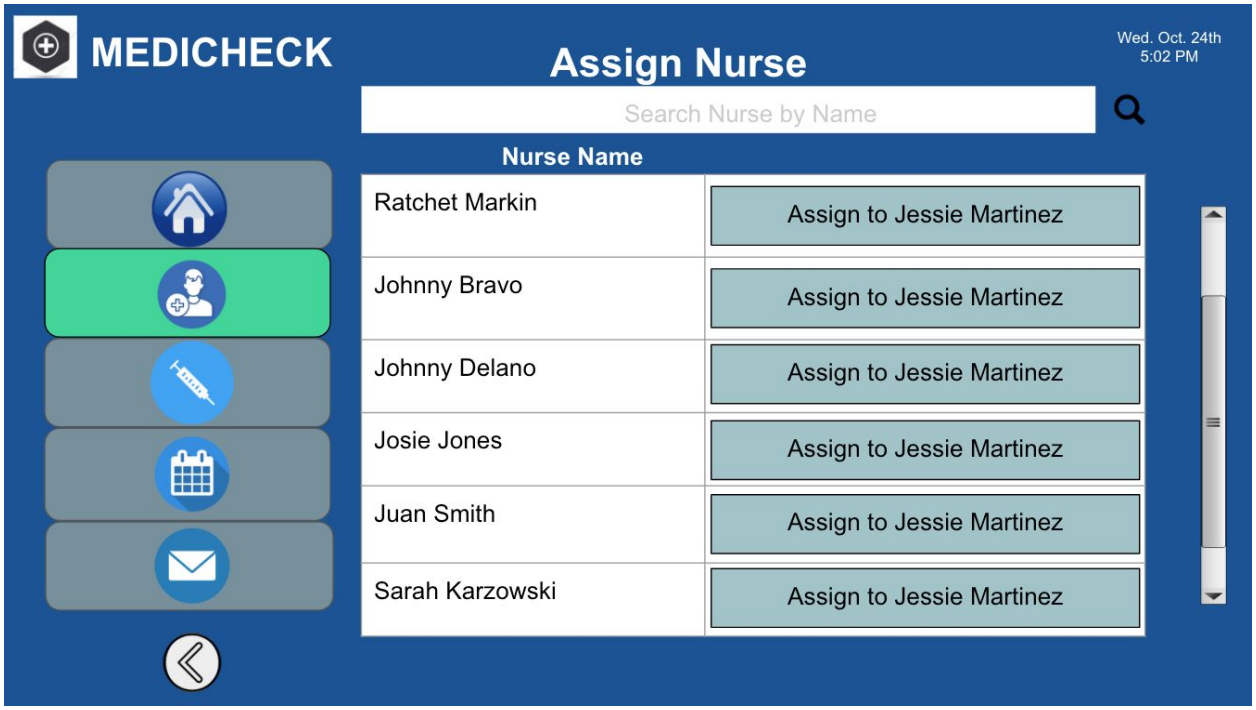


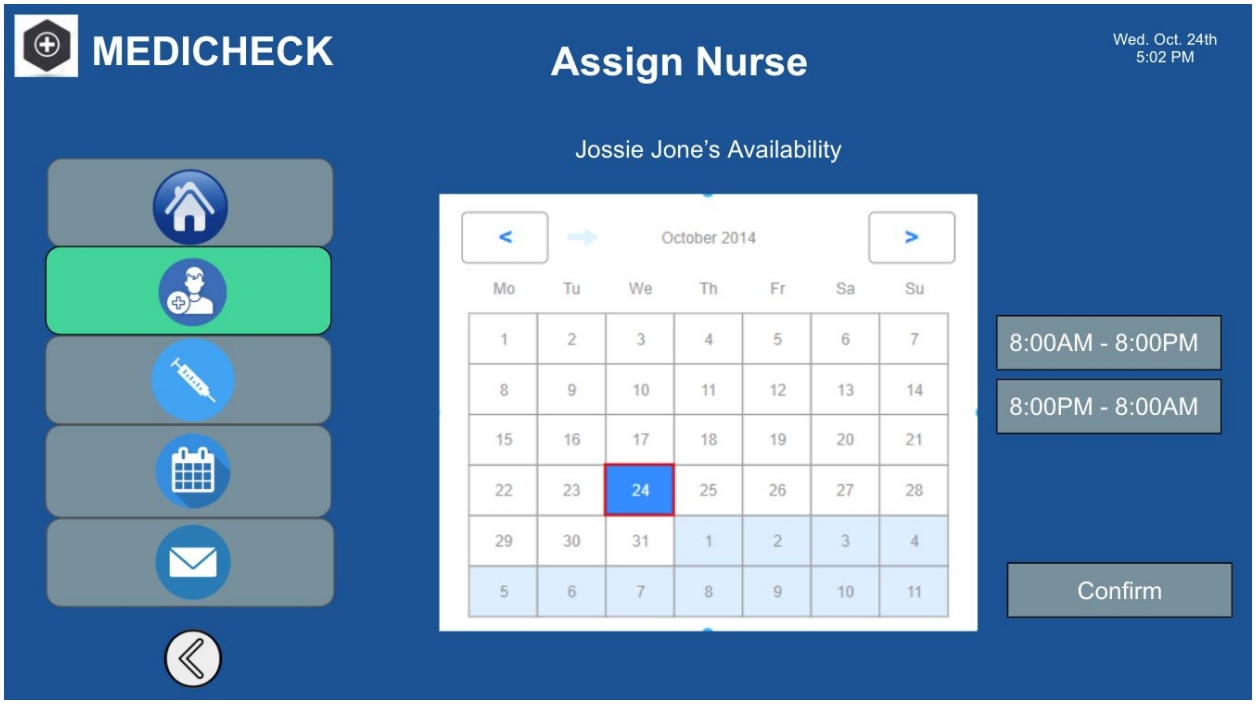
	Description:ihhnfevwjbcw Quantity on hand:xx Quantity to Order:	25	
	Description:knejbwcbekw Quantity on hand:xx Quantity to Order:		
	Description:erjhwbfbfui Quantity on hand:xx Quantity to Order:		
	Description:jcbwecfbweufbc Quantity on hand:xx Quantity to Order:		
	Description:cbheubwcwebcweficb Quantity on hand:xx Quantity to Order:		

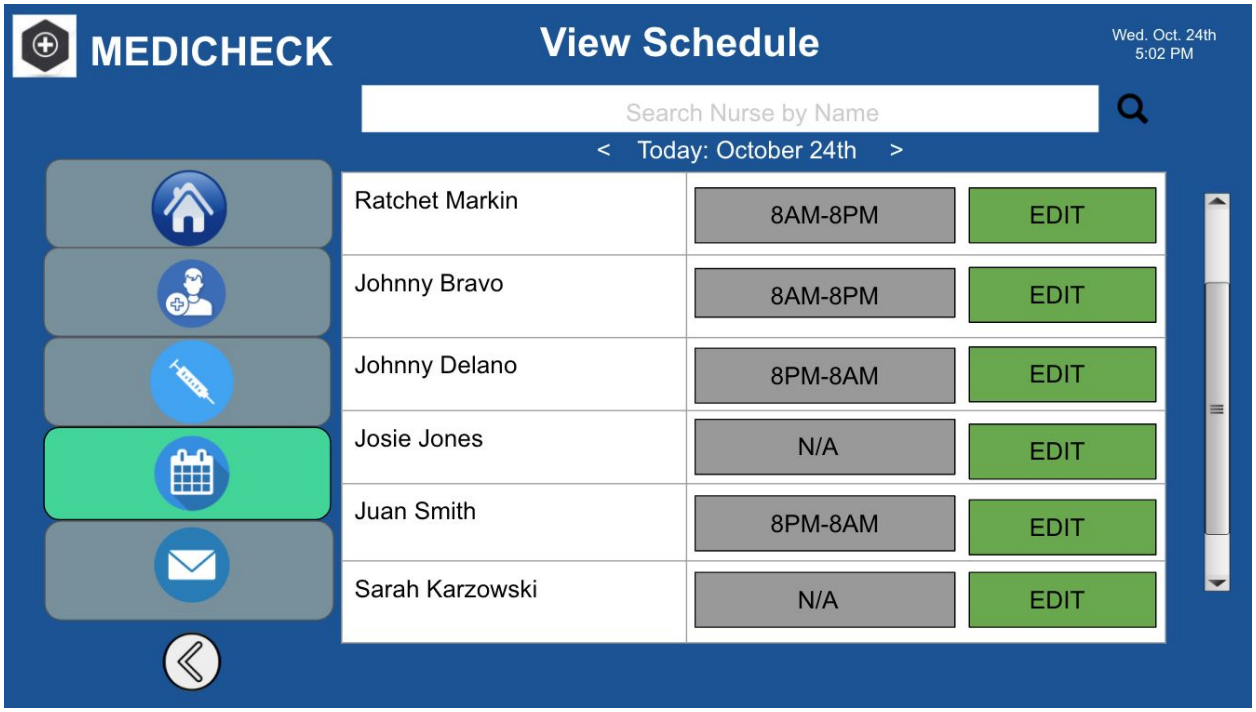
Submit Order

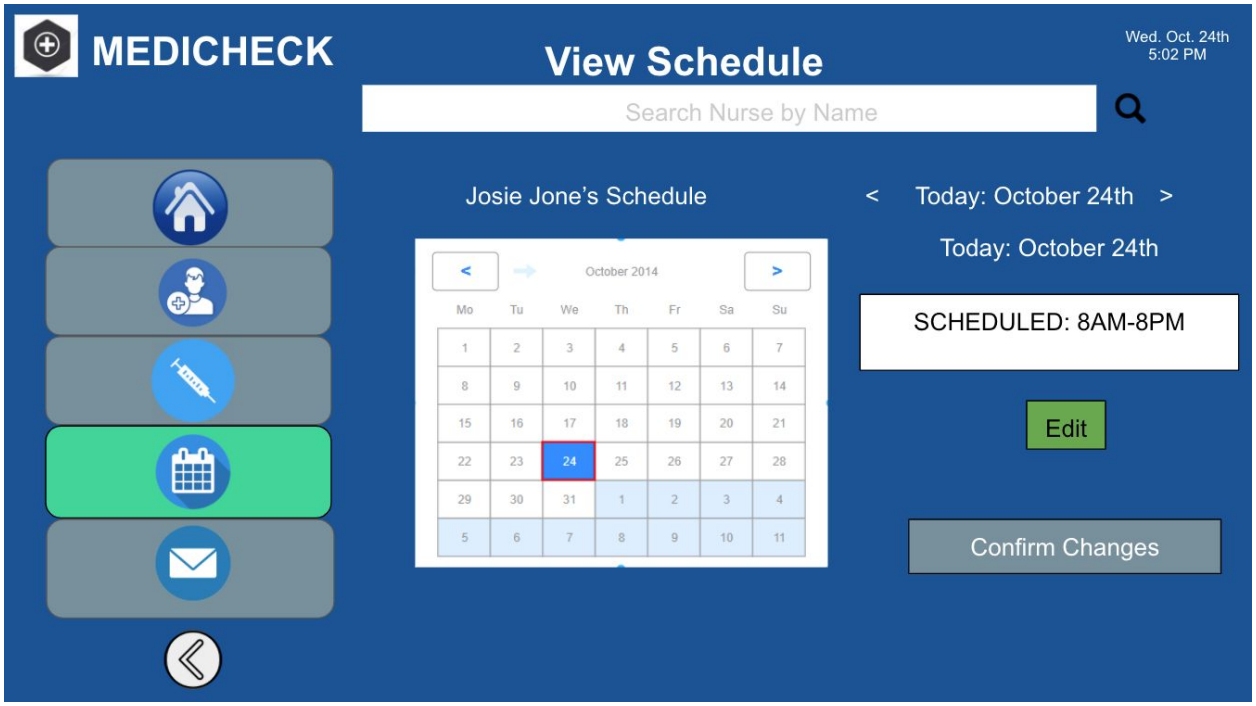

Are you sure you want to order 25 masks?
Yes
No

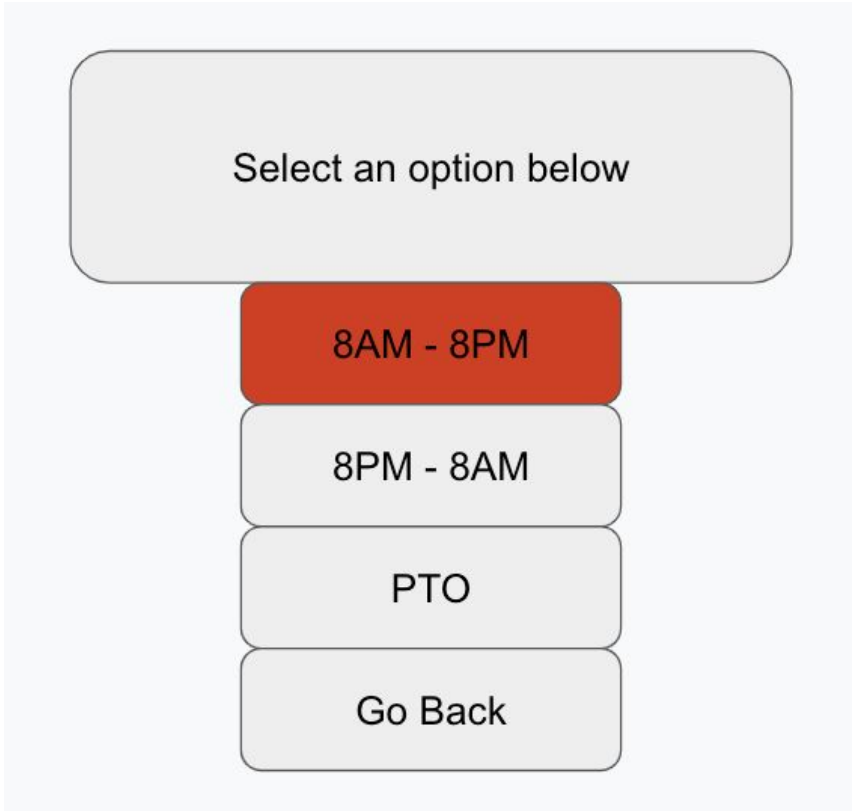

MEDICHECK
Patient List
Wed. Oct. 24th
5:02 PM
Search Patients by Name
Patient
Nurse
Patient Details
Juan Smith
Johnny Delano
Details
Jessie Martinez
!
Details
John Smith
Rachel Mendez
Details
Janet Picket
Johnny Bravo
Details
David Galloway
Ratchet Markin
Details
Daniel Hernandez
Sarah Karzowski
Details

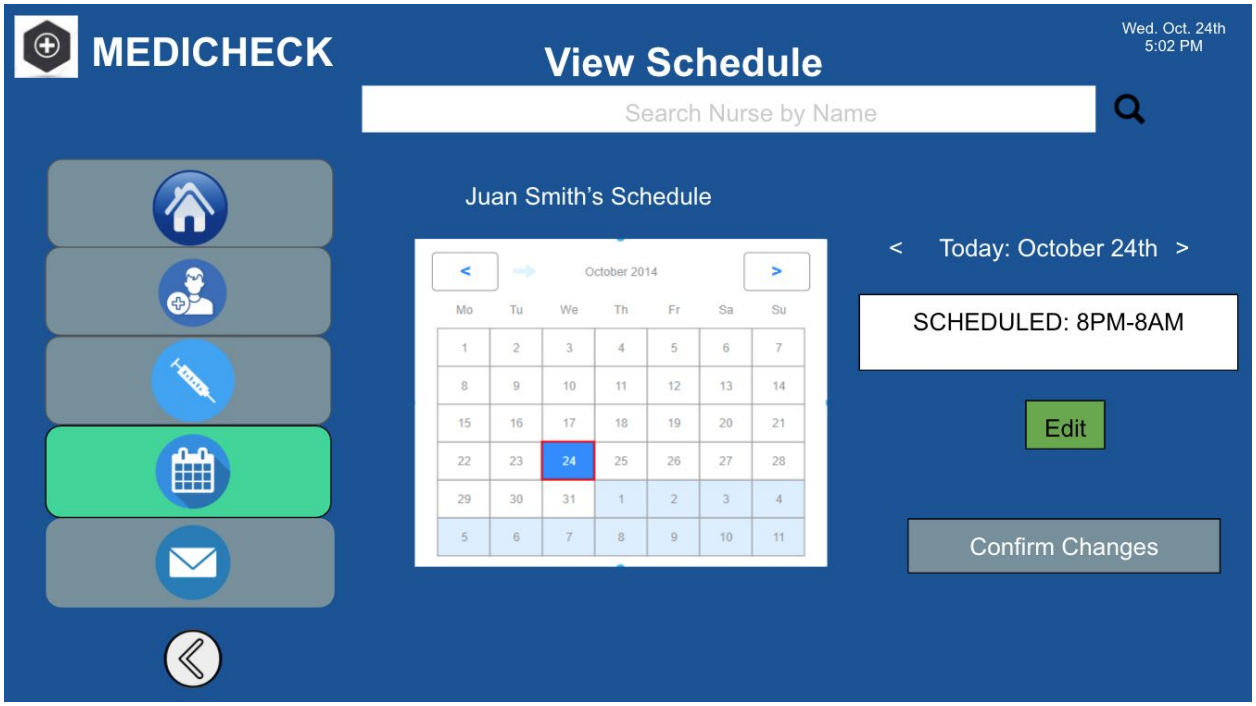

MEDICHECK
Assign Nurse
Wed. Oct. 24th
5:02 PM
Search Nurse by Name
Nurse Name
Ratchet Markin
Assign to Jessie Martinez
Johnny Bravo
Assign to Jessie Martinez
Johnny Delano
Assign to Jessie Martinez
Josie Jones
Assign to Jessie Martinez
Juan Smith
Assign to Jessie Martinez
Sarah Karzowski
Assign to Jessie Martinez

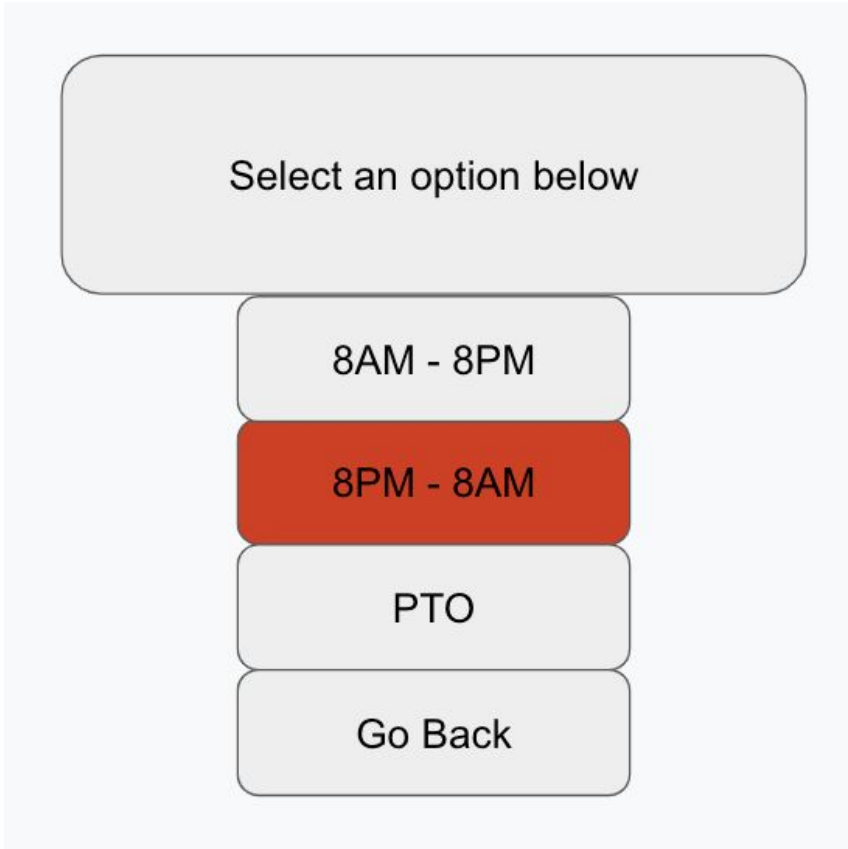

MEDICHECK
Assign Nurse
Wed. Oct. 24th
5:02 PM
Jossie Jone's Availability
October 2014
Mo Tu We Th Fr Sa Su
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 1 2 3 4
5 6 7 8 9 10 11
8:00AM - 8:00PM
8:00PM - 8:00AM
Confirm


MEDICHECK
View Schedule
Wed. Oct. 24th
5:02 PM
Search Nurse by Name
< Today: October 24th >
Ratchet Markin 8AM-8PM EDIT
Johnny Bravo 8AM-8PM EDIT
Johnny Delano 8PM-8AM EDIT
Josie Jones N/A EDIT
Juan Smith 8PM-8AM EDIT
Sarah Karzowski N/A EDIT


MEDICHECK
View Schedule
Wed. Oct. 24th
5:02 PM
Search Nurse by Name
Josie Jone's Schedule
< Today: October 24th >
Today: October 24th
October 2014
Mo Tu We Th Fr Sa Su
SCHEDULED: 8AM-8PM
Edit
Confirm Changes


Select an option below
8AM - 8PM
8PM - 8AM
PTO
Go Back


MEDICHECK
View Schedule
Wed. Oct. 24th
5:02 PM
Search Nurse by Name
Juan Smith's Schedule
October 2014
Mo Tu We Th Fr Sa Su
< Today: October 24th >
SCHEDULED: 8PM-8AM
Edit
Confirm Changes


Select an option below
8AM - 8PM
8PM - 8AM
PTO
Go Back

Problem Addressal for the Prototype:

We completed two iterations of testing. The first and second iteration had 3 users testing the interface where the users were to follow a set of specific tasks. In the first round of testing, the users came to not enjoy the design. It was hard for them to interpret how to navigate around and recognize where they were in the web application. In our second iteration, we aimed to increase learnability, efficiency and safety of the application by changing the color scheme and details within each window. With the second round of 3 user testers, we found that they enjoyed the web application, however, some of the new features we added such as the labeling for our tabs did not reduce the users' mistakes. However, with the new search capabilities and icons to “add” and “remove” nurses and tasks, it assisted in increasing the efficiency of the app. Finally, we provided confirmation features to ensure safety conditions for the user.

GR4-

1. **Platform Requirements**: In order to run the high-fidelity prototype that we have designed the user should have a compatible browser like FireFox and Google Chrome.

2. **Usage Instructions**:
   Parts that are not working:
   - The search bar
   - The messaging button
   - Some other aspects of the UI are not entirely implemented, such as only one nurse that the user needs to assign is working, similarly only the patient that needs a nurse is working.

   Click on the Link to access the prototype:
   https://xd.adobe.com/view/e519bb04-a625-4f69-9948-444ed3593365-b04a/?fullscreen&hints=off

3. A. **Feedback 1**: “The supplies and inventory icon may be confusing as I thought the syringe dealt with a patient's injections or something more related to attending a patient. The representation of this icon may not be so clear.” - Cecilia Avilia

   Changes Made: In regards to the feedback provided by Cecilia we changed our icon to reflect “Supplies and Inventory”. This icon promotes learnability since it is easier for the user to understand it.s

   B. **Feedback 2**: “The “Assign to Jessie Martinez" button is repeated multiple times, which can be redundant and take up some valuable screen space. I do agree that there will need to be some list display for the available nurses, but perhaps we can incorporate some simplicity. So, instead of having a "Assign" button to the right of each nurse name, there is only one at the bottom of the screen. At the top there will be a "Select a nurse" with the list of available nurses. Once someone taps on a nurse, the "Assign button will activate at the bottom. Then, we can have a more uniform way to show nurses and reduce the amount of "Assign" buttons.” - Yamin Reyes

   Changes Made: In regards to the feedback provided by Yamin, we removed all the assignment buttons and replaced them with check boxes on the screen and added one assign button so that the user could select a nurse and press the assign button. This reduced the number of redundant buttons on the screen.

C. **Feedback 3**: “I would definitely change the edit button to be more clear. You might even make the button showing hours (e.g. 8AM-8PM) clickable to go to editing. You can induce that by making the appearance more dynamic.” - Joseph Michaelis

Changes Made: In regards to the feedback provided by Prof. Michaelis, we removed the edit button and made the time clickable instead.

GR5-

Link for code - Github link

Instructions to run-

1. Download the repository off github, and make sure all contents are in the folder.
2. Right click onto ‘index.html’ and select ‘open with Google Chrome’ or ‘Firefox’.
3. A zipped folder is also attached.

Heuristics Changes -

- There was a comment about user control and freedom saying there was no way to reassign the nurses that were already assigned to a patient. However, that functionality is already implemented because all the nurse names are buttons and they can easily be changed.
- Michelle has stated in her heuristic report that it would be beneficial to include the list of items to the confirmation dialogue, we have added this feature. This applies to Error Prevention. She has also stated that we should add red text to items that were low, but we chose not to do this since none of the quantity was low enough to make red.
- She also made the point to allow the user to change quantity on hand which should not be allowed since this could lead to a user accidentally changing the value, the value should only be handled in the back end.
- Michelle mentioned to check for users input which we have included and pertains to error prevention. She speaks about adding a confirmation page and we have decided to exclude this since the backend would send an email for confirmation.
- Fatima has stated to add a label for the buttons, and we have included them, this pertains to the heuristic Error Prevention.
- Every user spoke about the inconsistency of the top of the pages, we have made them all consistent once you move away from the home page.
- Fatima has stated that buttons in the sidebar are inconsistent and we are unable to change them since we tried to add the closest related images, which resulted in the buttons we have now.

- Daniela stated to remove the word “Description” when talking about the items, we decided to remove it and this applies to Aesthetic and minimalist design.
- Daniela has also stated to add lines to our table and we decided not to do this since we learned in 422, white space is better to differentiate between items.
- Sakina has stated in her heuristic report that it would be beneficial to remove the extra right arrow that we had on our calendar as it was confusing for the user. This applied to Consistency and Standards, we agreed to her feedback and removed the extra arrow. This was good feedback.
- She also stated that the button that assigns a nurse to the patient should only be enabled when a nurse is selected. We made the necessary change to the UI, so now the button is initially disabled and gets enabled when a nurse is selected. This applies to Error Prevention.
- Sakina stated that the assign button in the assign nurse section directed the UI to the confirmation change of the supplies and inventory page, this is corrected by us in the UI for GR5.
- Sakina stated that the buttons were without labels and this hampered the concept of learnability as it promoted recall rather than recognition. We changed the UI so that the buttons had both the icons as well as the labels which promotes learnability using the concept of recognition.
- Sakina stated that the UI was not consistent between the different pages since the placement of the logo “MediCheck” kept changing from place to place. We fixed this error in our UI.
- Sakina informed us that the “No” button on the confirmation page isn't working. We have corrected that in our current UI. It was a matter of User Control and Freedom.
- Sakina stated that our UI didnt have a shortcut, specifically saying that “MediCheck” should be a button so when a user clicks on it, it redirects the user to the home page. We didn't consider this part of her feedback since we already have a home button on all the pages of our UI which basically acts as a short-cut.
- Kirun stated in his feedback that the icon for inventory in our UI is not descriptive enough and would be confusing to the user. We changed the icon to correct this.
- Kirun also stated that the need for each supply should be mentioned on the supplies and inventory page of the UI. We discussed this among our group members and concluded that we cannot assume how many supplies would be needed since it would change each time, hence we didn't add this in our UI.
- Kirun also stated that the UI was not consistent between the different pages since the placement of the logo “MediCheck” kept changing from place to place. We fixed this error in our UI.
- Many users suggested changing the format of selecting times for the nurses due to the layout being confusing to understand. We decided to then use labels for the options and a checkbox format to make it distinguishable and catching when changing the time.
- Included a ‘not available’ option to show that a nurse is canceling their shift.
- We added back buttons as suggested by the users to give the users freedom to maneuver around the application and not commit to any changes.
- Added titles to the subpages of the scheduling tab so that we can briefly know where we are located and also give a small understanding of what we can do.

Contributions -

Michael Lemus:

- Worked on **task 1,** submitting 25 masks and removing medication.
- Created the layout of the whole UI (separating columns) and added all the navigation(home, supplies, calendar, etc) buttons.
- Added CSS styling for all the buttons to show when they are hovered over.
- Worked on the supply page alongside Rohan.
- Created layout in Supplies and inventory Page
- Checked input when the user wants to search for an item for every item, and it updates the output accordingly.
- Worked on removing the items, and creates a popup if the user would like to actually remove the item.

Rohan Verma:

- Worked on parts of task1 and task2 with Michael and Krzystof.
- Worked on the supply page alongside Michael.
- Checked input number for supplies.
- Checked if submit button should be enabled
- Added CSS styling to submit button when it's enabled.
- When the order for the supplies is placed a confirmation pops-up informing the user that the order was successfully placed.
- Worked on the Patients page alongside Krzysztof.

Krzysztof Para:

- Worked on **task 2** to assign a nurse ‘Josie Jones’ to patient Jessie Martinez.
- Worked on the Patients page
- Worked on the Assign Nurse page and the status page as well
- Added functionality to buttons on the patients page
- Added toggle functionality to checkboxes on assign nurse page
- Added functionality to assign a nurse button.

Daniel Aguilar (Covid-19 Survivor) and Mustafa Habeeb:

- Worked on **task 3**: Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
- Worked on **task 4**: Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.
    - Both were similar tasks but slightly different goals.
- Created tables for scheduling pages to show layout of schedule times for nurses.
- Created new labels when selecting options for the schedule by adding a ‘not available’ option.

- When updating the schedule, use the check box format to select with option the user wants to select and make the options into labels rather than leaving them in boxes, as it was mentioned multiple times that the users were confused if the text was a button or not.
- The check boxes were also added to get the attention of the user.
- Previously, the submit button was thought to be one of the options to the color scheme we selected, however, now we changed the button to an option that related to the check box format.
- Created back buttons for all the pages so the user can go back and choose other nurses rather and change other schedules, so that they do not have to commit to one choice.
- Fixed date and title layout to match the rest of the UI creating consistency.
- Added additional title pages to the subpages of updating the schedule to summarize briefly what each page does.

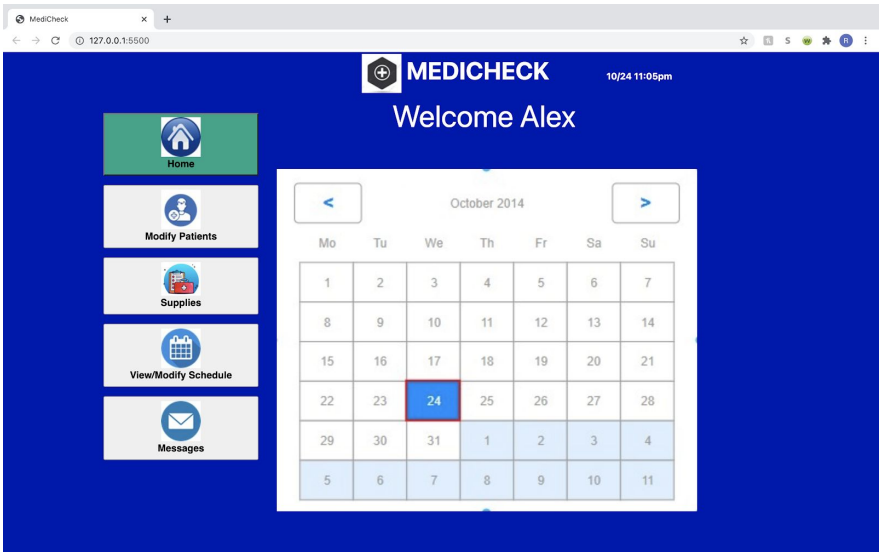
GR6: User Testing

1. DESIGN

A. Design Decisions

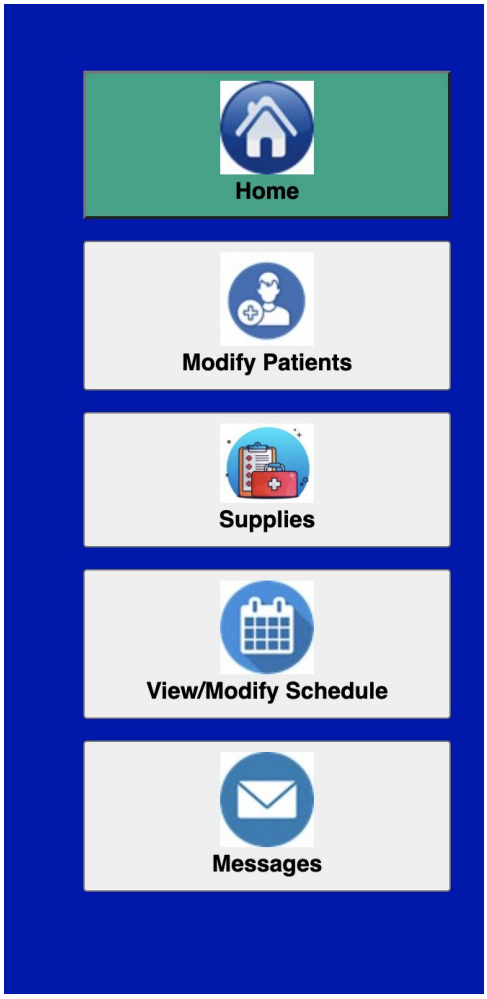
While designing the MediCheck application for nurses we had to make several important design decisions keeping in mind that the users work in an ever changing, and high stressful environment where our UI should be simple and help the users accomplish their tasks easily and efficiently.

1. We designed our application to follow the concepts of simplicity and minimalist design. We chose this approach so that the application screen isn't crowded and the user has quick access to all the features that the application offers (See Pic 1).



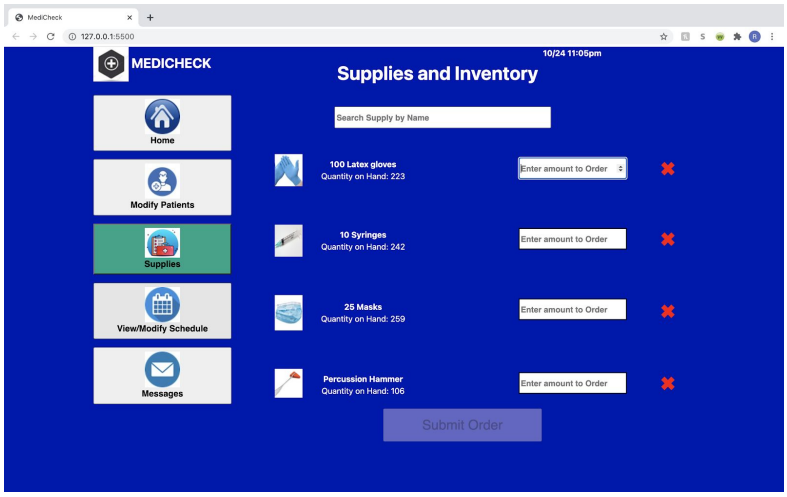
(Pic 1)

2. We included both, Icons and labels to the buttons in the UI to promote the concept of learnability by using recognition instead of re-call. This also increases the usability of the UI as it provides the user with all the information they need to navigate the MediCheck application. (See Pic 2)

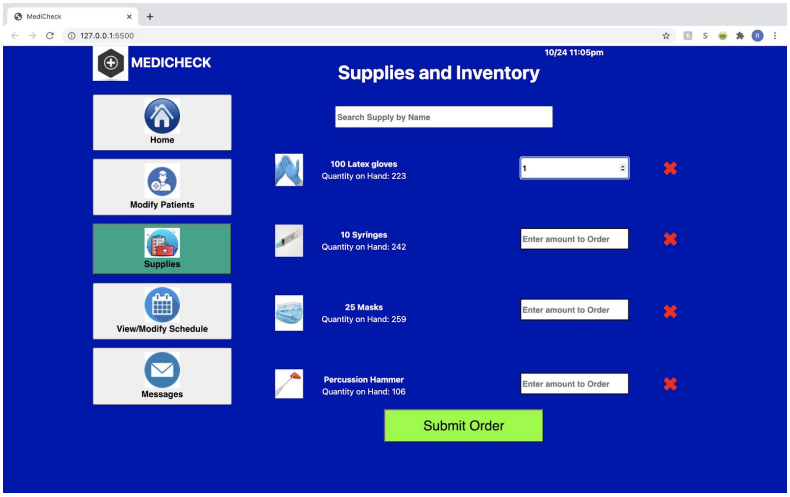


(Pic 2)

3. As mentioned above that the targeted users are working in an ever changing and highly stressful work environment hence to avoid the possibility of an error such as a lapse or a slip we implemented error checking throughout our application.
    a. When there is no quantity selected for any of the items, the submit button is disabled to avoid the error of placing an order with 0 items (Pic 3). When there is at least one item with some quantity greater than 0 the submit button is enabled allowing the user to place the order. (Pic 4)

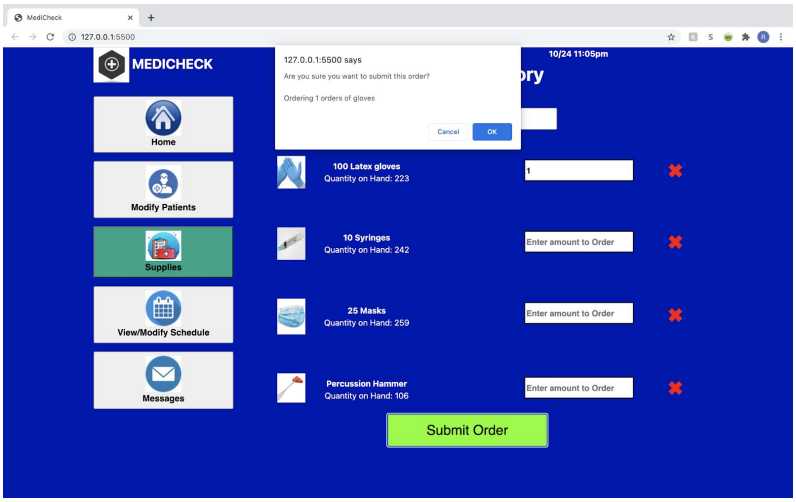


(Pic 3)



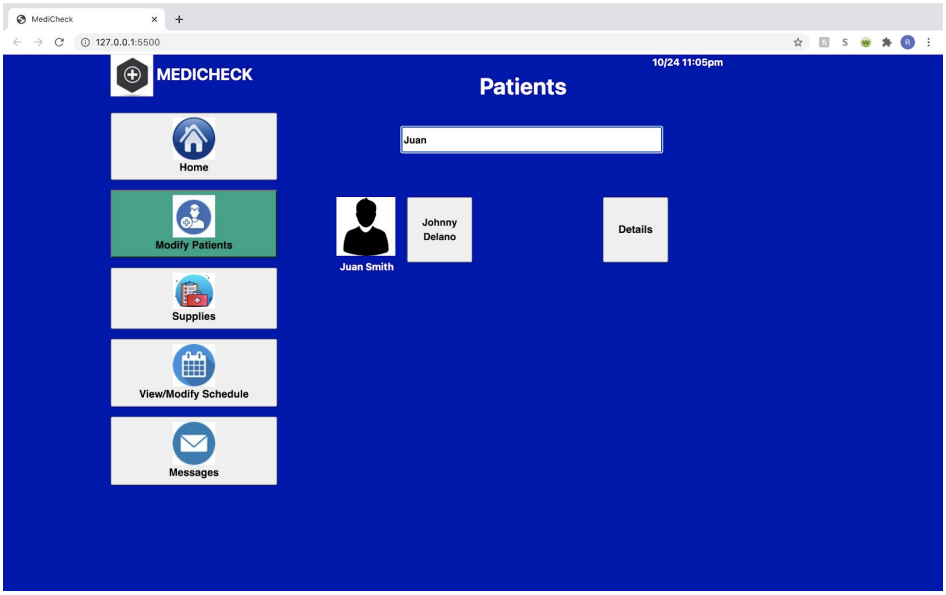
(Pic 4)

b. When the user clicks the “Submit Order” button there is a pop-up page that allows the user to confirm their order and also provides a summary of the user order. This enables the user to re-check their order for any mistake in quantity or item. (See Pic 5)



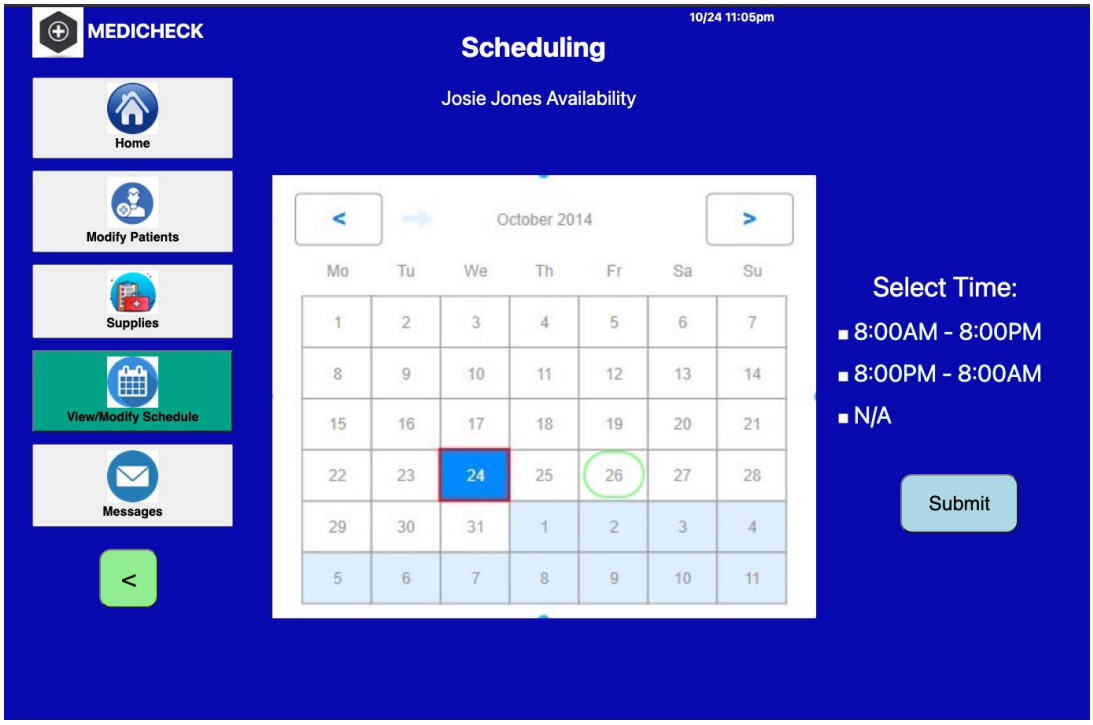
(Pic 5)

4. We implemented the search bar feature in our UI which increases the efficiency and usability of the UI. This allows the user to look for the information that they seek quickly and hence saves the user time. This is an important aspect for our targeted users (nurses). This is also aimed at reducing stress faced by the user when interacting with the application as when the nurses need to search for a particular patient in a hospital database scrolling and looking for a name can get frustrating. Hence the search bar is an important feature of our UI. (See Pic 6)



(Pic 6)

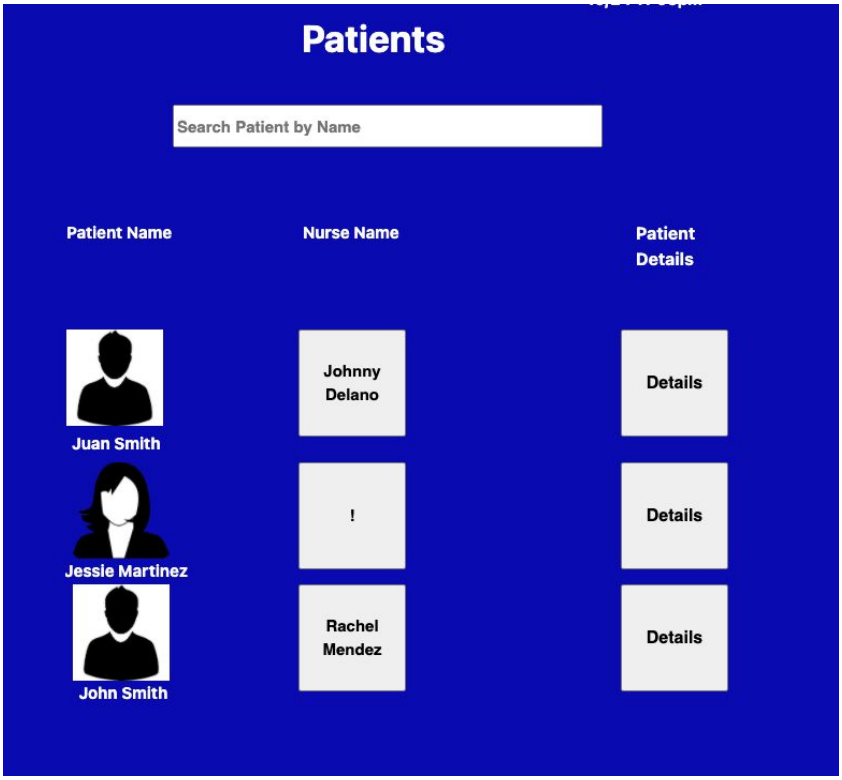
5. We implemented a feature that was more learnable for the users to understand. Before there were a lot of difficulties understanding how to change nurses time for their work schedules. However, from there we included a better selection method as you can see in Pic 7, where the user can select the time using a check box method, receiving visual verification of what they selected, and submit their choice.



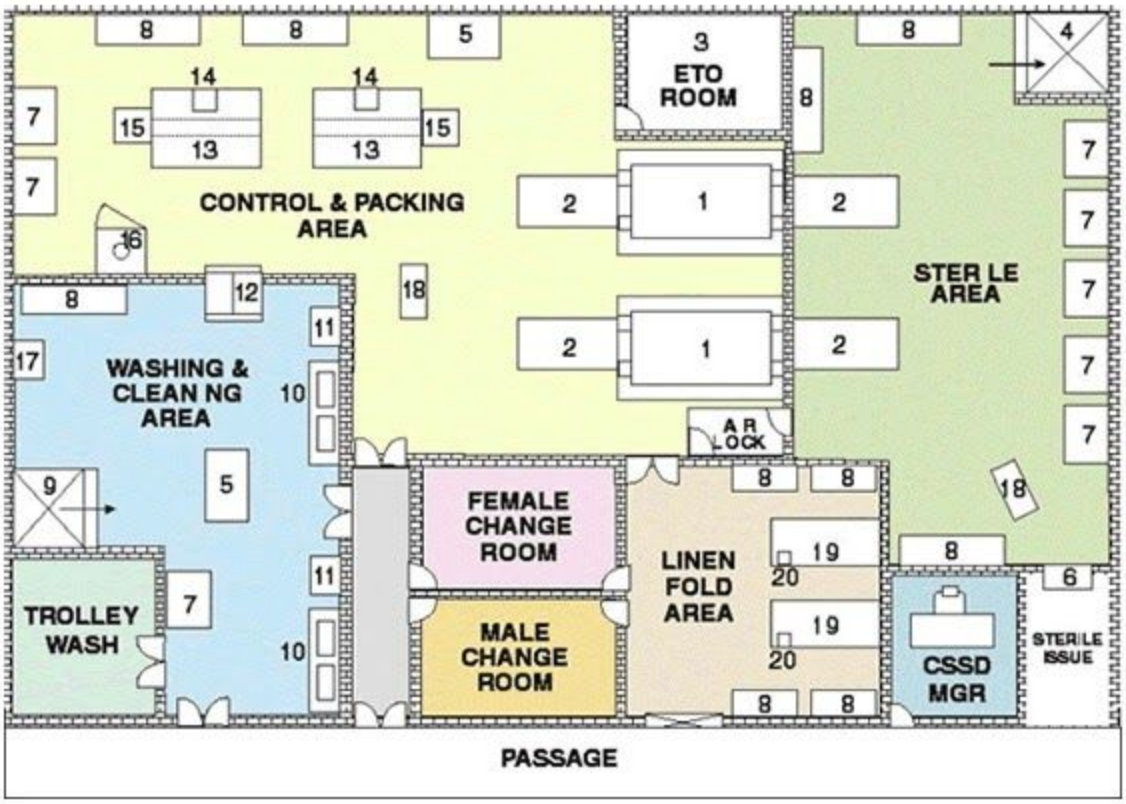
(Pic 7)

B. Design Alternatives

1. Some other designs we had were to use a metaphor for the patient's tab (Pic 8) and compare it to a hospital floor map, an example would be Pic 9, where each room would be a patient room and when clicked on, you can see if the room is occupied or not and if the room is occupied you can see which nurse is taking care of the patient as well as the other details in regards to the patients well being.


Patients
Search Patient by Name
Patient Name
Nurse Name
Patient Details
Juan Smith
Johnny Delano
Details
Jessie Martinez
!
Details
John Smith
Rachel Mendez
Details

(Pic 8)


CONTROL & PACKING AREA
ETO ROOM
STER LE AREA
WASHING & CLEAN NG AREA
AR LOCK
FEMALE CHANGE ROOM
MALE CHANGE ROOM
LINEN FOLD AREA
TROLLEY WASH
CSSD MGR
STERILE ISSUE
PASSAGE

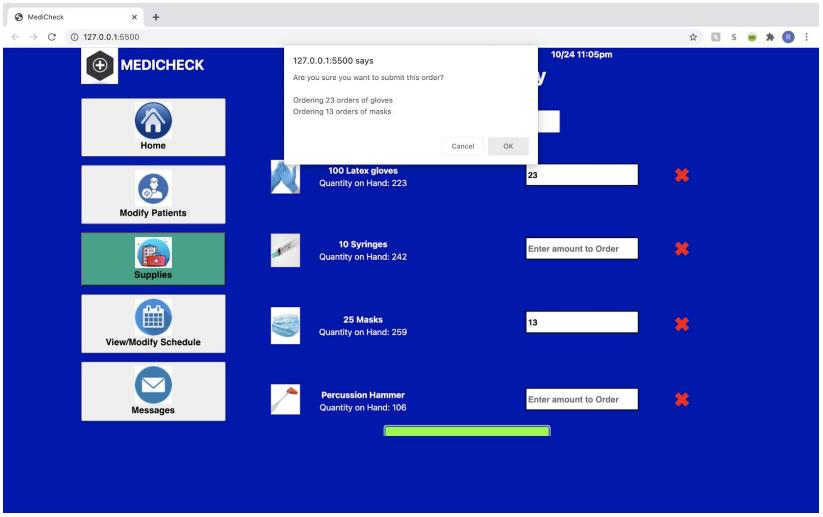
(Pic 9)

2. One alternative in the Supply and inventory page would have been adding a shopping cart in the corner of the screen (Pic 3). This would have been a great learnability experience for the user because they would recall from other websites such as Amazon and know what the icon would mean right away.
3. We also wanted to include icons in the upper corner of the home page (Pic 1) where the user can receive alerts, messages, and calendar updates. This would have been a great add-on as it would make it easier for the user to know what is going on and what exactly they need to do.

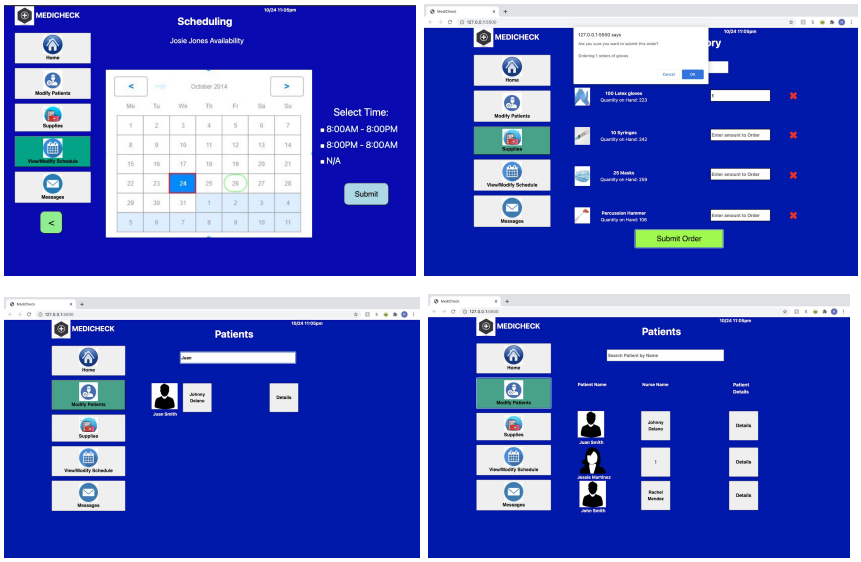
C. After Evals

We made many changes according to the feedback that we received from the paper prototyping and the Heuristic evaluations. They are listed below:

1. We included the summary of items that the user wanted to order in the confirmation dialogue page. This applies to Error Prevention.



2. We added labels for the buttons, this was a feedback we received from the heuristic evaluations. This pertains to the heuristic Error Prevention. (Pic 2)
3. Users stated that the placement of the MediCheck logo was different in each page and wasn't consistent throughout the UI. We corrected the placement for each page to improve the consistency of the UI. As shown in the pictures below.



4. Users suggested changing the format of selecting times for the nurses due to the layout being confusing to understand. We decided to then use labels for the options and a checkbox format to make it distinguishable and catching when changing the time.
5. We added back buttons as suggested by the users to give the users freedom to maneuver around the application and not commit to any changes.
6. Added titles to the subpages of the scheduling tab so that we can briefly know where we are located and also give a small understanding of what we can do.

2. EVALUATIONS

The final iteration is built using HTML and CSS meaning the users could use this application through Firefox or Google Chrome. The users are then able to do their assigned tasks and provide feedback to the developers.

Brief:

Thank you for agreeing to participate in Michael's, Mustafa's, Krzysztof's, Rohan's, and Daniel's study for their User Interface Design course at UIC. The test Facilitator/Observer will go over the following points, before we can begin the actual study:

1.) The purpose of this study is to test the functionality of a desktop application, in high fidelity form to get feedback on the layout and functionality, and be able to observe any difficulty the user may have while performing tasks.

2.) The purpose of the application is to help nurses better manage their tasks, view their tasks, and view their schedule. The charge nurses should be able to view/order supplies, and assign tasks.
3.) Overview of Tasks: the facilitator will provide several tasks that the user must complete using the powerpoint shared.
4.) The User should "think out loud" when performing tasks so that the observer's would be able to take notes on any confusion or trouble the user may have.
5.) Duration of Tasks: the User will participate in the tasks for at most 30 minutes but usually takes about 20 minutes.
6.) These tests are about the website, not you. So, don't worry about mistakes, that's what we need to see.
7.) There will be several tasks to be completed and you can skip any tasks that you would not like to complete.
8.) You may stop this study at any time.

Overview

Assuming that the user has already gone through the login page, they will start from the Home Screen and continue the following list of steps to order masks/remove medication, assign tasks to nurses, and edit nurses schedules.

List of Tasks:

1) Order a total of 25 more masks, confirm and submit the order. Remove medication from the order.
2) Assign patient Jessie Martinez to nurse Josie Jones
3) Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
4) Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.

Observations for Final Evaluation:

User 1:

Task: Order a total of 25 more masks, confirm and submit the order. Remove medication from the order.

Outcome: The user successfully ordered 25 masks and was able to remove medication from the list.
Observations: User said they liked the buttons being labeled because it makes it easier for them to be identified.
Problem Points: The user had a hard time finding out if the order went through.

Task: Assign patient Jessie Martinez to nurse Josie Jones
Outcome: The user successfully assigned Josie Jones to the patient Jessie Martinez without any issues.
Observations: The user did not catch the '!' mark right away which was there to say that there was no assigned nurse.
Problem Points: No problems

Task: Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
Outcome: User was able to schedule Josie Jones for a 8AM - 8PM shift.
Observations: User was confused because the calendar had a blue mark over the 24th day of the month.
Problem Points: User was confused because of the calendar. The 24th day on the calendar is blue and the user tried clicking it instead of clicking the 26th first.

Task: Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.
Outcome: User was able to successfully modify Juan Smith's schedule to 8am -8pm.
Observations: User was confused on the calendar and the user was confused because they were able to select multiple times on Juan Smiths availability page.
Problem Points: The user should not have been able to select 8pm - 8am since Juan was already scheduled for that shift. That option should have been grayed out.

User 2:

Task: Order a total of 25 more masks, confirm and submit the order. Remove medication from the order.
Outcome: The user successfully found the masks and has removed medication from the order.
Observations: The user found the search to be extremely useful and has found if it weren't for this ability, she would have spent more time looking for the item.
Problem Points: The user stated they would have liked to see a confirmation of the order being sent as they have even said "did it go through?"

Task: Assign patient Jessie Martinez to nurse Josie Jones
Outcome: The user successfully assigned Jessie Martinez to Jossie Jones.
Observations: While the user was going through the task, she noted how the top of the screen was well formatted but the names of patients and nurses were a bit hard to see due to size.
Problem Points: When going through the task, the user has stated why are the patients without a nurse listed first as they are the ones who will most likely need to be assigned a nurse.

Task: Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
Outcome: The user successfully scheduled Josie Jones.
Observations: The user had a really hard time figuring out the calendar since they did not know there were any buttons available on the calendar.
Problem Points: They noted there should be some feedback when hovering over an item. Having them know there are items they can click on would decrease the amount of time that they would need to learn the calendar page.

Task: Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.
Outcome: The user successfully scheduled Juan Smith
Observations: The user had a hard time clicking on the checkbox since it was too small. They also stated that the background did not match with other tables in the application.
Problem Points: The check box should be bigger to increase efficiency of the application and tables should be formatted the same throughout the application.

User 3:

Task: Order a total of 25 more masks, confirm and submit the order. Remove medication from the order.
Outcome: User was able to successfully get the order of 25 masks.
Observations: Putting in the 25 masks was a breeze for the user and they were able to also notice that there was an order of medications and make sure to eliminate that by using the red "X" in the row.
Problem Points: The user was double checking to see if there was any sign of confirmation on their submission for the order.

Task: Assign patient Jessie Martinez to nurse Josie Jones.
Outcome: Success on assigning patient to nurse.

Observations: The user was able to do this task quickly as it seemed like it didn't take much thought to click on the patient's name when it was missing a nurse's name and assigning them.
Problem Points: No issues were encountered with the user.

Task: Schedule Josie Jones for October 26th for a 8 AM - 8 PM shift and confirm the updated schedule.
Outcome: The user was able to complete the task.
Observations: The user noticed that since there wasn't anything else on the page besides the image of the calendar, they began tapping on the numbers of the calendar to move onto the next page. Once they were on the October 26th date, they saw the list of patients and went on the task.
Problem Points: The user questioned why there was so much blank space on the main calendar page, mentioning that it would be helpful to expand the calendar.

Task: Modify the schedule for Juan Smith on October 28th and modify his schedule from 8pm-8am to 8am-8pm.
Outcome: Task was completed.
Observations: After completing the last task, the user was able to rapidly adjust Juan's schedule for the date.
Problem Points: Same issue as previous task.<3

3. REFLECTION

- Learnings:

1. We learnt that any Web application is a lot more than just a collection of webpages. It is a web space where different things - in our case a nurse and his/ her duties and tasks - meet, communicate, and affect each other. It is an interface, this interaction with the interface creates an experience for the user. As a web designer it is our role and responsibility to ensure that we are providing the user with the best possible interaction.

2. For point 1 to be successful, we as designers should consider the user feedback as the most important input while designing the UI.

3. Getting user feedback at each and every step is of the utmost importance. There are many theoretical concepts, and guidelines that we have learnt in our CS 422 class but the experience of using which feature when and where is gained only through multiple rounds of user testing.

4. We have learnt the importance of good communication when it comes to working as a team. Dividing work equally, and being there to help each other when they require help is really important.

5. Meeting frequently i.e once a week and more during user testing and submission deadline was really beneficial for us to be on track.

- What we would do differently:

    1. We would definitely use the already existing components to develop our UI. Components such as the ANT components, and the CARBON 10 components by IBM would definitely improve our UI as well as make the front-end development much easier.

    2. During the current pandemic since we weren't able to be physically present with our users for our user testing we didn't get the best experience. We would definitely like to be physically present during the user testing and experience this part as compared to doing it remotely.

    3. We would have implemented many more features if we had the knowledge that we currently have in our UI such as creating a login page and managing the user state using Redux or Recoil.

- Prototype Creation Process

    1. Since our prototyping process would be online and done remotely, we created a google presentation where we had floating buttons and other parts of the UI.

    2. This technique allowed us to drag and drop the elements when the user clicked on a button. This enabled the user to see the changes in the UI when they performed a certain function.

    3. Our prototype was made by combining features from the various sketches we made for our GR2 assignment. We all decided on what features we

would choose from the 5 different GR2 sketches that would benefit our users.

4. After making our prototype, we decided that the best tasks that would give us the best idea of what our users feel about our prototype would be the ones that require the users to navigate through the entire UI. So we created tasks that would ensure that when all the tasks were completed the user has navigated through most of the UI.

5. These tasks were also the ones that the user would have to perform on a daily basis as a part of their job description and requirements.

- Learnings from the Evaluation Process

1. We learnt that while designing the UI, some features that might seem easy for us as a developer to use might not be as easy for the user to use.

2. We learned to keep in mind that not every user for our UI would be a tech savvy person. Hence we should make sure that the UI is user friendly.

3. We learnt for different scenarios there exist different trade-offs in the UI. For example even though a pie menu is beneficial in terms of efficiency, most users would prefer the list menu in a UI. This could only be learnt through the process of user testing and heuristic evaluations.