
CSCE5430: Software Engineering

Project Workbook

Fall 2022

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

Revision History

Date	Issue	Description	Author
September 6, 2022	Project1-Phase1	Adding Glossary (Question 4)	Group 11-Section 007
September 6, 2022	Project1-Phase1	Adding system actors (Question 6.1)	Group 11-Section 007
September 6, 2022	Project1-Phase1	Adding system use cases (Question 7.1)	Group 11-Section 007
September 6, 2022	Project1-Phase1	Adding use case diagram (Question 8.1)	Group 11-Section 007
September 25, 2022	Project1-Phase2	Produce a list of candidate classes	Group 11-Section 007
September 25, 2022	Project1-Phase2	Filtering the list of candidate classes	Group 11-Section 007
September 25, 2022	Project1-Phase2	Produce a potential class diagrams	Group 11-Section 007
September 25, 2022	Project1-Phase2	Identified potential class attributes	Group 11-Section 007
September 25, 2022	Project1-Phase2	Revised the diagrams	Group 11-Section 007
September 25, 2022	Project1-Phase2	Update the glossary	Group 11-Section 007
October 20,2022	Project1-Phase3	Potential iCare Sequence Diagram	Group 11-Section 007
October 20,2022	Project1-Phase3	Class and it's operations	Group 11-Section 007
October 20,2022	Project1-Phase3	State Chart Diagram	Group 11-Section 007
October 20,2022	Project1-Phase3	State Chart Diagram Explanation	Group 11-Section 007

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

Table of Contents

<u>ICARE SYSTEM GLOSSARY</u>	<u>4</u>
<u>1.1 INTRODUCTION</u>	<u>4</u>
<u>1.2 GLOSSARY</u>	<u>4</u>
<u>ICARE SYSTEM ACTORS</u>	<u>7</u>
<u>ICARE SYSTEM USE CASES</u>	<u>8</u>
<u>ICARE SYSTEM USE CASE DIAGRAM</u>	<u>10</u>
<u>LIST OF CANDIDATE CLASSES</u>	<u>11</u>
<u>POTENTIAL ICARE CLASSES</u>	<u>12</u>
<u>POTENTIAL ICARE CLASS DIAGRAMS (ENTITY CLASSES ONLY)</u>	<u>16</u>
<u>REVISED ICARE UML CLASS DIAGRAM</u>	<u>19</u>
<u>POTENTIAL ICARE SEQUENCE DIAGRAM</u>	<u>25</u>
<u>CLASS AND IT'S OPERATIONS</u>	<u>27</u>
<u>STATE CHART DIAGRAM</u>	<u>31</u>
<u>STATE CHART DIAGRAM EXPLANATION</u>	<u>32</u>

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

iCARE System Glossary

Introduction

This document is used to define terminology specific to the problem domain, explaining terms, which may be unfamiliar to the reader of the use-case descriptions or other project documents. Often, this document can be used as an informal *data dictionary*, capturing data definitions so that use-case descriptions and other project documents can focus on what the system must do with the information.

Glossary

The glossary contains the working definitions for the key concepts in the iCARE System.

Term	definition
Authentication	Authentication is the process of determining whether someone or something is, in fact, who or what it is declared to be.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

User account	A user is a person who uses iCARE system. Each user should have an account in order to be identified by iCARE. To login to an account, a user is typically required to authenticate himself/herself with a password or other credentials for the purposes of accounting, security, logging, and resource management.
User friendly interface	It is a computer application screen that makes it easier for novices to use this application. Menu-driven programs, for example, are considered more user-friendly than command-driven systems. Graphical user interfaces (GUIs) are also considered user-friendly.
Physicians	A physician is a professional who practices medicine, which is concerned with promoting, maintaining or restoring human health through the study, diagnosis, and treatment of disease, injury, and other physical and mental impairments.
Digital ink	Refers to technology that digitally represents handwriting in its natural form. In a typical digital ink system, a digitizer is laid under or over an LCD screen to create an electromagnetic field that can capture the movement of a special-purpose pen, or stylus, and record the movement on the LCD screen. The effect is like writing on paper with liquid ink. The recorded handwriting can then be saved as handwriting or converted to typewritten text using handwriting recognition technology.
UI component	UI stands for User Interface. It is a junction between a user and a computer program. An interface is a set of commands or menus through which a user communicates with a program.
PDF Document	Portable Document Format (PDF) is a file format used to present and exchange documents reliably, independent of software, hardware, or operating system.
Pen-based document	Any document that is created using tablet and stylus as pointing devices in addition to handwriting recognition capability.
Windows-based desktop computers	A desktop computer is a personal computer powered by Microsoft Windows operating system in a form intended for regular use at a single location desk/table due to its size and power requirements.
Tablet PCs	A tablet PC, commonly shortened to tablet, is a mobile computer with a touchscreen display, circuitry, and battery in a single device.
Sequence diagram	A diagram which describes dynamic behavior of objects by showing the sequence of interactions among the objects in the use case.
State chart diagram	A diagram which describes dynamic behavior of a single reactive object by showing its transitions among states upon occurrence of events in the use case.
UML diagram	Unified Modeling Language notation is an Object Oriented software modeling approach.
State	Situation of an object where it satisfies some condition, performs some activity or wait for some event to occur.
Event	A specific occurrence of a stimulus in time and space that triggers a state transition.
Transition	Movement from one state to another state in response to an event.
Operation	A method triggered by a class which does some task or action.
PatientID	This indicates the unique number assigned to each patient in iCare system.
WorkerID	This indicates the unique number assigned to each worker in iCare system.
Username	This specifies the username created for each iCare user by administrator.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

Password	This is string with alphanumeric characters which is unique for each user .This is used to validate a user against his username.
MyBoard	MyBoard in iCare indicates a feature where an iCare worker can view his/her assigned patients' detailed information in one place.
UserID	This indicates the unique number assigned to each user (Doctor/Nurse/admin)in iCare system.
*Form	This indicates a boundary object which acts as an interface between actor and controller in each feature use case.
*Controller	This is a controller class object which does the actual control tasks in each feature use case.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

iCARE System Actors

The first useful step to analyze the system functionality is to look in the problem statement at the things that interact with the system. In UML use case analysis, these external things are called **actors**. Actors are identified based on the following:

- Actors are always external to the system – they are therefore outside our control.
- Actors interact directly with the system.
- Actors represent roles that people and things play in relation to the system, not specific people or specific things.
- Each actor has a unique name and description.

Actor	Description
iCARE User	A general user interacting with iCARE system. This general user can be a doctor, a nurse, or the system administrator. We will use the name “worker” to refer to a doctor or a nurse. In order to this general user to use iCARE, he/she needs to successfully login to the system.
iCARE Admin	A special type of iCARE User who is responsible for ensuring around-the-clock technical maintenance and support. This normally includes maintaining workers accounts and the connectivity issues with the drugs management system.
iCARE Worker	A special type of iCARE User who wish to use iCARE system to automate the paper-based processes and to speed up its data entry related tasks, i.e., doctor or nurse.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

iCARE System Use cases

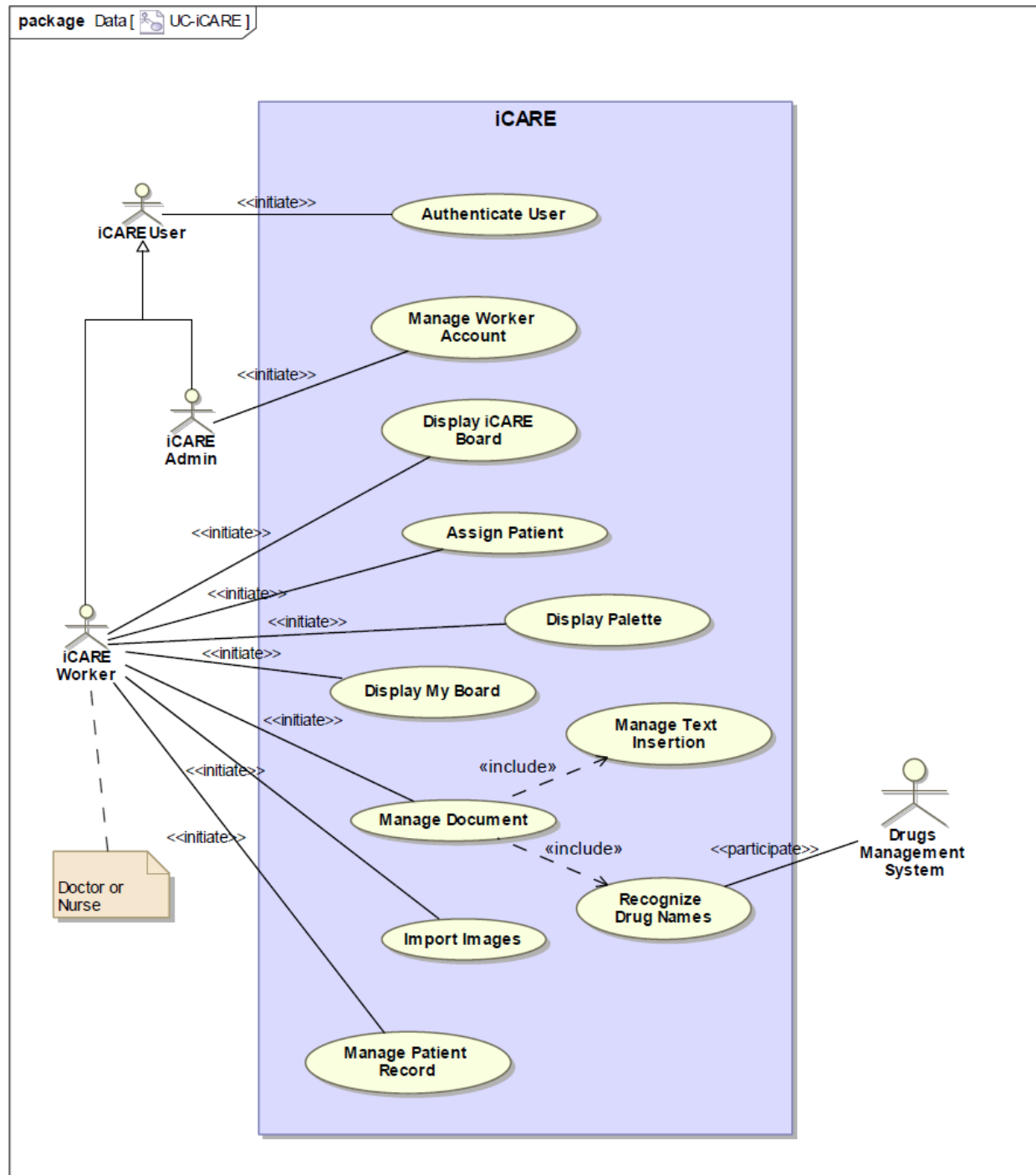
Use Case	Description
Authenticate User	iCARE shall provide a functionality to authenticate its user by using a pen only. The user taps his name and can "ink" his password in the box. The user can of course also type (typically using the on-screen keyboard) into the box if desired. Once the user has logged in, the set of controls dynamically changes to match the permissions of this account. Note that, each user should be successfully authenticated before using any of iCARE functionalities.
Manage Worker Account	iCARE shall provide the functionality for the system administrator to create user accounts for doctors and nurses to use iCARE according to a set of access controls predefined for each user type. The administrator account itself is shipped with the system.
Display iCARE Board	iCARE shall provide the functionality for its workers to show a list of the existing patients corresponding to the geographic unit view.
Assign Patient	iCARE shall provide the ability for its workers to browse through the provided list of patients exist in the iCARE Board, select one or more patients and assign himself to them.
Display Palette	Display Palette UC shall provide a graphical user interface GUI to help simplify the choosing of documents among large number of potential documents. It's one tablet screen in size so the user can see all choices in one view which consists of a series of buttons for the user to tap on. The Palette shall be able to manage larger number of document choices than can fit on one screen.
Display My Board	iCARE shall provide the functionality for its workers to show only the active patients list of the logged on worker, and hence My Board view can be different for doctors and nurses.
Manage Document	<p>iCARE shall allow the workers to create a new document. It is a text based document and the works shall be able to modify its contents.</p> <p>This document will be saved in a PDF format and will be tagged with the patient's a metadata. This metadata includes Patient ID, Date of creation/imported, the user ID of the creator/importer, Modification date, the user ID of the modifier, Brief description.</p> <p>This UC includes two UCs Manage Text Insertion and Recognize Drug names.</p>
Manage Text Insertion	This is a supplier UC for the Manage Document UC that shall allow the workers to insert different types of text into the new and/or the old documents created by the base UC. This text can be any paragraph that describes treatments, drug orders, or prescriptions.
Recognize Drug Names	This is a supplier UC for the Mange Document UC that shall allow iCARE to recognize generic and brand drug names during the text insertion process to help auto completion capability. This information will be extracted from a common repository managed by the Drugs Management System.
Import Images	This UC provides a tool to import images using a scanner or by browsing the internal stored image files into the application. These imported files will then be converted to PDFs, to become a part of the iCARE documents repository.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

Manage Patient Record	<p>This UC shall allow the workers at iCARE to maintain (add, modify) patient records. Patient's record includes (but not limited to) the following information: ID, name, address, date of birth, height, weight, bloodGroup, BedID, Treatment area. Each patient record will be associated with zero or more treatment records and a set of digital documents.</p>
-----------------------	--

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

iCARE System Use case Diagram



CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

List of Candidate Classes

pen	images
user	scanner
his name	application
his password	PDFs
box	documents
set of controls	metadata
account	Patient ID
iCARE Board	Date of creation/imported
My Board	user ID
patient	the creator/importer
the geographic unit	Modification date
Worker	Brief description
Palette	administrator
documents	doctors
tablet	nurses
screen	records
text	Treatment area
treatments	treatment records
drug orders	digital documents
prescriptions	

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

Potential iCARE Classes

Class name	Type	Brief Description
UserAuthenticationForm	Boundary	The UserAuthenticationForm will be displayed by the iCARE system asking the user to enter its username and password to be authenticated.
iCAREUser	Entity	The common information of the iCARE works and the iCARE admin such as User ID and User name will be maintained by this entity class.
iCAREWorker	Entity	iCAREWorker is a specification class inherits the iCAREUser class and add specific information about the worker such as the profession name and type.
iCAREAdmin	Entity	iCAREAdmin is a specification class inherits the iCAREUser class and add specific information about the system administrator such as the starting and ending date for the admin responsibility.
UserPassword	Entity	The UserPassword class store the iCARE user account information that include a password related information like an encrypted password of a user, the day the password expires, whether or not the password has to be changed from time to time, the minimum and maximum time between password changes, etc.
UserAuthenticationController	Control	A control class to accept and validate the iCARE username and its corresponding password. It takes the decision whether the iCARE user is allowed to access the iCARE services or not.
ManageAccountsForm	Boundary	iCARE displays the ManageAccountsForm when the system admin initiate the process for adding/modifying iCARE user account. This form will help the admin to enter the user general information like name and addresses and the secret information like password and the associated access roles.
UserRole	Entity	UserRole class maintains a list of all available iCARE access roles and the related permissions. For example, System administrator who has a privilege to create/modify user accounts, Physician who has a privilege for all iCARE functionality for doctors, or Nurse who has the privilege to access all nurses' duties at iCARE.
ManageAccountsController	Control	A control class to create and store the new iCARE users' information. It also determines whether the entered username has been used by other user or not, it encrypts the password before storing, and finally assign a specific system access role to the user.
iCAREBoardForm	Boundary	A boundary class to define a graphical user interface GUI elements that display a list of all patients at iCARE admitted to the current unit location.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

PatientRecord	Entity	The PatientRecord class defines the fundamental information of the patient at iCARE. For example, ID, name, address, etc.
GeoCodes	Entity	GeoCodes is a class holding the attributes that will be used as a look-up dictionary for the iCARE units' locations.
iCAREBoardController	Control	This class defines the attributes and the methods needed to retrieve the information of all patients at iCARE in the current location maintained by the PatientRecord class and display it through the boundary class iCAREBoardForm.
AssignPatientForm	Boundary	AssignPatientForm is a boundary class that show all admitted patients at iCARE and give the worker the ability to assign one or a group of patients to him/herself.
TreatmentRecord	Entity	This entity class acts as an association class in order to hold the common data between the patients and the workers. The patients and the workers are linked together by a many-to-many relationship because one worker may have many patients and one patient may be treated by many workers. This common data is simply the treatments information.
AssignPatientController	Control	AssignPatientController class displays a list of all patients and response to the workers interactions to assign one or more patients to this work.
DisplayPalette	Boundary	This class defines a GUI window that show the available iCARE documents and help the interested worker to choose a document he or she wish to work on. This window fits in one tablet screen size so the worker can see all choices in one view which consists of a series of buttons to facilitate such purpose.
DocumentMetadata	Entity	<p>This entity class will be used to store the information required to manage iCARE PDF files. This information includes: Patient ID, Date of creation/imported, the user ID of the creator/importer, Modification date, the user ID of the modifier, Brief description about the PDF file. Note that, the PDF file contents will be saved on the local storage and we just need to link these files with the patient IDs and the worker IDs so that the works can access the content of these PDFs easily.</p> <p>As iCARE provides the functionality to insert texts into these PDFs, these texts will be achieved in a separate entity class called "ModificationHistory" as described below.</p>
DisplayPaletteController	Control	This class read all available iCARE records achieved in the DocumentMetadata entity class and group them in a way that help organize and display them in a usable screen size lists.
DisplayMyBoard	Boundary	DisplayMyBoard is an application window that shows only the active patients list of the logged on doctor or nurse.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

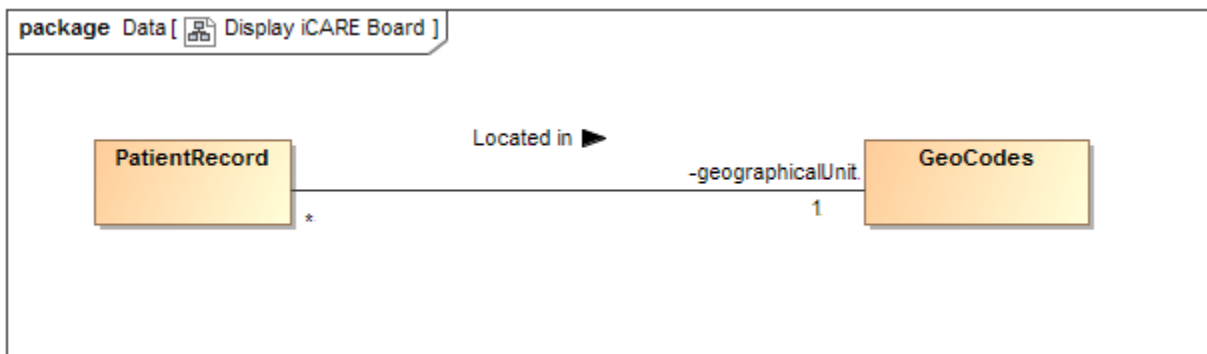
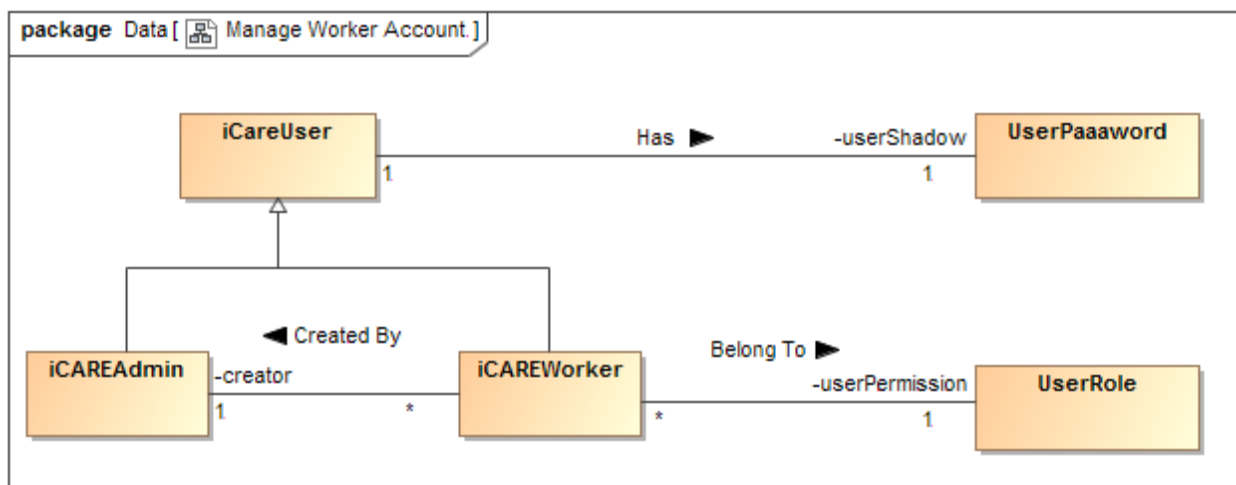
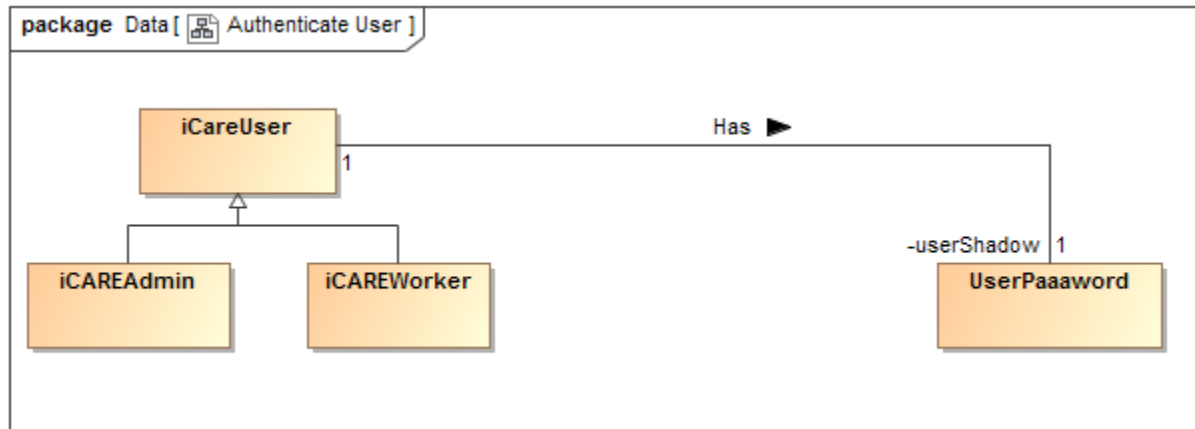
DisplayMyBoard Controller	Control	This control class defines the functionality that is needed to let the DisplayMyBoard boundary class to show the active patients list related to the logged on worker.
ManageDocumentForm	Boundary	ManageDocumentForm is a class that defines the attributes and methods needed to create or modify the iCARE documents.
DocumentMetadata	Entity	<p>This entity class will be used to store the information required to manage iCARE PDF files. This information includes: Patient ID, Date of creation/imported, the user ID of the creator/importer, Modification date, the user ID of the modifier, Brief description about the PDF file. Note that, the PDF file contents will be saved on the local storage and we just need to link these files with the patient IDs and the worker IDs so that the works can access the content of these PDFs easily.</p> <p>As iCARE provides the functionality to insert texts into these PDFs, these texts will be achieved in a separate entity class called “ModificationHistory” as described below.</p>
ModificationHistory	Entity	<p>Any new text addition made on any PDF document by any workers need to be saved using this entity class. This information include the modification date and the modification description. This modification description can be any paragraph that describes treatments, drug orders, or prescriptions to be added to the original PDF.</p> <p>Note that, each PDF document may have one or more instance of this class as the information of the PDF document being created for the first time need also be achieved.</p> <p>Each instance of this class “ModificationHistory” should hold information about its creator (the worker).</p>
DrugsDictionary	Entity	An entity class that manage and control the access to the external Drugs Management System. It provides read only access to the database of this external system.
ManageDocumentController	Control	This control class helps the workers to control the creation process of a new document. The original contents of the document will be save in a PDF format and will be linked to the Document Metadata. This UC includes two UCs Manage Text Insertion and Recognize Drug names.
ImportImageWindow	Boundary	This boundary class defines the user interface controls that help the worker to scan or browse the patient image-based documents.
ImportImageController	Control	This class controls the process of importing images using a scanner or by browsing the internal stored image files into the application. This control class will then convert these imported images into PDFs, to become a part of the iCARE documents repository.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

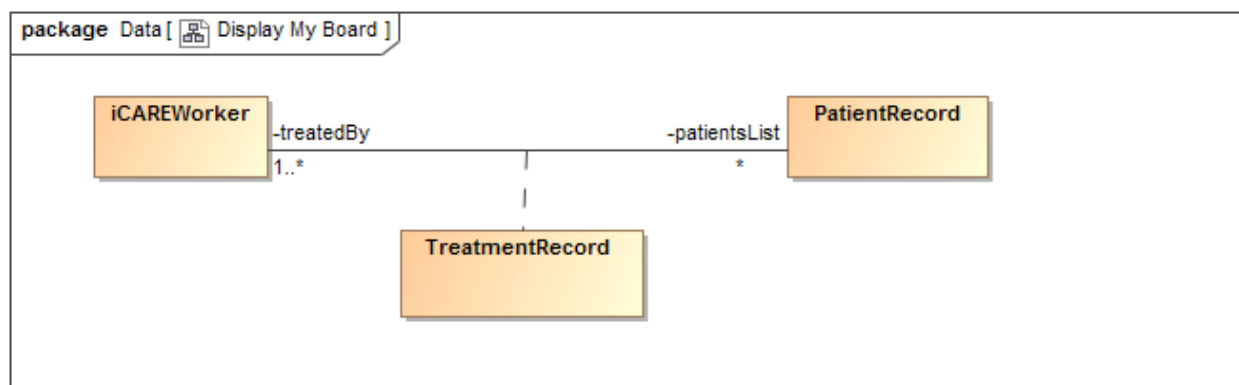
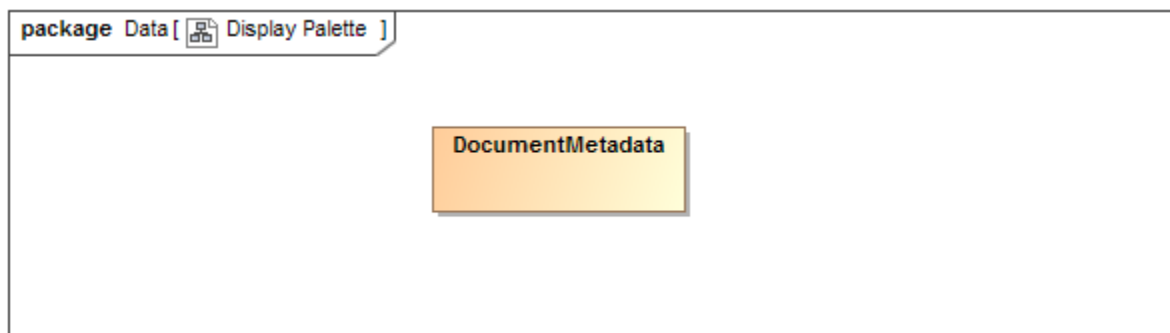
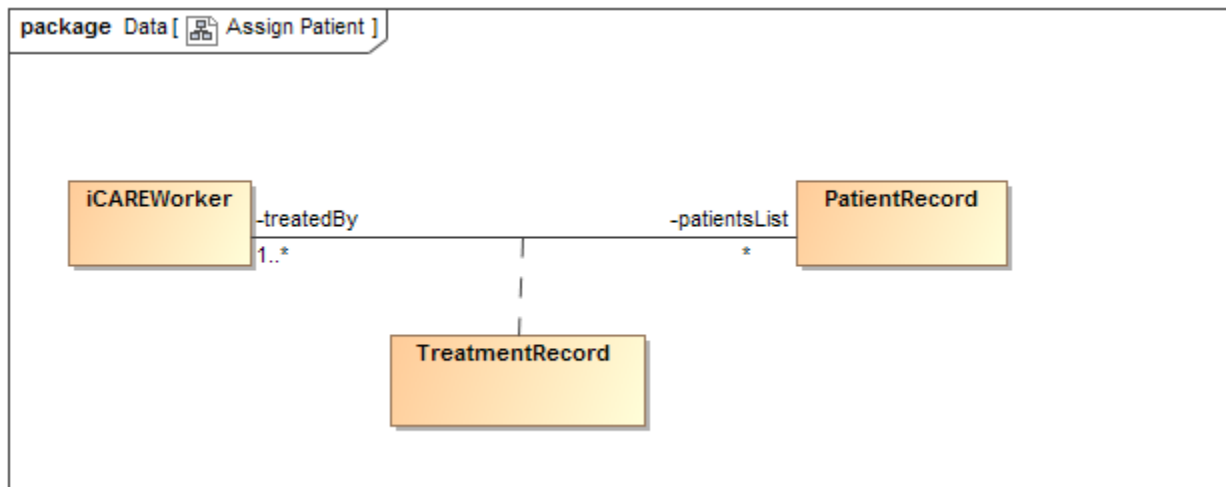
ManagePatientRecordForm	Boundary	iCARE provides their workers with a form represented by the ManagePatientRecordForm boundary class by which the worker can fill and/or modify his/her patients information.
ManagePatientRecordController	Control	This control class defines the method that allow the workers at iCARE to maintain (add, modify) patient records. Patient's record includes (but not limited to) the following information: ID, name, address, date of birth, height, weight, bloodGroup, BedID, Treatment area. Each patient record will be associated with zero or more treatment records and a set of digital documents.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

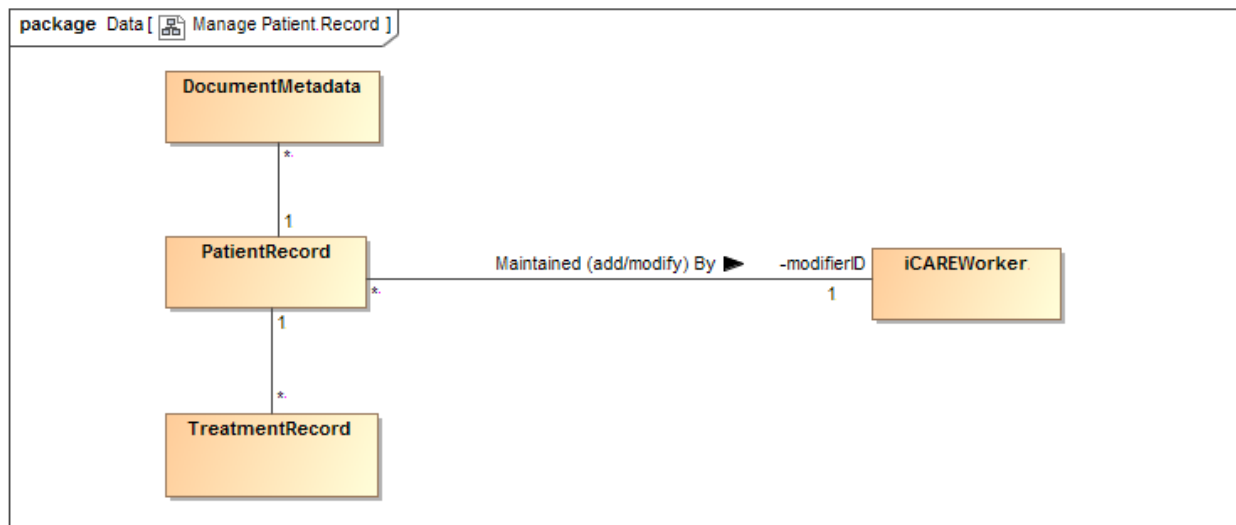
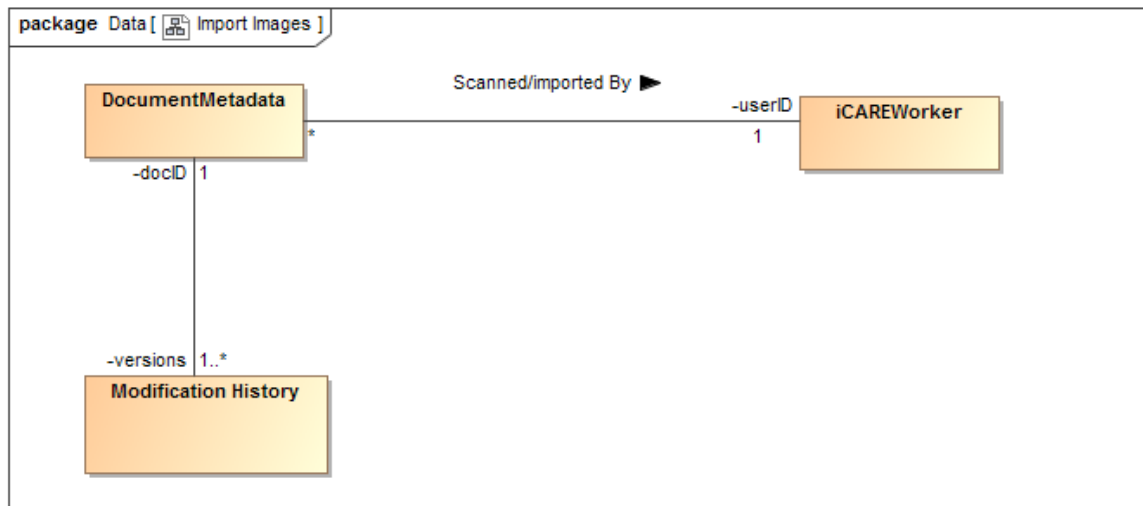
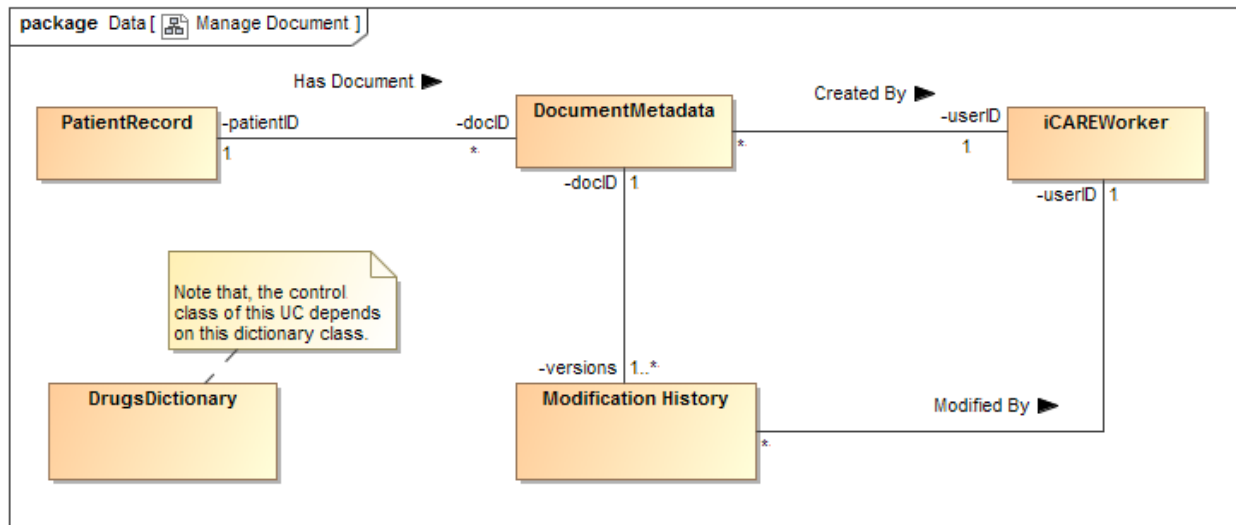
Potential iCARE class diagrams (entity classes only)



CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	



CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	



CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

Revised iCARE UML class diagram

1. iCAREUser Class

Attribute name	Type	Brief Description
ID	String	This is the primary key of the iCARE user info class. Every registered iCARE user is assigned a unique user ID.
name	String	The name attribute stores the full name of the iCARE user.

2. iCAREWorker Class

Attribute name	Type	Brief Description
profession	String	The profession attribute store the worker profession name.

3. iCAREAdmin Class

Attribute name	Type	Brief Description
adminEmail	String	The adminEmail attribute stores the administrator email address.
dateHired	Date	The date when the system administrator is hired by iCARE.
dateFinished	Date	The date when the system administrator left the iCARE.

4. UserPassword Class

Attribute name	Type	Brief Description
ID	String	This is the primary key of the UserPassword class. The value of this attribute need to be the same as the value corresponding customer.
userName	String	The name attribute stores the use account name of the customers.
encryptedPassword	String	The userEncryptedPassword attribute stores the encrypted version of the customer password. A salted hash will be used in order to encrypt the password.
passwordExpiryTime	Integer	From time to time the system requires the customer to change the password. The passwordExpiryTime attribute stores this period of time.
userAccountExpiryDate	Date	The userAccountExpiryDate attribute stores the expiry date of the customer account if any.

5. UserRole Class

Attribute name	Type	Brief Description
----------------	------	-------------------

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

ID	String	This is the primary key of the UserRole class. The value of this attribute distinguishes one role from the other.
roleName	String	The roleName attribute stores the iCARE access roles and the related permissions. Example, System administrator who has a privilege to create/modify user accounts, Physician who has a privilege for all iCARE functionality for doctors, or Nurse who has the privilege to access all nurses' duties at iCARE.

6. GeoCodes Class

Attribute name	Type	Brief Description
ID	String	This is the primary key of the GeoCodes class. The value of this attribute distinguishes one geographical unit from the other.
description	String	The description attribute stores the location and characteristics of the iCARE units.

7. PatientRecord Class

Attribute name	Type	Brief Description
ID	String	This is the primary key of the patient info class. Every admitted patient is assigned a unique ID.
name	String	The name attribute stores the full name of the patient.
address	String	The address attribute stores the address of the iCARE patient.
dateOfBirth	Date	The DOB attribute stores the date of birth of the patient.
height	double	The height attribute stores the patient height in inches.
weight	double	The weight attribute stores the patient weight in pounds.
bloodGroup	String	The bloodGroup attributes store the classification of patient's blood. Example: A, B, AB and O, with +, -
bedID	String	The bedID attribute stores the patient bed ID
treatmentArea	String	The treatmentArea attribute stores the patient treatment unit or department.

8. TreatmentRecord Class

Attribute name	Type	Brief Description
treatmentID	String	This is the primary key of the treatment record class. The value of this attribute distinguishes one treatment from another.
description	String	The description attribute stores the detail worker's recommendation and treatment.
treatmentDate	Date	The date and time of the treatment.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

9. DocumentMetadata Class

Attribute name	Type	Brief Description
docID	String	This is the primary key of the document metadata class.
docName	String	The docName attribute stores the name and he title of the PDF document.
dateOfCreation	Date	The date and time of the document.

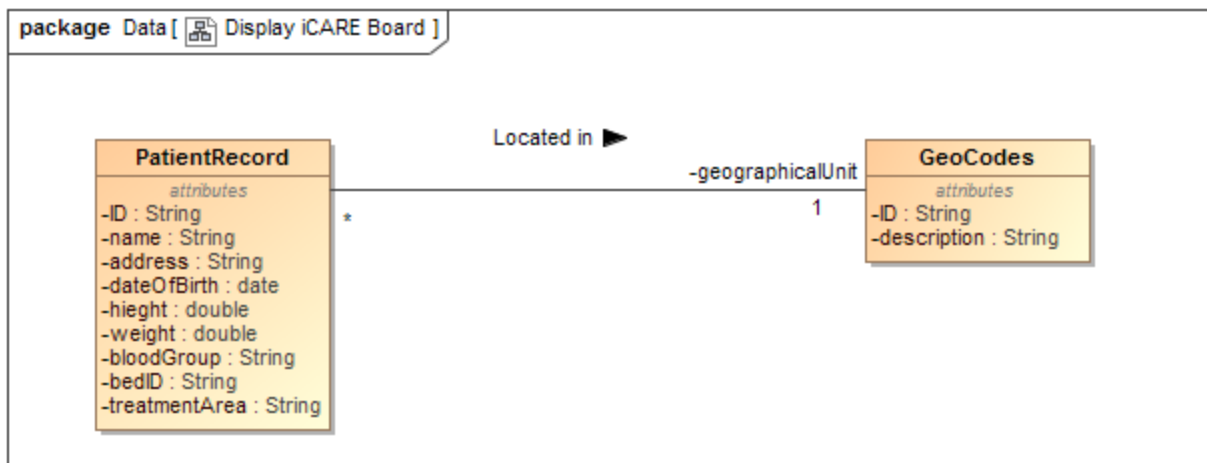
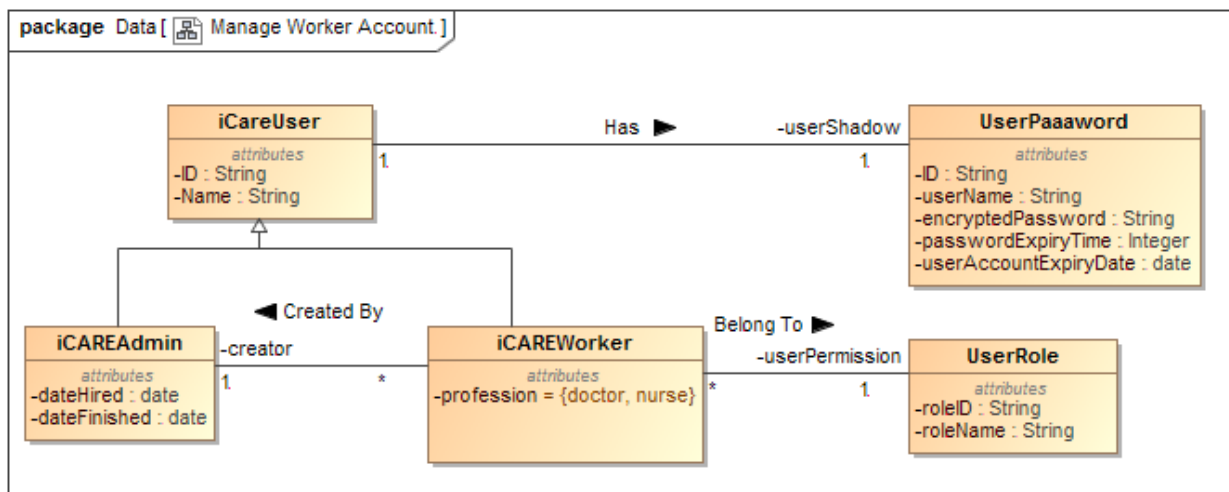
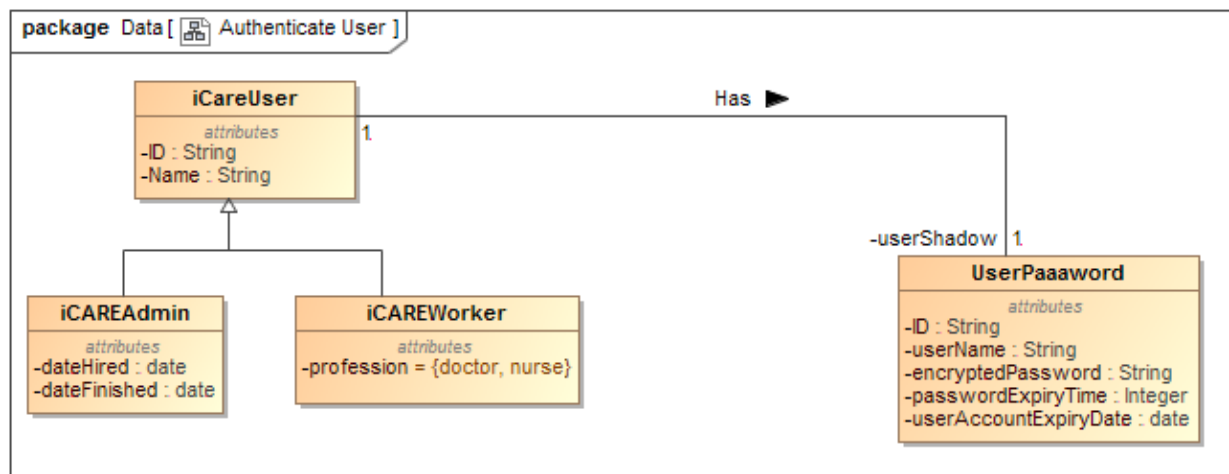
10. ModificationHistory Class

Attribute name	Type	Brief Description
dateOfModification	Date	The date and time of the document modification.
description	String	The description attribute stores the detail worker's modification made on the document.

11. DrugsDictionary Class

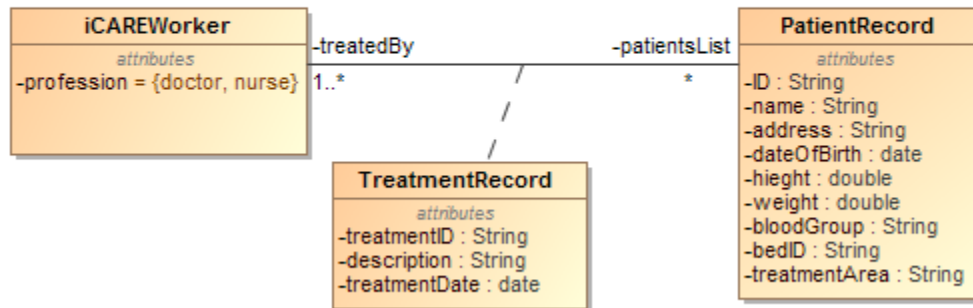
Attribute name	Type	Brief Description
ID	String	This is the primary key of the drugs dictionary class.
name	String	The name of the drugs to be used in the auto completion facility.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

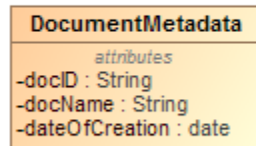


CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

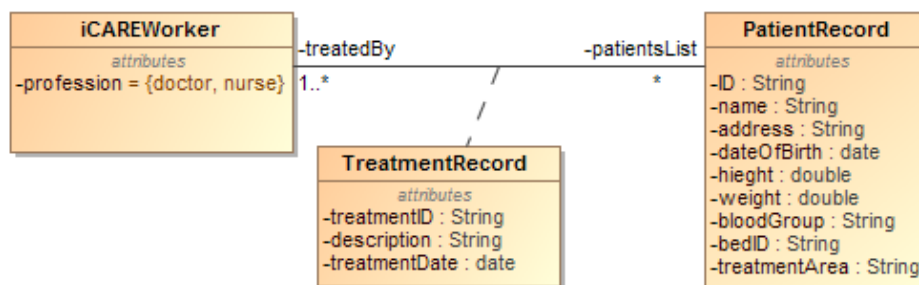
package Data [ Assign Patient]



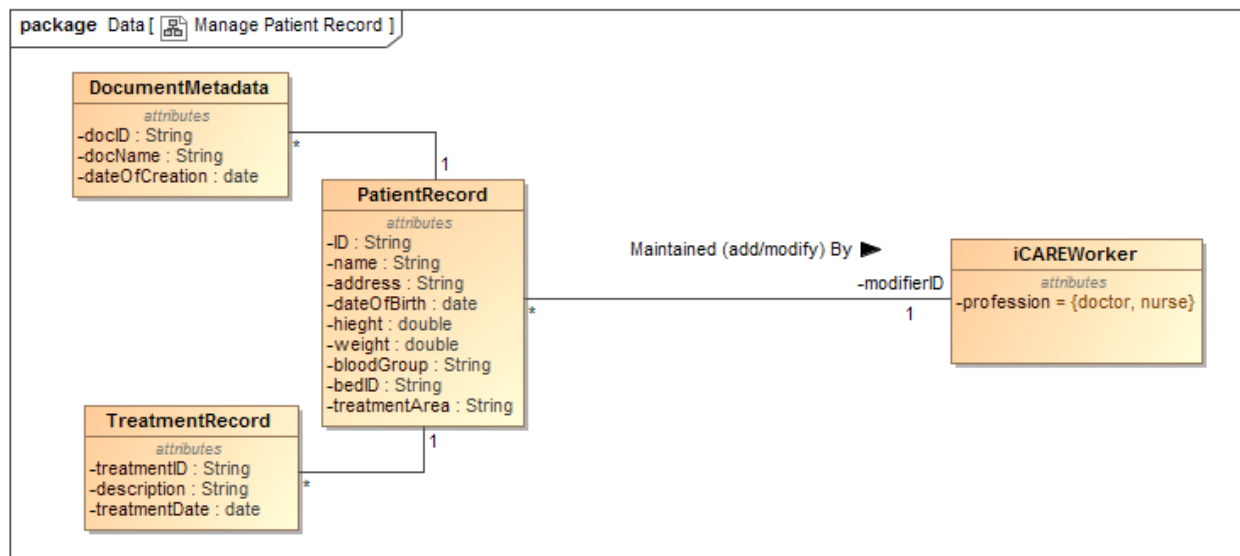
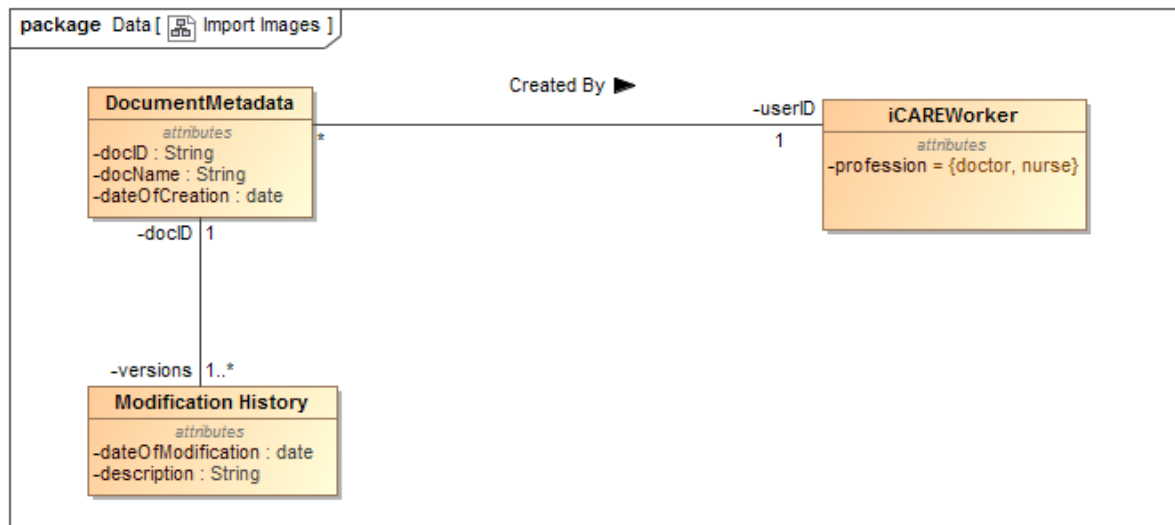
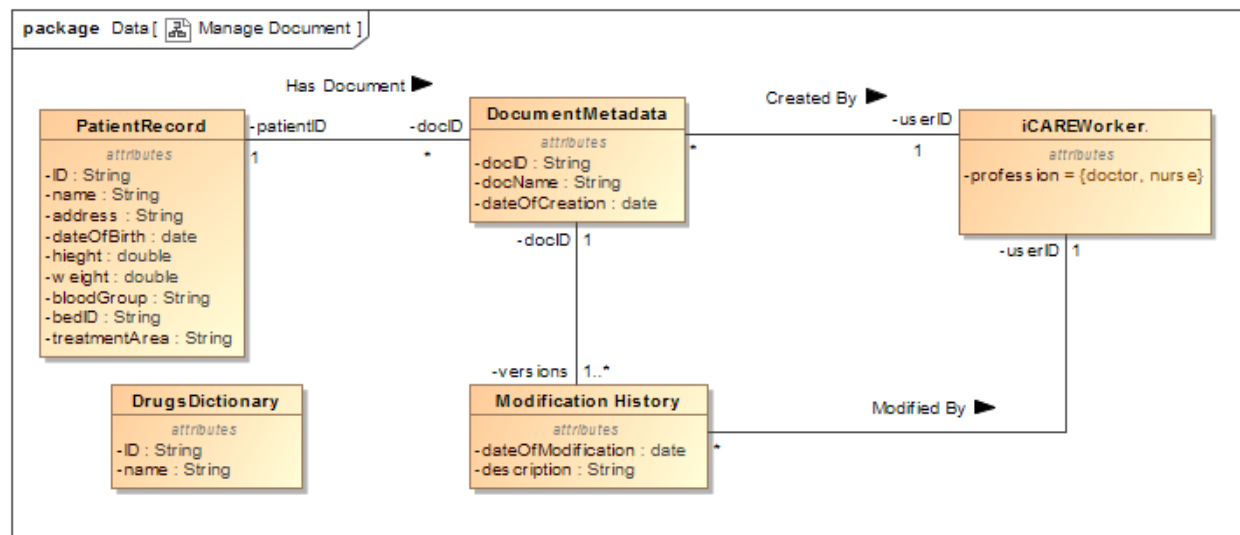
package Data [ Display Palette]



package Data [ Display My Board]

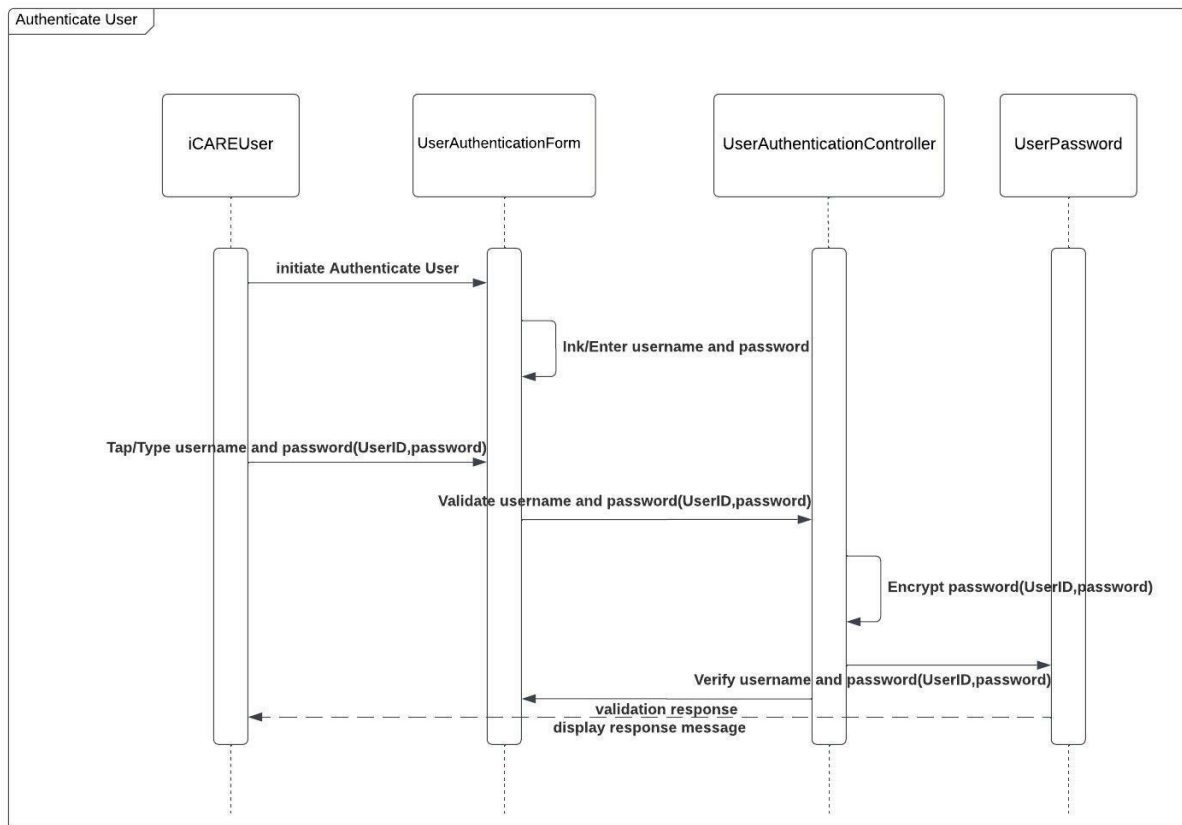


CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

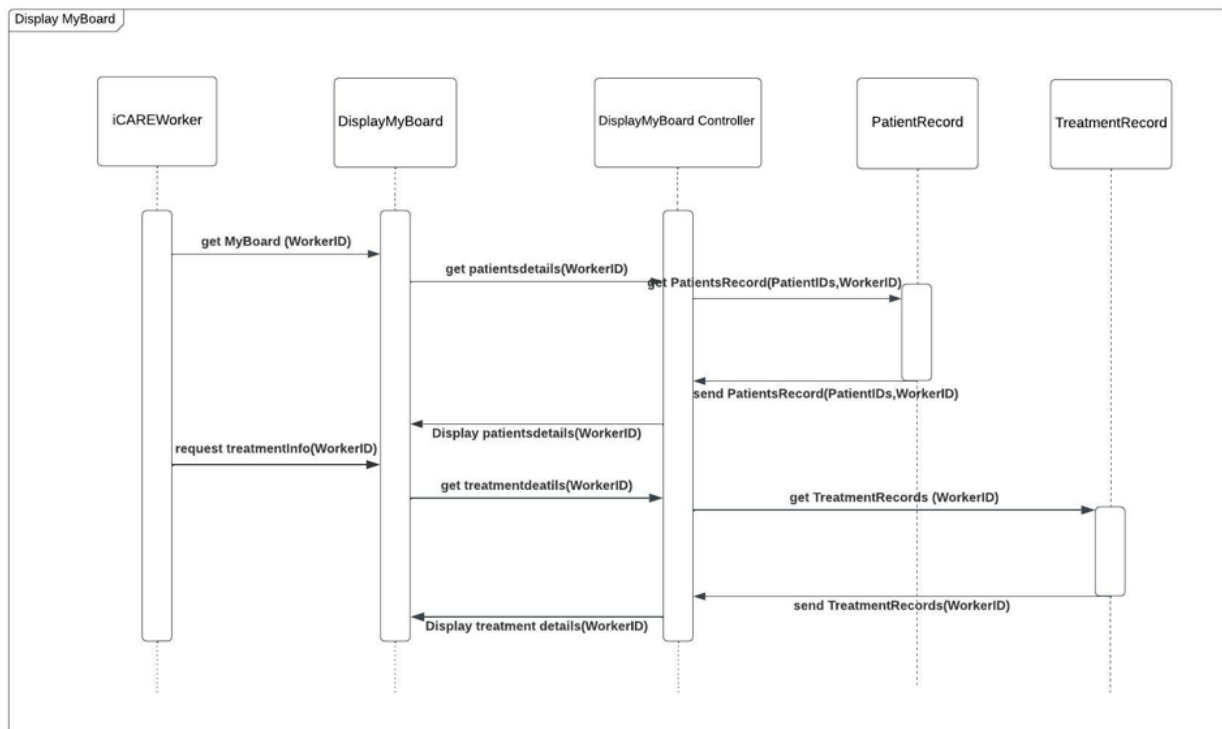
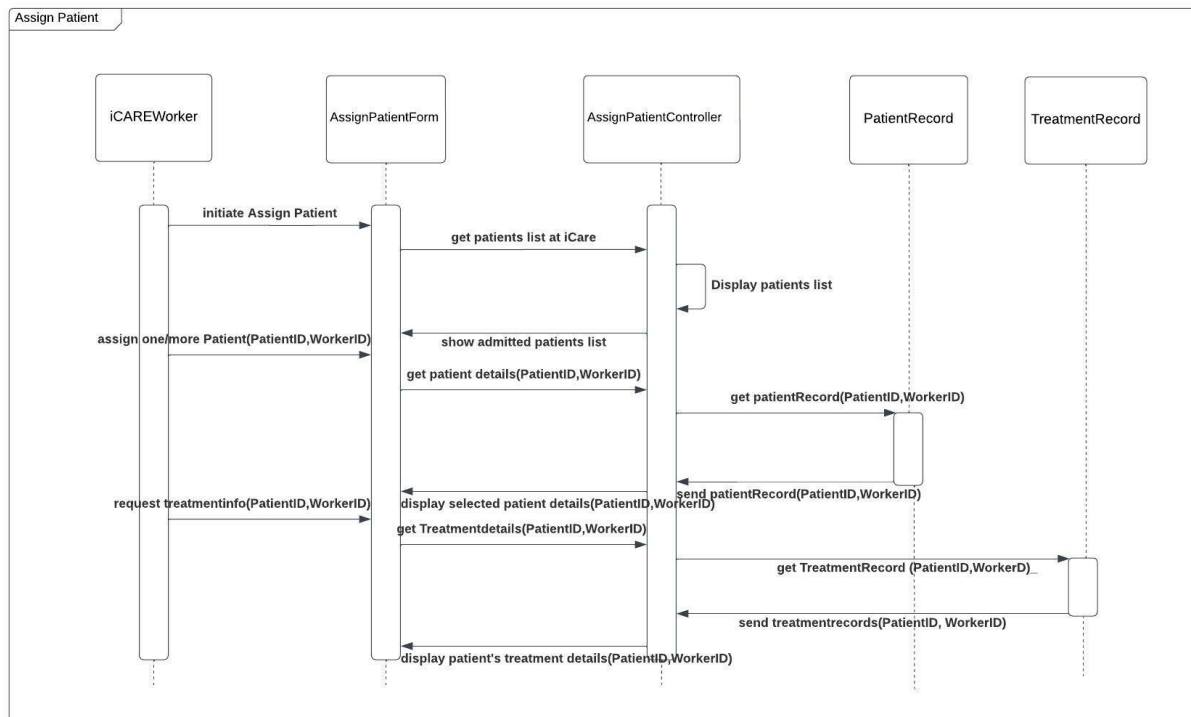


CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

Potential iCare Sequence Diagram



CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	



CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

Class and it's operations

Class Name	Receiving Message (Operation)	Brief Description
iCARE User	Initiate Authenticate User	The user starts the iCare application by first trying to logging in using Authenticate User feature or option.
User AuthenticationForm	Ink/Enter Username and Password	The boundary object userAuthenticationForm asks user to ink or enter his username and password by displaying this.
iCARE User	Tap/Type Username and Password(UserID,password)	Here the user acts on the above display message by tapping or typing his username and password into icare system.
User AuthenticationForm	Validate Password(User ID, password)	This method is initiated to check the password against the username in the icare system.
User Authentication Controller	Encrypt Password(User ID, password)	This method encrypts the password for the specific username entered.
User Authentication Controller	Verify Password(User ID, password)	Here, the controller checks with the userPassword class whether the entered password is correct or not by verifying it against the username entered.
User Authentication Controller	Validation response	Once the verification is done , the controller reverts back with a response whether the password is correct or not.
User Password	Display Response Message	Once the verification process is over , it responds to the user with a message saying the authentication is successful or not.
iCARE Worker	Initiate Assign Patient	This is just an action from iCare worker trying to access the assign patient feature in iCare system.
iCARE Worker	Assign one/more patient(Patient ID, Worker ID)	This method is triggered by the worker when he/she wants to assign one or more patients to himself/herself.

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

iCARE Worker	Request Treatmentinfo(PatientID,WorkerID)	Here the worker requests the system to provide the treatment of selected patients.
Assign Patient Form	Get Patient list at iCare	This is a generic method triggered by boundary AssignPatientForm with controller to provide the existing patients' list in iCare.
Assign Patient Form	Get Patient details(PatientID,WorkerID)	This method specifically tries to get a patient's details with provided patient and worker ids.
Assign Patient Form	Get Treatment details(PatientID,WorkerID)	Here , treatment details of specific patient is resulted with particular patient and worker ids.
Assign Patient Controller	Display Patient List	This displays the existing patient list in iCare to the boundary object AssignPatientForm.
Assign Patient Controller	Show admitted patient list	This forwards the display message from controller which consists of the existing patient list in iCare.
Assign Patient Controller	Get Patient Record(PatientID,WorkerID)	This method is used to fetch the record details of a patient with patient and worker ids.
Assign Patient Controller	Display Selected Patient Details(PatientID,WorkerID)	Once the requested patient details are collected , the same is displayed to the worker.
Assign Patient Controller	Get Treatment details(PatientID,WorkerID)	This method is used to fetch the treatment details of a patient with patient and worker ids.
Assign Patient Controller	Display Patient's Treatment Details(PatientID,WorkerID)	Once the requested patient's treatment records are found , the same is displayed back to the worker.
Patient Record	Send Patient Record(PatientID,WorkerID)	After looking out for specific patient records with patient and worker ids, the record details are returned to the AssignPatientController.
Treatment Record	Send Treatment Record(Patient ID,Worker ID)	After looking out for specific patient's treatment records

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

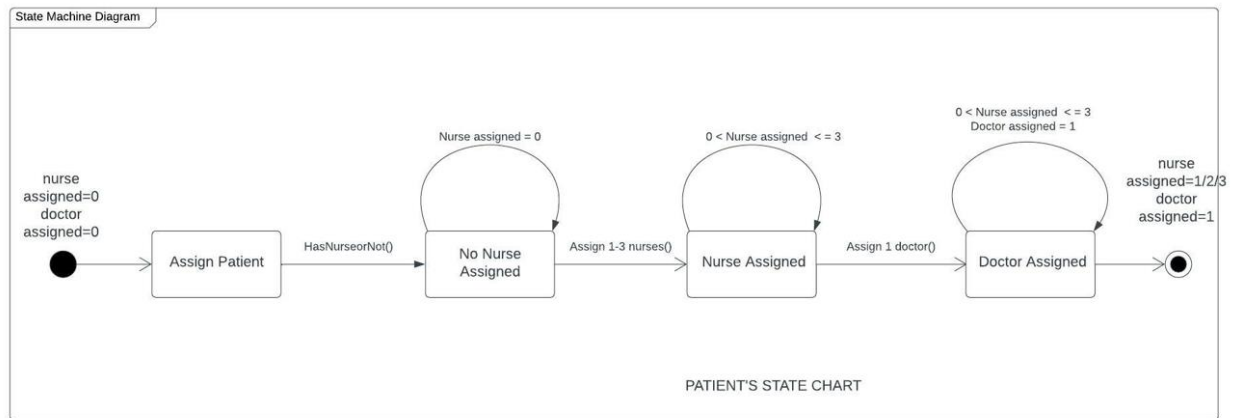
		with patient and worker ids, the treatment details are returned to the AssignPatientController.
ICare Worker	Get MyBoard(WorkerID)	(doctor / nurse) can access the list of his /her assigned patients details and their treatment details as well.
ICare Worker	Request Treatmentinfo(WorkerID)	Here the worker requests the system to provide the treatment of his/her assigned patients.
DisplayMyBoard	Get Patientsdetails(WorkerID)	This method specifically tries to get his/her assigned patients' details with provided worker ids.
DisplayMyBoard	Get Treatmentdetails(WorkerID)	Here , treatment details of his/her assigned patients is resulted with particular worker ids.
DisplayMyBoard Controller	Get Patients Record(PatientIDs,WorkerID)	This method is used to fetch the record details of his/her assigned patients with patients and worker ids.
DisplayMyBoard Controller	Display Patientsdetails(WorkerID)	Once the requested assigned patients details are collected , the same is displayed to the worker.
DisplayMyBoard Controller	Display Treatmentdetails(WorkerID)	Once the requested assigned patients' treatment records are found , the same is displayed back to the worker.
DisplayMyBoard Controller	Get TreatmentRecords(WorkerID)	This method is used to fetch the treatment record details of his/her assigned patients with patients and worker ids.
Patient Record	Send PatientsRecord(PatientIDs,WorkerID)	After looking out for specific assigned patients records with patients and worker ids, the record details are returned to the DisplayMyboardController.
Treatment Record	Send Treatmentdetails(WorkerID)	After looking out for specific assigned patients treatment records with patients and

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

		worker ids, the treatment details are returned to the DisplayMyboardController.
--	--	---

CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

iCare State chart Diagram



CSCE5430: Software Engineering	Issue: Fall 2022
Project Workbook	Issue Date: October 20 , 2022
Group11_CSCE5430_007_Workbook	

State chart Diagram Explanation

A state diagram depicts the behavior of classes in response to a specific stimulus. State chart diagram or state machine diagram particularly explains behavior of a single reactive object in response to series of events. Steps involved in writing this state chart diagram are as follows.

1. Identify the starting and ending states.
2. Determine different states that exists which the object can traverse through.
3. Identify the events/stimuli that can cause transitions between these states.

Explanation:

Above state machine diagram depicts the state machine of single reactive object – Patient. Patient is in the iCare environment comprising of doctors and nurses. In the above state machine diagram, we begin with the **START** state where the patient is not assigned any nurse and no doctor.

Hence , initially **ASSIGN PATIENT** state and then based on *hasNurseorNot()* state changes to next state called **NURSE NOT ASSIGNED** state. Patient dwells in this state until the assigned nurse count is 0.

When *Assign a nurse()* event is applied to the patient , patient's state transits to **NURSE ASSIGNED** where the patient is assigned from 1 to 3 number of nurses. Patient's state remains in nurse assigned state until it satisfies the condition assigned nurse count is between 1 and 3.

As per the given assumption, a patient can be assigned a doctor only when he is assigned to at least 1 nurse. Therefore , we can now apply the next event which is *assign a doctor()* to the patient making the patient's state transition to next state – **DOCTOR ASSIGNED** state bringing the State Chart Diagram to an END.