CLASS PROJECT PHASE 2

Team Name: Antava

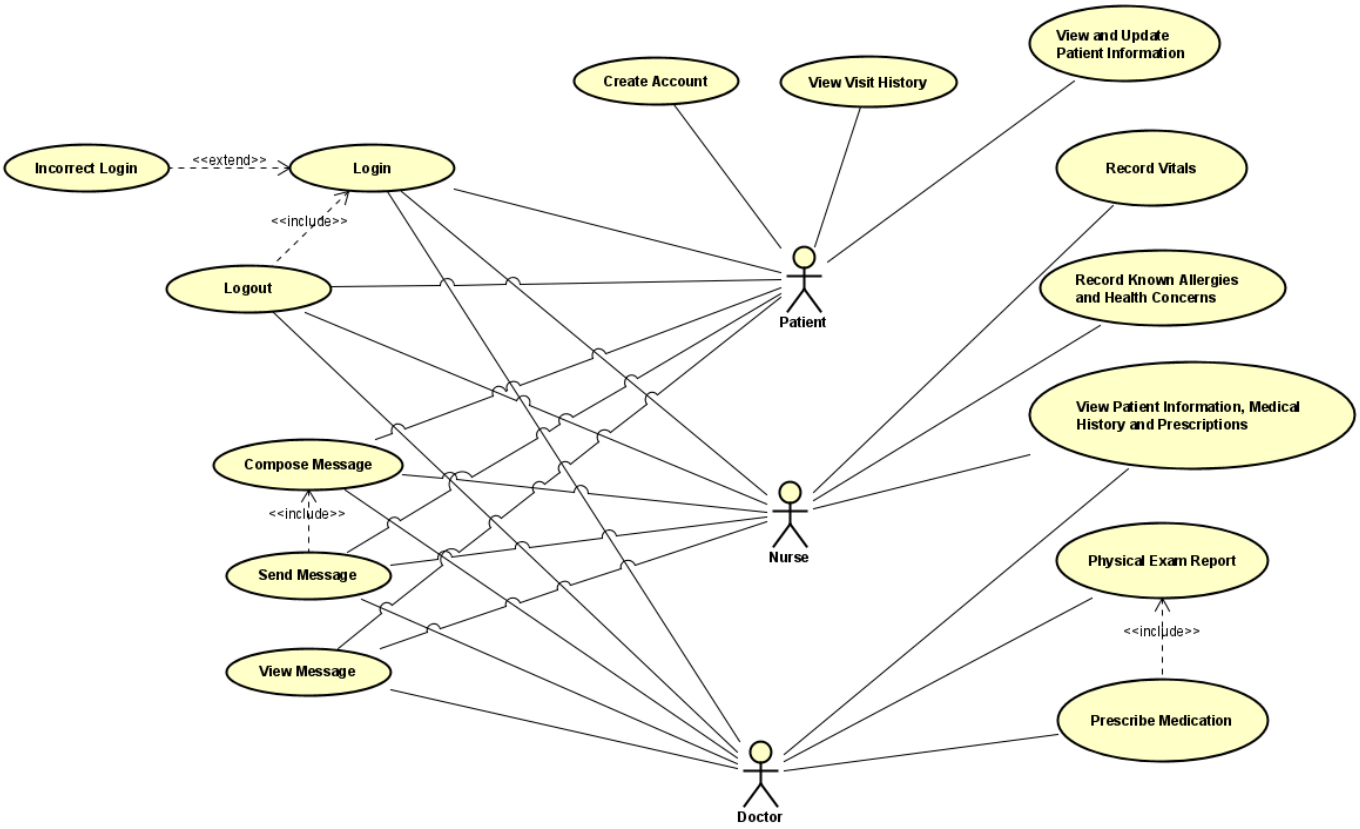
Team: 22

Team Members:

Mathm Alkaabi, Christopher Chou, Karisma Liddell, Jesse Sims, Leo Wilson

1. Use Cases and the Use Case Diagram (30). Copy and paste your use case diagram from Astah.

Use Case Diagram



Use Case Descriptions

1. **Login**

   Use Case 1: Login
   Actor: Patient, Nurse, Doctor
   Basic Flow: The user accesses the login page, and enters their User ID and password. If the credentials are correct it will lead the user to their respective screen
   Data: User ID, Password
   Stimulus: The user interacts with the login page and inputs the User ID and password.
   Response: The user gets redirected to their respective screen
   Comments: This is the initial screen for all actors

2. **Incorrect Login**

   Use Case 2: Incorrect Login
   Actor: Patient, Nurse, Doctor
   Basic Flow: The user accesses the login page, and enters their User ID and password with it being incorrect which then shows an error message explaining the incorrect credentials.
   Data: User ID, Password
   Stimulus: The user interacts with the login page and inputs the wrong User ID or password.
   Response: An error message is displayed explaining what's wrong.
   Comments: This is to prevent users from gaining access to a screen they're not supposed to

3. **Logout**

   Use Case 3: Logout
   Actor: Patient, Nurse, Doctor
   Basic Flow: The user after already being logged in to their screen navigates to the top right and clicks the logout button that sends them to the login page
   Data: None
   Stimulus: The user clicks the log out button
   Response: The user gets logged out and redirected to the login page
   Comments: Logging out saves the information, if all preconditions are met, such as clicking a save button

4. **Record Vitals**
   Use Case 4: Record Vitals
   Actor: Nurse
   Basic Flow: The nurse once confirming the patient is over 12 years old will record the vitals of the patient, which includes their weight, height, body temperature, and blood pressure
   Data: Age, Weight, Height, Body Temperature, Blood Pressure
   Stimulus: The nurse checks the patient's age and starts checking the patient's vitals
   Response: Patient vitals are recorded in the system.
   Comments: Vitals will only be taken from the patient if their age is over 12

5. **Record Known Allergies and Health Concerns**
   Use Case 5: Record Known Allergies and Health Concerns
   Actor: Nurse
   Basic Flow: The nurse will ask the patient about any known allergies and health concerns and record them down
   Data: Patient allergies, Health Concerns
   Stimulus: The nurse will ask the patient what their allergies and health concerns are
   Response: The patient’s allergies and health concerns will be recorded in the system
   Comments: This information will be used by the doctor

6. **View Patient Information, Medical History and Prescriptions**
   Use Case 6: View Patient Information, Medical History and Prescriptions
   Actor: Nurse, Doctor
   Basic Flow: The nurse or doctor will look on their respective screen for the recorded patient information, medical history, and previous prescriptions, this includes information such as previous health issues and immunization history
   Data: Patient Information, Patient Medical History, Patient Prescriptions
   Stimulus: The nurse or doctor interacts with their screen and attempts to view the patient's information, medical history, and prescriptions
   Response: Patient information, history, and prescriptions are displayed for viewing purposes
   Comments: This information is needed for the nurse and doctor to fulfill their tasks

7. **Physical Exam Report**
   Use Case 7: Physical Exam Report
   Actor: Doctor
   Basic Flow: The doctor will perform a physical exam on a patient and then record all their findings into a report as well as give a final assessment of the patient's condition
   Data: Physical Exam Report
   Stimulus: The doctor performs the physical exam and accesses the text field inputs corresponding to the physical exam
   Response: The patient's physical exam findings will be recorded and saved in the system
   Comments: This also includes a summary of the visit that will be viewed by the patient

8. **Prescribe Medication**
   Use Case 8: Prescribe Medication
   Actor: Doctor
   Basic Flow: The doctor will analyze the patient's condition based on their findings in the physical exam and will prescribe and order any medication if necessary
   Data: Physical Exam Report, Prescribed Medication
   Stimulus: The doctor finishes the analysis of the patient and interacts with the prescription section
   Response: The prescription will be sent to the patient's pharmacy and saved into the system.
   Comments: The doctor isn't required to prescribe medication, it's only if it's necessary

9. **Create Account**
   Use Case 9: Create Account
   Actor: Patient
   Basic Flow: The patient enters in their patient information and sets up their login credentials where the system will save it
   Data: Patient User ID, Patient Password, Patient Name and Birthday
   Stimulus: Patient attempts to create an account
   Response: The patient account is created and saved into the system
   Comments: All patients will need to create an account first

10. **View and Update Patient Information**

    Use Case 10: View and Update Patient Information
    Actor: Patient
    Basic Flow: The patient accesses their screen, views their information, and updates it if necessary. This includes contact information, insurance details, pharmacy information, previous medical history, etc
    Data: Patient Contact Information, Patient Insurance, Patient Pharmacy Information
    Stimulus: The patient accesses their screen and attempts to view/update their information
    Response: Patient information will be displayed and/or patient information will be updated and saved into the system.
    Comments: Any updated patient information will be viewed by the nurse and doctor for their tasks

11. **View Message**

    Use Case 11: View Message
    Actor: Patient, Nurse, Doctor
    Basic Flow: The user accesses the messaging system and will be displayed an interface that contains all messages that have been sent to the user which they can view
    Data: Message Content, Sender, Recipient
    Stimulus: The user opens the messaging system
    Response: The received messages to the user will be displayed
    Comments: Once the messaging system box is open, all messages will be displayed in a scrollable text area, no need to click a button to view the messages

12. **Compose Message**

    Use Case 12: Compose Message
    Actor: Patient, Nurse, Doctor
    Basic Flow: The user once clicks the new message/reply button, a text box will open up for the user to enter the recipient's email and enter in the subject and message body
    Data: Message content, Sender, Recipient
    Stimulus: The user clicks the new message/reply button
    Response: A message box will open up for the user to create their email
    Comments: Patients will mainly be creating new messages to send to nurses/doctors while they are usually replying back to the patient

13. Send Message

Use Case 13: Send Message
Actor: Patient, Nurse, Doctor
Basic Flow: The user after composing a message will click the send message button which will send the message to the messaging interface of the recipient based on the email put down
Data: Message content, Sender, Recipient
Stimulus: The user composes a message and clicks the send message button
Response: The message is sent to the recipient
Comments: Once the message is sent it will be saved in the messaging system of the recipient

14. View Visit History

Use Case 14: View Visit History
Actor: Patient
Basic Flow: The patient accesses their visit history, which includes details of all their previous visits, including the date, the doctor and nurse recommendations, and the summary of the visit
Data: Visit Summary, Visit Date, Doctor/Nurse Recommendations
Stimulus: The patient attempts to view their visit history
Response: Their visit history is displayed
Comments: A visit is sent to the visit history after the doctor is done with tasks, i.e., physical exam and prescribing medication

2. Object Identification and CRC (20). List each object and CRC for each object.

The objects identified from the use cases above are Patient, Nurse, Doctor, Account, MessageManager, Message, and PatientDataRepository.

Class: Patient **Description:** The Patient class will be responsible for facilitating the management of personal and medical information and providing access to the healthcare system's messaging interface.	
Responsibilities:	**Collaborators:**
Create and maintain a user account, including login and logout functions.	Account
Access and manage personal information (e.g., contact information, insurance details, pharmacy information, previous medical history etc.)	Patient Data Repository
Access and view visit history.	Patient Data Repository, Nurse, Doctor
View, compose, send, and receive messages via the healthcare system's messaging interface.	MessageManager, Nurse, Doctor

Class: Nurse **Description:** The Nurse class is responsible for assisting in patient care by recording and providing health care information (e.g., vitals, prescriptions etc.) to the doctor while facilitating communication amongst all parties leveraging the healthcare system's messaging interface.	
Responsibilities:	**Collaborators:**
Login and logout functions.	Account
Record patient vitals (Age, Weight, Height, Body Temperature, Blood Pressure).	Patient Data Repository
Record patient health concerns and known allergies.	Patient Data Repository

Access and update patient information, medical history, and prescription information.	Patient Data Repository, Doctor
View, compose, send, and receive messages to the patient via the healthcare system's messaging interface.	MessageManager, Patient

Class: Doctor **Description:** The Doctor class is responsible for performing patient care activities such as managing patient information, prescribing medication, creating and recording physical exam reports, and communicating results with nurse and patient entities.	
Responsibilities:	**Collaborators:**
Login and logout functions.	Account
Create the physical exam report.	Patient Data Repository
Prescribe medication.	Patient Data Repository
Access and update patient information, medical history, and prescription information.	Patient Data Repository, Nurse
View, compose, send, and receive messages to the patient via the healthcare system's messaging interface.	MessageManager, Patient

Class: Account **Description:** The Account class is responsible for facilitating user interactions with the system, including handling login and logout functions, and managing patient account creation. The Account class interacts with Patient, Nurse, and Doctor classes to ensure secure and efficient access to the system for different user roles.	
Responsibilities:	**Collaborators:**
Login and logout functions.	Patient, Nurse, Doctor
Patient account creation.	Patient

Class: MessageManager **Description:** The MessageManager class is used for managing the messaging functionality in the system with it handling the tasks related to viewing, composing, and sending messages between patients and nurses/doctors.	
Responsibilities:	**Collaborators:**
View Message	Message, Patient, Nurse, Doctor
Compose Message	Message, Patient, Nurse, Doctor
Send Message	Message, Patient, Nurse, Doctor

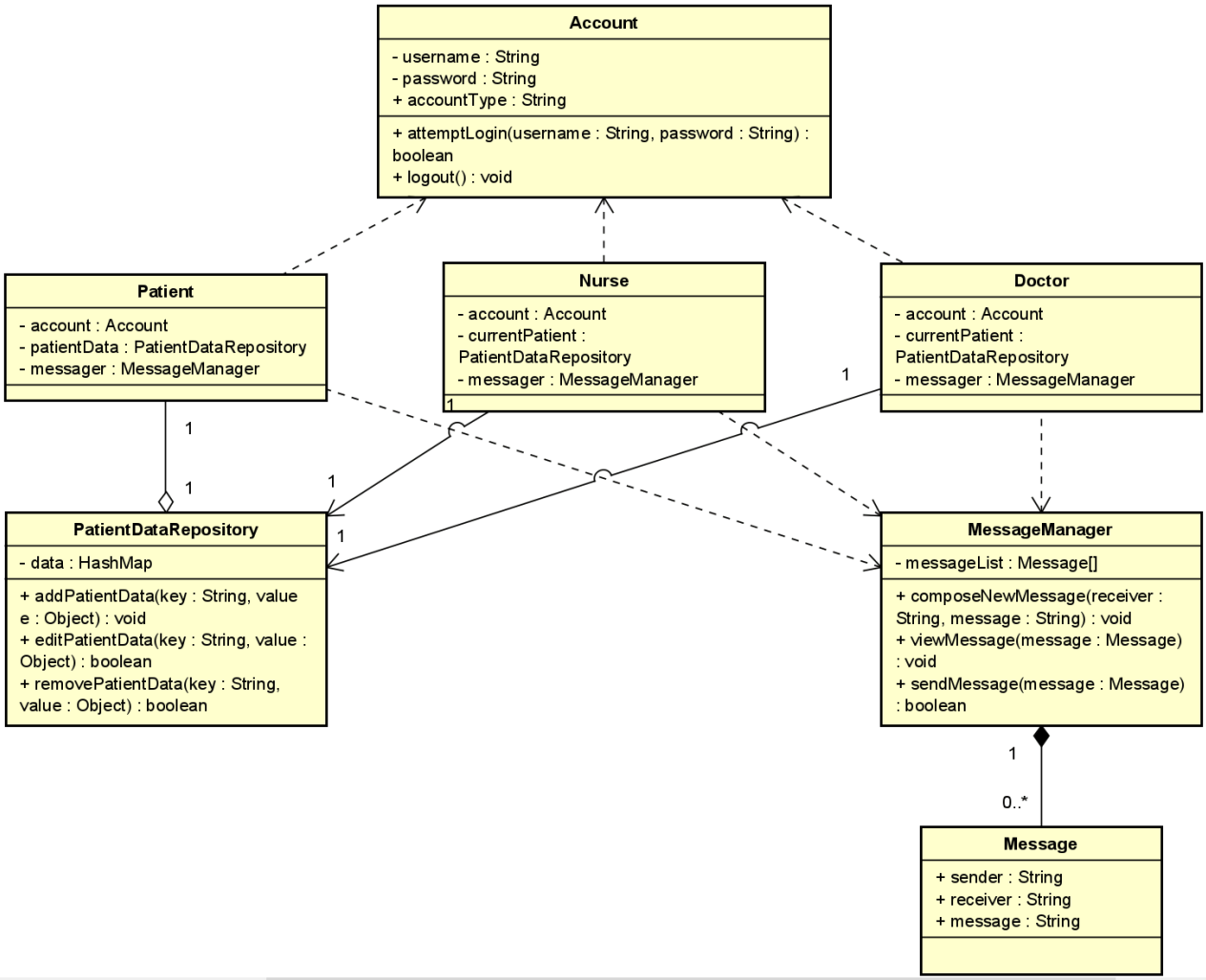
Class: Message **Description:** The message class is used to represent an individual message with it containing information about the message content, the message's sender, and the message's recipient.	
Responsibilities:	**Collaborators:**
Contain Message information, Sender Information, and Recipient Information	MessageManager

Class: Patient Data Repository **Description:** The Patient Data Repository class is designed to securely store and manage comprehensive patient information, including contact details, insurance and pharmacy information, medical and visit histories, vitals, allergies, health concerns, physical exam reports, and prescriptions. Its primary responsibility is to ensure the integrity, confidentiality, and accessibility of all patient data for healthcare delivery purposes.	
Responsibilities:	**Collaborators:**
Store, Edit, and Delete the following patient information: ● contact information, insurance details, pharmacy information, medical history. ● visit history	Patient, Nurse, Doctor

• vitals, allergies, health concerns • physical exam report/summary • prescriptions	

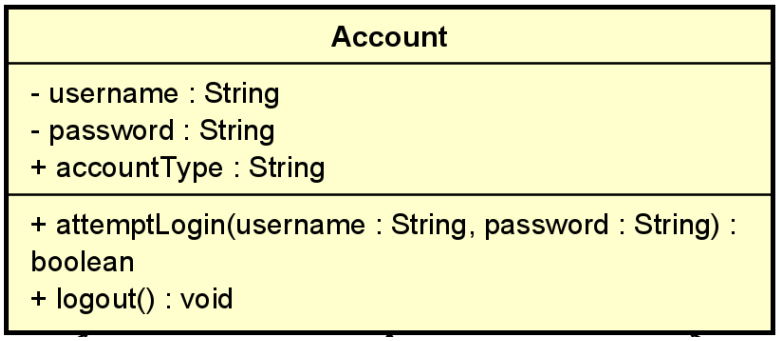
3. Class Diagram (40). Copy and paste your class diagram from Astah. Class in the class diagram need to have attributes, methods and classes need to be connected using appropriate UML class relationships.

Class Diagram

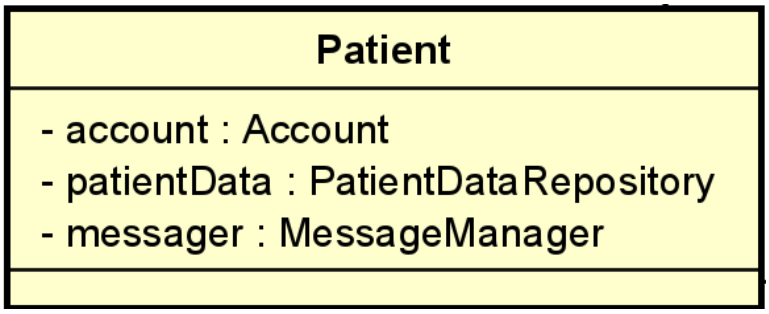


Class Descriptions + Diagrams

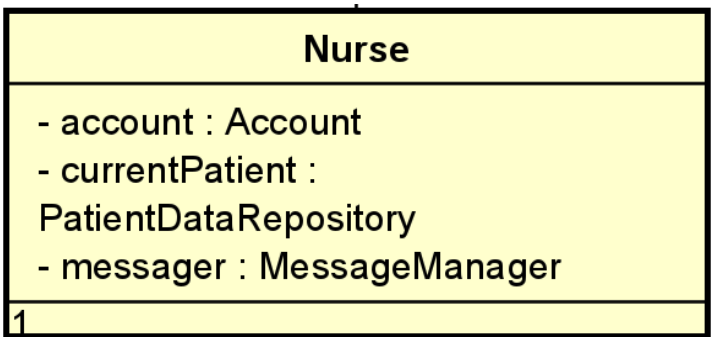
Account: The Account class represents the user's account in the automation system as it helps encapsulate the account information such as the username, password, and account type and allows the user to log in (via the login screen) and access the screen that's corresponding to the account type, with account creation being done when the constructor is called. It also allows the user to log out on any screen and be redirected back to the login screen. In all, this safeguards account information (specifically patient information) and helps maintain system integrity.



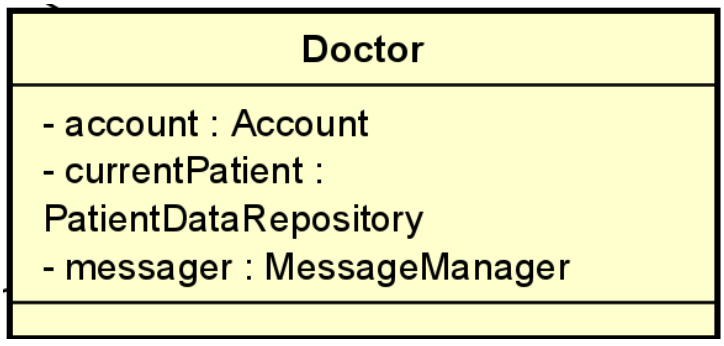
Patient: The Patient class represents the patient in the automation system. It encapsulates patient-related information and functionalities. It contains the account of the patient as well as the patient data where the patient can access and add/edit any of their contact and medical information (previous health issues and medication and immunization history) and view their visit history. The patient also has a messaging interface that will used to communicate to nurses and doctors about medical issues.



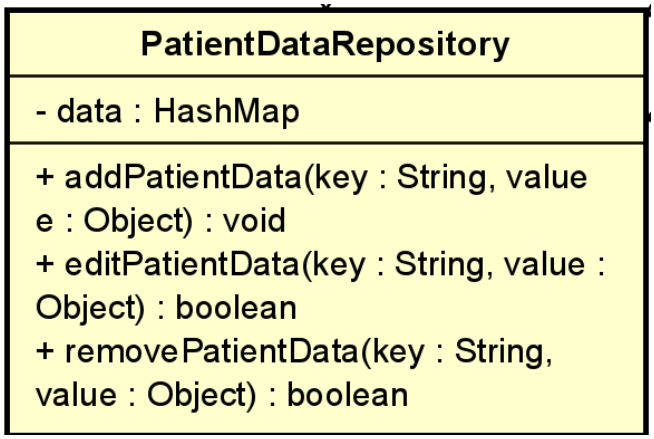
Nurse: The Nurse class represents the nurse in the automation system. It encapsulates nurse-related information and functionality. It contains the account of the nurse and access to the current patient data (previous health issues and medication and immunization history) and has the functionality (through the PatientDataRepository object) to add patient medical information like the patient's vitals (age, weight, height, body temperature, blood pressure), known allergies and any health concerns to the patient data repository. It also has a message interface where the nurse can view and reply to any patient messages sent to them.



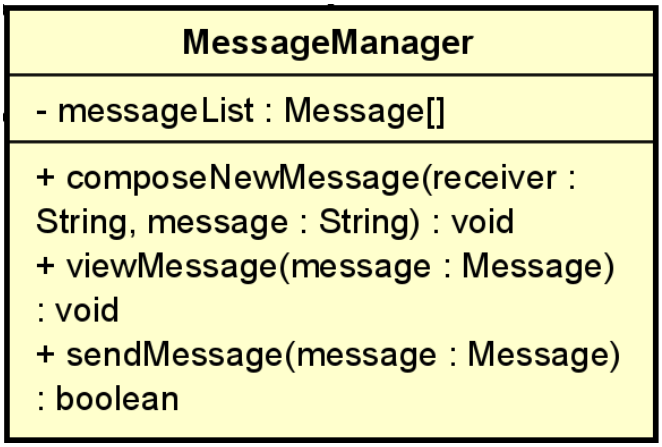
Doctor: The Doctor class represents the doctor in the automation system. It helps encapsulate doctor-related information and functionality. It contains the account information of the doctor and has access to the current patient data (previous health issues and medication and immunization history as well as any information gathered by the nurse) and has the functionality (through the PatientDataRepository object) to record the patient's physical exam results, a summary of the visit and any needed prescriptions all into the patient data repository. It also has a message interface where the doctor can view and reply to any patient messages sent to them.



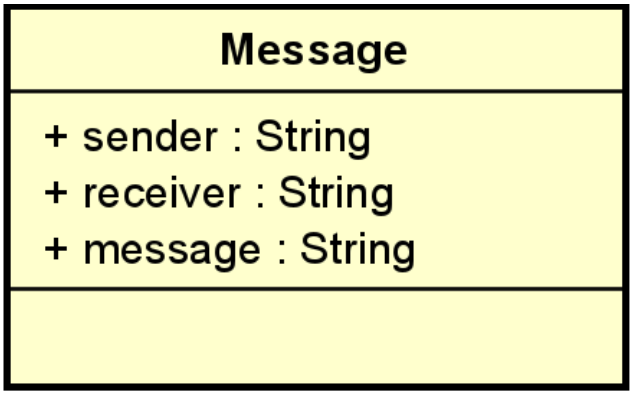
PatientDataRepository: The PatientDataRepository class represents the collection of patient data that's used in the automation system. It securely stores and manages all the patient information in a hashmap and has functionality to add, edit, and delete any specific type of data with that functionality being used by the Patient, Nurse, and Doctor classes to help facilitate efficient data management and retrieval (that includes patient name and contact details, medical history, vitals, physical exam information, prescriptions, and visit history). In all, this stores, edits, and retrieves any data relating to the patient and their visit.



MessageManager: The MessageManager class represents the interface of the messenger system where it contains a list of messages which serves as a repository of all messages exchanged between a patient and a nurse/doctor. It also provides the essential functionality related to composing messages (specifying the message and recipient), viewing a message from the message list, and sending messages to the recipient. The actual message content and body are regulated by the Message class which is used by the MessageManager class to function properly. This class is used by the Patient, Nurse, and Doctor class to facilitate communication between them.



Message: The Message class represents the actual message entity that's used in the system and helps encapsulate the information necessary for message communication. It's composed of the sender, which is who is sending the message, the receiver, which is who will be receiving the message, and the message, which is the content of the message that will be sent out. Together all these plus the MessageManager class form the foundation for message exchanges among patients to nurses/doctors in the automation system.



4. Test Plan for Functional Testing (30)

Test Case Scenarios

1. Valid login
2. Invalid login
3. Logout
4. Record Vitals
5. Record Known Allergies and Health Concerns
6. View Patient Information, Medical History, and Prescriptions
7. Physical Exam Report
8. Prescribe Medication
9. Create Account
10. View and Update Patient Information
11. View Message
12. Compose Message
13. Send Message
14. View Visit History

Test Case Number	Inputs	Expected Output	Actual Output
1	1. User accesses login page 2. User enters User ID and password	User is redirected to a page with access respective to their role	TBD

Test Case Number	Inputs	Expected Output	Actual Output
2	1. User accesses login page 2. User enters incorrect User ID or password	Error message is displayed to user regarding invalid inputs	TBD

Test Case Number	Inputs	Expected Output	Actual Output
3	1. User clicks logout button	User is logged out and changes made during the user being logged in are saved given they pressed save before logging out	TBD

Test Case Number	Inputs	Expected Output	Actual Output
4	1. Nurse confirms patient is over 12 years old 2. Nurse records weight, height, body temperature, and blood pressure.	Vitals are recorded and saved in the system	TBD

Test Case Number	Inputs	Expected Output	Actual Output
5	1. Nurse records patient known allergies and health concerns		TBD

Test Case Number	Inputs	Expected Output	Actual Output
6	1. Nurse and Doctor select a Patient to view Patient Information, including medical history and prescriptions	Nurse and Doctor gain access Patient Information, including medical history and prescriptions	TBD

Test Case Number	Inputs	Expected Output	Actual Output
7	1. Physical Exam data is entered by doctor during visit	Findings and data are recorded in the system for the patient being seen	TBD

Test Case Number	Inputs	Expected Output	Actual Output
8	1. Doctor assesses the patient's condition and treatment options. 2. Doctor prescribes a medication for patient condition	Prescription is sent to the pharmacy to be filled and record of prescription is saved for patients under medications.	TBD

Test Case Number	Inputs	Expected Output	Actual Output
9	1. Patient enters patient used ID, password, name and date of birth	Patient account is created and save in the system	TBD

Test Case Number	Inputs	Expected Output	Actual Output
10	1. Patients are logged in and can edit their patient information such as contact info, insurance details, pharmacy location and medical history.	Updated patient information is saved in the system	TBD

Test Case Number	Inputs	Expected Output	Actual Output
11	1. User enters messaging system	Received messages are displayed to user	TBD

Test Case Number	Inputs	Expected Output	Actual Output
12	1. User selects to compose a new message or reply to a message previously received	A message box is displayed to the user, so that they can enter their text	TBD

Test Case Number	Inputs	Expected Output	Actual Output
13	1. User presses send on the composed message	Message is sent to recipient	TBD

Test Case Number	Inputs	Expected Output	Actual Output
14	1. User navigates to visit history	The patients visit history is displayed to the user	TBD

Code Explanation Video:
https://drive.google.com/file/d/1qK8-IWavGnbk1pMSRSpglBGwwN1B8C1e/view?usp=sharing

Credit Sheet:

Team Member Name	Contributions
Jesse Sims	Object Identification and CRC Diagrams
Mathm Alkaabi	Use Case Descriptions, Use Case Diagram, Class Descriptions
Christopher Chou	Class Diagram, Prototype Code
Karisma Liddell	Test Plan
Leo Wilson	Prototype Code, Explanation Video