NEIU COMPANION

LUNA SYSTEMS

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LUNA SYSTEMS

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VISION AND SCOPE

Background: Business Opportunity/Customer Needs

Northeastern Illinois University (NEIU), a Chicago public university with a student population of 8,000 plus, has contacted us in order to develop a mobile application named *NEIU Companion* that will service the student body. The currently unadvertised NEIU mobile application (app) needs a major upgrade, as it currently does not open due to the app's inability to download the university's network configuration. The current mobile app also uses technology that is currently not up-to-date, as the application was released in 2013. The goal for implementation would be slated for the start of the 2019-2020 academic year.

The NEIU Companion will provide convenient access to current services provided in multiple NEIU websites and brings them into one single app. The app will allow

students to keep track of any books they have checked out, as well as allow mobile access to NEIUport to keep track of current and past class information. The application will allow students to sign in with their NEIU ID, creating a profile page that will show their current class schedule and grades from Desire2Learn (D2L). For added consideration, feature upgrades to the app will include services such as a calendar for school events and the Physical Education (PE) schedule and services. We believe that because of the application's ease of use, the school will maintain or improve the retention rate of students as they become more comfortable with university life.

Vision Statement

The NEIU Companion will be the single access point for multiple university related websites on smartphones. Though the initial implementation of the application will only include important information from certain websites such as NEIUport and D2L, the application will eventually be upgraded for students to become more integrated into the NEIU community.

➢ **Major Features**
1) Check what books you have currently checked out from the library
2) Access NEIUport for past student information as well as make tuition payments
3) Profile page that shows current semester/ current classes
4) Keep track rented books from the school's bookstore
5) Access to PE schedule and services

6) Check what clubs are currently offered at NEIU
7) Implementation of a school event calendar
8) Make appointments for the NEIU Student Health Services
9) Implementation of a school map

Project Selection

The development of *NEIU Companion*, an overall enhancement of Northeastern Illinois University's current mobile application. The current application is nonfunctional as it does not respond properly during startup and uses outdated technology. As a result, students are unable to access their information from NEIU's multiple websites without using a browser that does not always complement mobile usability. In order to facilitate the access of information for students and keep NEIU's technology as modern and up to date, our project will address these issues while simultaneously adding new user capabilities, including keeping track of books checked out, the addition of a school event calendar, and access to services offered by the physical education building. Thus, the implementation of this project will address the current and future needs of students while allowing NEIU to become a more technology-friendly and competitive institution.

Problem Definition

Addressing the technological concerns of the current unresponsive application while revamping and incorporating new user functionalities. In order to develop a functional end-product, we must incorporate the current services offered by NEIU's multiple websites while adding new aspects based on the needs of university students. In addition, we must use up to date technologies that meet current standards followed by other universities nationwide while maintaining an aesthetically pleasing design. The combination of these requirements must merge into a cohesive and mobile user-friendly application simple enough for the average user to grasp.
Financing, supplies, and consumer issues are possible constraints that can prevent or delay the implementation of the application. An example of an external constraint we may face is how fast we are given access to updated technology. This type of mobile application requires up to date technology that will allow the project to be finalized within the given timeframe. An internal constraint we may face is a deficiency of proper financing, leading to a delay of the project or depriving it of necessary resources that

maintain the application functional. These constraints can cause a domino effect if not managed correctly, for instance, without proper financing we may be unable to secure the proper technology from suppliers and thus, affect the whole project. Ultimately, potential unexpected problems may arise prior to launching the application and thus, we will need to be prepared to address these issues before and after they arise.

Problem Solution

In order to make the access of multiple NEIU websites convenient to students, our development team will be creating a new mobile application for the university from scratch. Essentially, the goal is to rework the current defunct 2013 mobile application by modernizing it with new technologies and a new aesthetic. The new mobile application, offered on both iOS and Android, will allow access to multiple NEIU websites from a single log-in entry point using their student NEIU ID. While logged in, a student does not have to leave the application when accessing different parts that would be offered on a separate NEIU website, as it will be connected to that module by the application.

Scope and Objectives of the System

- ➢ *Scope of the System:*

The *NEIU Companion* will contain the following main components:
- User interface that provides direct access to Desire to Learn (D2L), NEIUport, Nmail, NEIU's Library Website, Collegiatelink and IMLeagues
- An SQL database that saves and updates user information: username, email, contact information, class schedule, and grades
- Financial Aid Management that allows user to track past and future tuition payments, scholarships, grants and/or loans

- ➢ *Objectives of the System:*

The *NEIU Companion*'s objectives are:
- Maintaining student information updated
- Providing access to university websites in a single platform
- Tracking of financial status and history
- Providing access to financial aid office information: tuition payments, payment due dates, etc.
- Track book due dates (whether these were rented at the university's library or bookstore)
- Access to student detailed schedule for the given semester
- Access to an updated calendar:
    - Includes:
        - University events (events from student-led organizations, Student Leadership Development, and Campus Rec)
        - Beginning and end dates of the semester
        - Finals week dates
        - Spring Break/ Fall Break dates
- Access to interactive university map: satellite version

Organization Chart

Board of Trustees

Gloria J. Gibson
President

Mike Dizon Chief of Staff and Chief of Marketing and Communications Officer

Liesl Downey
Vice President of Institutional Advancement

Craig Duetsch Interim Vice President of Insitutional advancement

Melissa Reardon Henry VIce President for Legal Affaris and General Counsel

Daniel Lopez Jr. Vice President of Student Affairs

Wamucci Niogu Acting porvost

Suleyma Perez, ExecutiveDirector for Government Relations

Vazquez, Nunez, Luna
NEIU Companion Developers

Financial Aid Office

Library Staff

Bookstore Staff

Campus Recreation Staff

Health Services Staff

NEIU Student Population

Use Cases

> *Description:*

This section highlights seven of the modules presented by NEIU Companion. The application's modules are: *Bookstore (M1), Student Organizations (M2), Library (M3), Health Services (M4), Campus Map (M5), NEIUport (M6), and Campus Rec (M7).* Each module provides a detailed description of the use cases including triggers, preconditions, postconditions, flow, exceptions, priority and frequency of use. This section also provides different diagrams for each module: *Activity Diagram, Extended Systems View, Data Flow, Sequence Diagram and Data Models.*
For summary of the Modules and use cases, please refer to Figure 1 .

Figure 1: Module Summary

Module	Primary Actor	Use Cases
M1: Bookstore	Student	1. Order Merchandise 2. Cancel Merchandise Order 3. Rent Books 4. Check Book Rentals
M2: Student Organizations	Student	1. Register Club 2. Message Club 3. View Clubs 4. Read Club Messages
M3: Library	Student	1. Place Books on Hold 2. Check Material Due Date 3. Check Library Inventory
M4: Health Services	Student	1. Making an appointment 2. View Services Available 3. View Disease Information
M5: NEIUport	Student	1. Financial Account 2. Personal Account 3. Academic Details 4. Register for classes
M6: Campus Recreation	Student	1. Manage IMLeagues profile 2. Access schedule of classes, gym and pool hours

NEIU Companion | Vazquez, Nunez, Luna
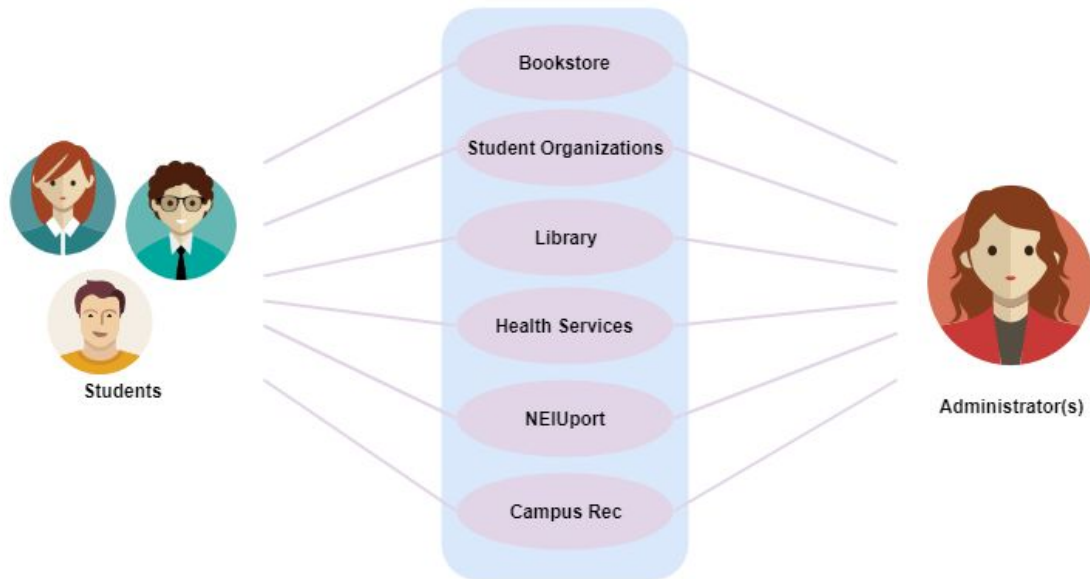
The NEIU Companion consists of the following modules:

1.0 Bookstore
The Bookstore module is the application's alternative to NEIU's Bookstore website. The Bookstore will allow Students to check merchandise that is currently offered and make orders as well. Orders include book rentals, which Students will be able to check the due dates for on the module itself. All orders are cancellable before they have been confirmed by the Bookstore Staff.

2.0 Student Organizations
The Student Organization module is the application's alternative to NEIU's CollegiateLink website. The module will allow Students to conveniently check what clubs are currently being offered at NEIU. A Student will be able to refine their club search through filters provided on the module, as well as a tab that will allow them to see what clubs they run or apply for new clubs at NEIU. Each Club page will contain a logo, description and additional pictures that club leaders wish to provide.

3.0 Library

The Library module is the application's alternative to NEIU's Library website. The module will allow students to view the library's collection of books and conveniently place a book they wish to check out on hold. Students will also be able to check the due date of any material they have currently checked out along with the option to check the library's inventory and its type for any specific material.

4.0 Health Services

The Health Services module is the application's alternative to NEIU's student health services website. The module will facilitate the process of setting up an appointment for students with a specific provider and maintaining communication regarding any follow-up problems. The application will also allow students to view the services that are provided by the health services department and view information on any disease they may have been diagnosed with or simply to compare symptoms on a reliable source.

5.0 NEIUport

The NEIUport module is the application's alternative to NEIU's NEIUport student website. The module gives students the opportunity to access their financial account with the university and make any payments or check for updates in their student accounts. In addition, by having access to their personal account students can change their personal information such as name, SSN, emergency contact, etc. The application gives access to student's academic details (e.g., class schedules, degree evaluation, transcripts) and to register for classes for upcoming semesters.

6.0 Campus Recreation

The NEIUport module is the application's alternative to NEIU's IMLeagues student website and provides additional access to the campus recreation building information. This module facilitates the access to building, pool and weight room hours. Furthermore, it gives the students the convenience of accessing their profile and checking on events, teams and/or statistics of teams.

NEIU Companion | Vazquez, Nunez, Luna
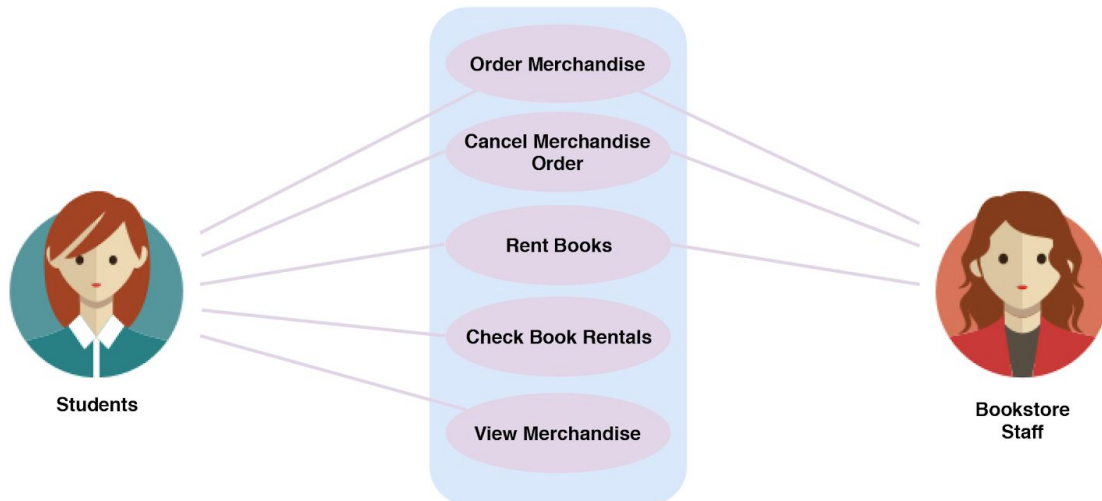
Bookstore Module

1.1 Order Merchandise

A Student is capable of ordering merchandise offered by the NEIU Bookstore through the Bookstore module of the NEIU Companion app. The module will open up to the main screen of the Bookstore interface, which will conveniently provide students to easy access menus and tabs that direct to specific product categories in addition to a tab option that shows previous and current orders done by the Student. If the Student knows the name of the particular item they wish to seek, they will be able to type in the item name in the provided search box on the main screen of the module. After the Student has decided on the items they wish to purchase as well styles and quantity, the Student will verify their order through the cart window. If the order is to their liking, the Student will then select an available pick-up time for their order. The order information will then be forwarded to the Bookstore Staff, who will then send an email confirmation to the Student that their order has been confirmed once all items have been retrieved.

1.2 Cancel Merchandise Order

Should a Student wish to cancel their merchandise order, a Student has the ability to do so through the Merchandise Order tab on the main screen of the module. The Student is able to select an order that has currently been unconfirmed to cancel, and provide a reason as to why they wish to cancel their order. Once supplied, the order cancellation will be forwarded to the Bookstore Staff, who will update the merchandise inventory and update the available pick-up times

NEIU Companion | Vazquez, Nunez, Luna

1.3 Rent Books

On the Rent Books tab of the main screen of the Bookstore module, the Student will be able to search for books currently in inventory at the NEIU Bookstore by either ISBN or the Student's class list. Once an order has been created to rent books and a pick-up time has been selected, the information will be sent to the Bookstore Staff to verify. The Bookstore Staff will then send an email confirmation to the student that their order has been confirmed.

1.4 Check Book Rentals

On the Rent Books tab of the main screen of the Bookstore module, the Student will provided with the titles and dates of currently rented books on the main screen of this tab should they have any.

1.5 View Merchandise

The Student is capable of viewing merchandise currently offered by the NEIU Bookstore through menus on the main screen of the module that will direct to specific merchandise categories.

Bookstore Use Case: Order Merchandise

The following table showcases the details of Bookstore Use Case: Order Merchandise.

ID and Name:	Order Merchandise		
Created By:	Kevin Nunez	Date Created:	4/1/2019
Primary Actor:	Student	Secondary Actors:	Bookstore Staff
Description:	A Student is capable of accessing merchandise from the NEIU Bookstore. The student is able to filter out products by specific product menus, such as books and school supplies, or by searching with the built-in search bar and adds desired items to their cart, where they can pay for their items through ePay.		
Trigger:	A Student indicates they want to purchase merchandise from Bookstore.		
Preconditions:	PRE-1. Student is logged on NEIU Companion. PRE-2. Student has payment information set up on ePay through NEIUport Module.		
Postconditions:	POST-1. Merchandise Order is stored on NEIU Companion, marked as "confirmed" on NEIU Companion when Bookstore Staff confirms order. POST-2. Merchandise inventory is updated by Bookstore Staff POST-3. Bookstore Staff update available Merchandise pick-up times.		

The following table showcases the expected normal flow and alternative flows:

Normal Flow:	**1.0 A Single Merchandise Order** 1. A Student taps on the Bookstore Module of the NEIU Companion app. 2. App displays home page for the Bookstore, including menus for specific items, Merchandise Order tab, and Book Rentals tab. (see 1.1). 3. Student can search for specific items by using built-in search bar, if desired. 4. Student chooses items, as well as quantity and color options if applicable. 5. Student opens cart window which displays full Merchandise Order, including prices for each individual item (or bundle price if more than one of the same item is purchased), total order cost along with taxes. 6. Student can confirm merchandise order (which continues normal flow) or can modify merchandise order (return to step 4). 7. NEIU Companion displays times when Student wants to pick up Merchandise Order at Bookstore. 8. Student selects time for pick up. 9. Student pays through ePay information on the NEIUport Module. 10. NEIU Companion sends Merchandise Order information to Bookstore for confirmation. 11. Bookstore confirms Merchandise Order, which changes status of Merchandise Order to confirm on NEIU Companion. 12. Student receives email to their NEIU Email that Merchandise Order has been confirmed.
Alternative Flow:	**1.1 Repurchase Previous Order** 1. Student taps on Merchandise Orders tab. 2. Student selects a previous Merchandise Order they wish to repurchase. 3. Return to step 5 of normal flow.
Exceptions:	**1.1E Previously Available Items Now Unavailable** 1. App displays on the step 5 of normal flow that an item is now unavailable. 2. Student can delete this item off their cart, continuing to either step 4 of normal flow or step 6 of normal flow after deletion.
Priority:	High
Frequency of Use:	Approximately 50% of the student population throughout the semester, expect a higher frequency of use during the beginning of the semester.
Other Information:	None.

NEIU Companion | Vazquez, Nunez, Luna

Order Merchandise: Activity Diagram
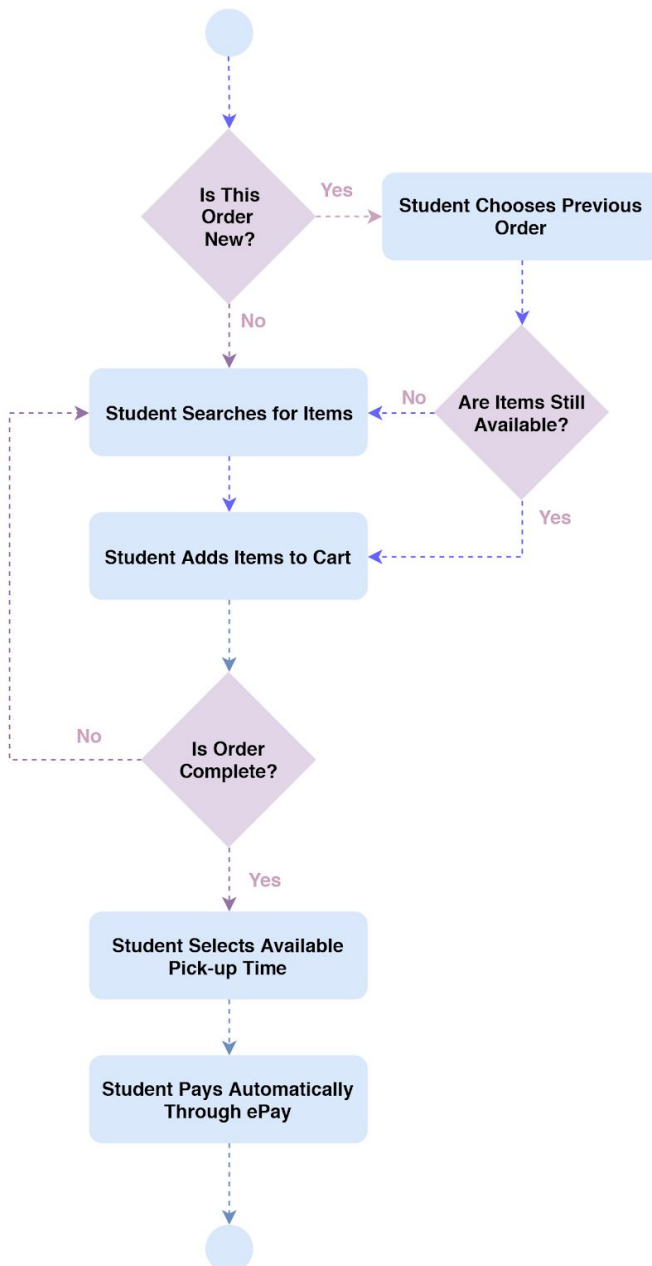
The diagram on the left specifies the normal flow a Student would take to order merchandise through the Bookstore module.

The diagram starts when the Student is deciding to order a previous order they have made (which moves through an alternative flow on the right), or they wish to create a new order.

The diagram then follows through the Student searching for and adding items to their order. At this point, the Student will very if their order is complete.

If complete, the Student will then select an available pick-up time and pay automatically through their ePay information that has been provided in the NEIUport module of the NEIU Companion app.

Order Merchandise: Data Flow

The diagram on the right describes the way in which data flows through the Order Merchandise use case in the Bookstore module.

Following the starting point of normal flow, if the Student chooses to reorder a previous merchandise order, the system will retrieve previous orders data done by the Student on the database. Otherwise, the Student will search for item data in database. The Student will then add that item data to an Order Object created for the student.

If their order is complete, the Student will then add their pick-up time and payment information to the Order Object which is sent to the Bookstore Staff to process.
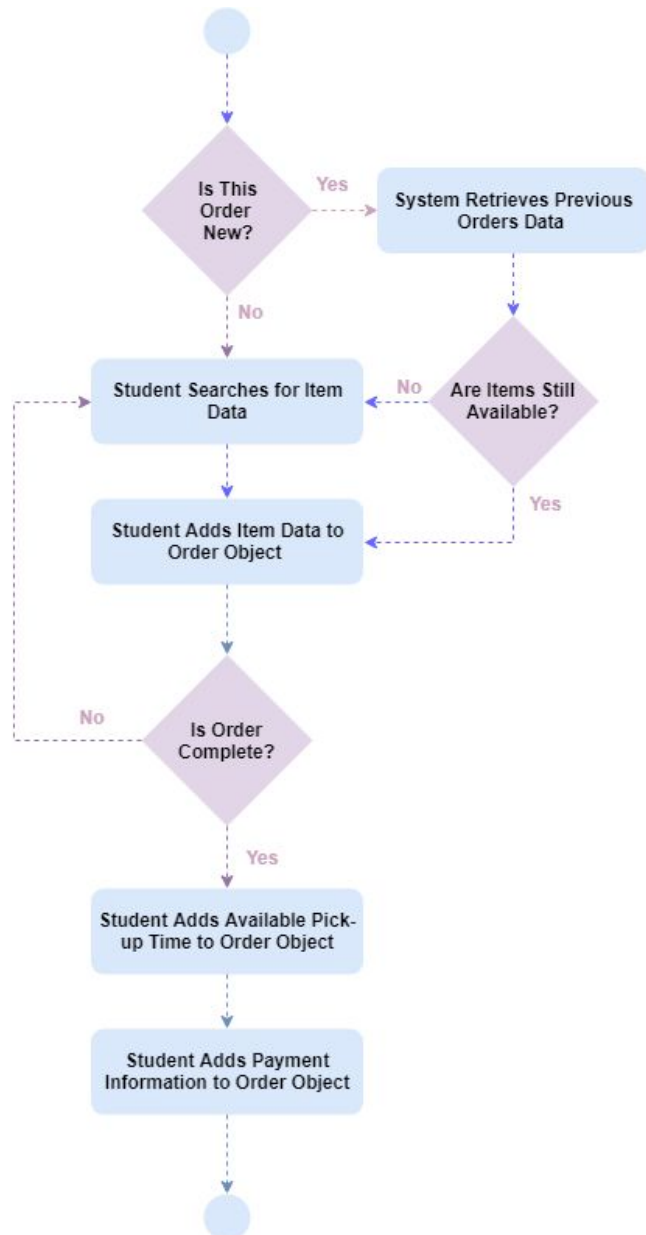
Order Merchandise: Sequence Diagram
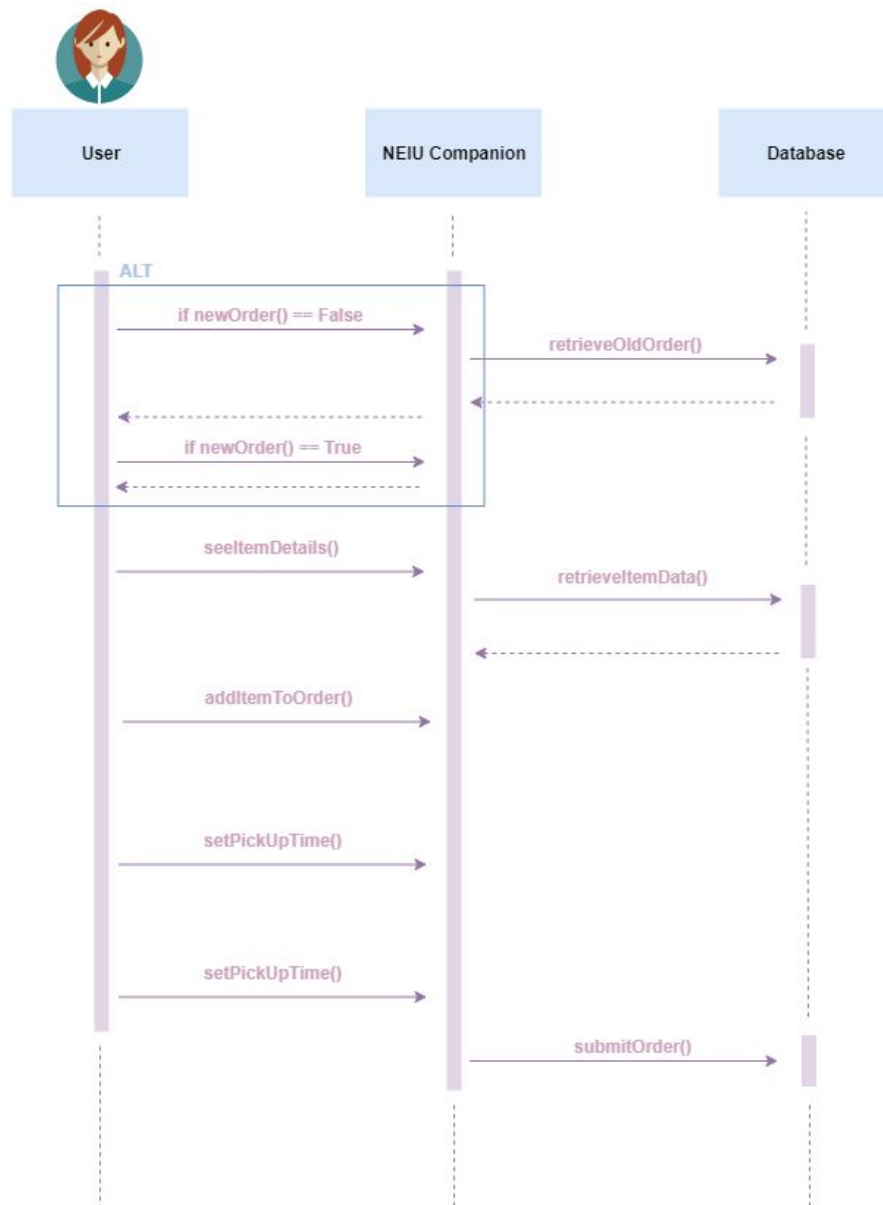
The sequence drawing above showcases the number of method calls between user, the NEIU Companion app and database that holds item and order information. The sequence diagram begins when the user decides on ordering a previous order or starting a new order. If it is an old order the user wishes to reorder, the app will retrieve old order information from the database. Whenever the user wishes to see item information, the app will retrieve item information from the database as well.

Order Merchandise: Data Model

User

- studentName
- studentID
- ePayInformation
- isNewOrder
- orderListReference

Order

- orderNumber
- itemList
- pickUpTime
- isPaid
- isConfirmed
- nextOrderLink

Item

- itemName
- itemQuantity
- itemProperty
- itemPrice
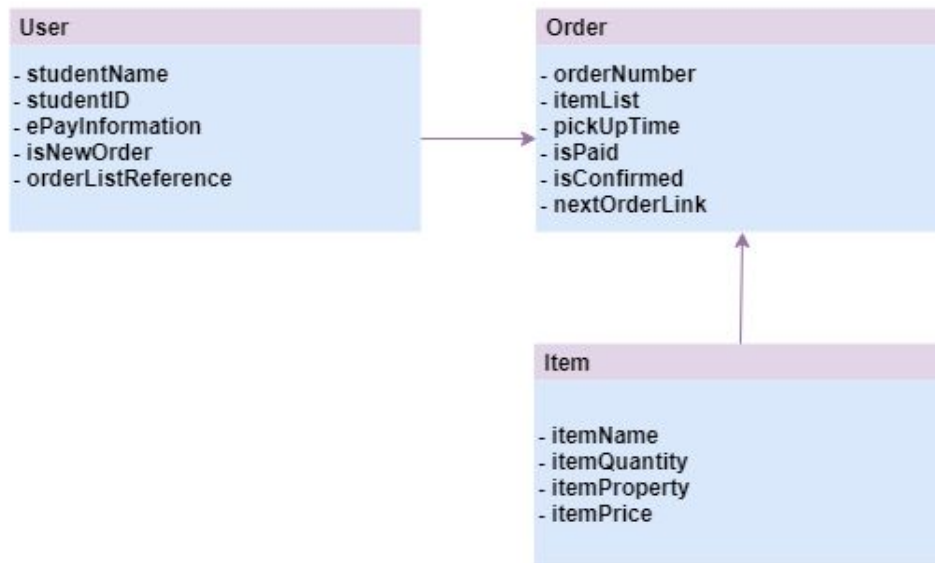
The following diagram includes the three main entities that are involved during the order merchandise use case. These three entities will now be explored further:

User
The user refers to the student that wishes to place an order for merchandise offered by the NEIU bookstore. The entity will have basic information, such as their name, student ID number and ePay information. The user will also hold a reference to their previous orders, which is used to them grab information from the database.

Order
The order is the object which holds all the information for orders that have been placed or are currently confirmed. All orders will contain an order number and item list, as well if they were paid and confirmed. Previously placed orders will not have pick up times set. The order will have a link to the next order placed by the user for easy database management.

Item
Item objects will contain the item name, quantity, and price for items that are being purchased. If the item has multiple options, the item property will define the item option being bought.

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Bookstore Use Case: Cancel Merchandise Order

The following table showcases the details of Bookstore Use Case: Cancel Merchandise Order.

ID and Name:	**Cancel Merchandise Order**		
Created By:	Kevin Nunez	Date Created:	4/1/2019
Primary Actor:	Student	Secondary Actors:	Bookstore Staff
Description:	A Student wishes to cancel a Merchandise Order they have placed through the Bookstore Module of the NEIU Companion tab.		
Trigger:	A Student indicates a desire to cancel their Merchandise Order.		
Preconditions:	PRE-1. Student logged in to NEIU Companion. PRE-2. Student has payment information set up on ePay through NEIUport Module.		

The following table showcases the expected normal and alternative flows:

Normal Flow:	**1.0 Cancel Merchandise Order** 1. A Student taps on the Bookstore Module of the NEIU Companion app. 2. App displays home page for the Bookstore, including menus for specific items, a Merchandise Order tab, and a Book Rentals tab. 3. Student taps on the Merchandise Order tab, which displays current and previous Merchandise Orders. 4. Student taps on the Merchandise Order they wish to cancel. (See 1.0E1) 5. Student provides a reason as to why they wish to cancel their Merchandise Order and submits order cancellation. 6. App sends order cancellation to Bookstore staff to cancel order. 7. Bookstore updates available pick-up times since pick-up time has been freed. 8. Bookstore updates inventory to show canceled items are still available. 9. Student receives email to their NEIU email to show their order has been canceled.
Alternative Flow:	None
Exceptions:	**1.0 E1 Order Has Already Been Confirmed** 1. If Student selects a confirmed order, app will display that order has already been processed and confirmed, therefore cannot be canceled.
Priority:	High
Frequency of Use:	Out of the 50% of the student population who do orders through the NEIU Companion, an approximate 10 – 15% will cancel Merchandise Orders.
Other Information:	1. Since a Student is unable to cancel confirmed orders on the app, they will have to do a return at the physical Bookstore during their scheduled pick-up time.

Cancel Merchandise Order: Activity Diagram
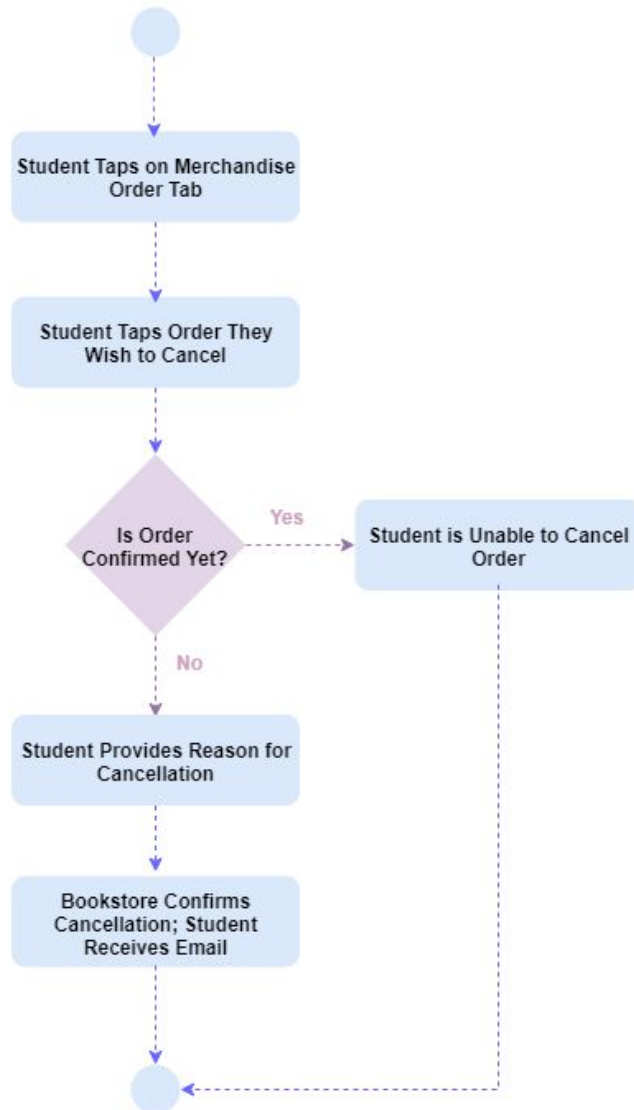
The diagram on the left specifies the normal flow a Student would take to cancel a merchandise order through the Bookstore module.

The Student begins by first navigating the Merchandise Order tab of the Bookstore module, where all their current and previous orders are located. The Student will then choose the order they wish to cancel.

If the Order has already been confirmed the Bookstore Staff, the app will display that they are unable to return their order and will have to process a return during their pick up time.

If the Order has not yet been confirmed, the Student will then provide a reason for cancellation and submit their cancellation order.

The Bookstore Staff will then confirm the cancellation.

Cancel Merchandise Order: Data Flow

The diagram on the right describes the way in which data flows through the Cancel Merchandise Order use case in the Bookstore module.

When the Student first opens the Merchandise Order tab, the NEIU Companion will retrieve the Student's Order List Reference from the database to display. From there, the Student will be able to select the order they wish to cancel, which the app will then retrieve the information for.

The application will check the Order's status and if it is confirmed or not.

If it is not confirmed, the application add a cancellation reason to the Order Object and update it on the database, which will be used by the Bookstore Staff to cancel the order.

Student Chooses Desired Order to Cancel

Order Data Retrieved from Database

Is Order Confirmed Yet? —— Yes —→ Student is Unable to Cancel Order

No

Student Adds Cancellation Reason to Order Object

Order Object Sent Back to Database for Cancellation Confirmation

NEIU Companion | Vazquez, Nunez, Luna
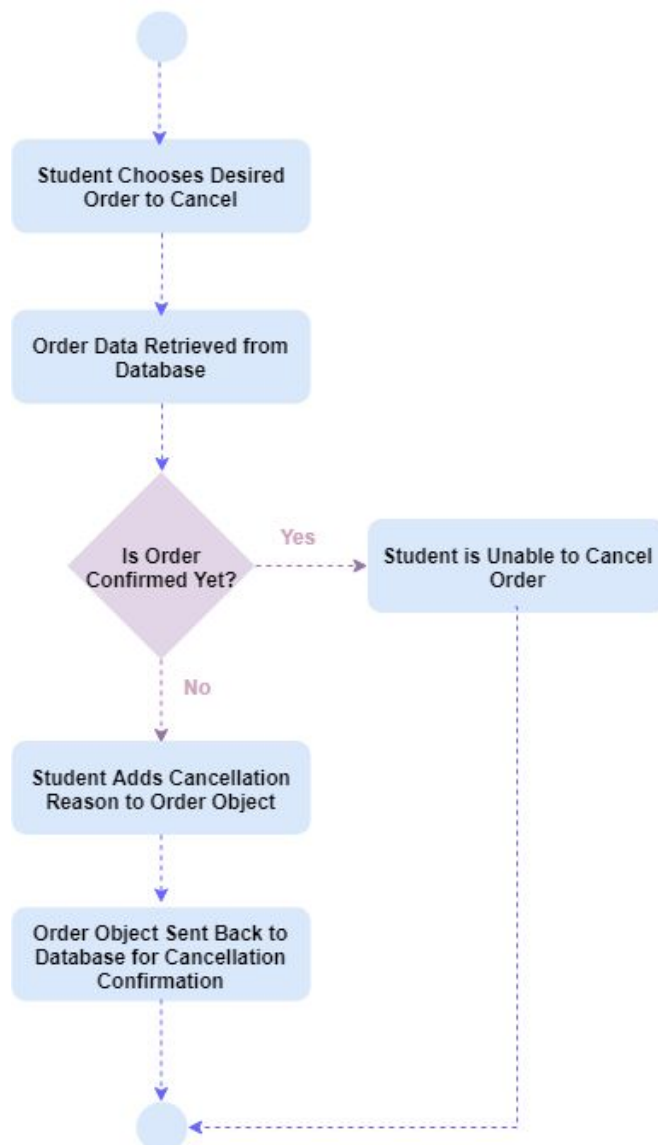
Cancel Merchandise Order: Sequence Diagram
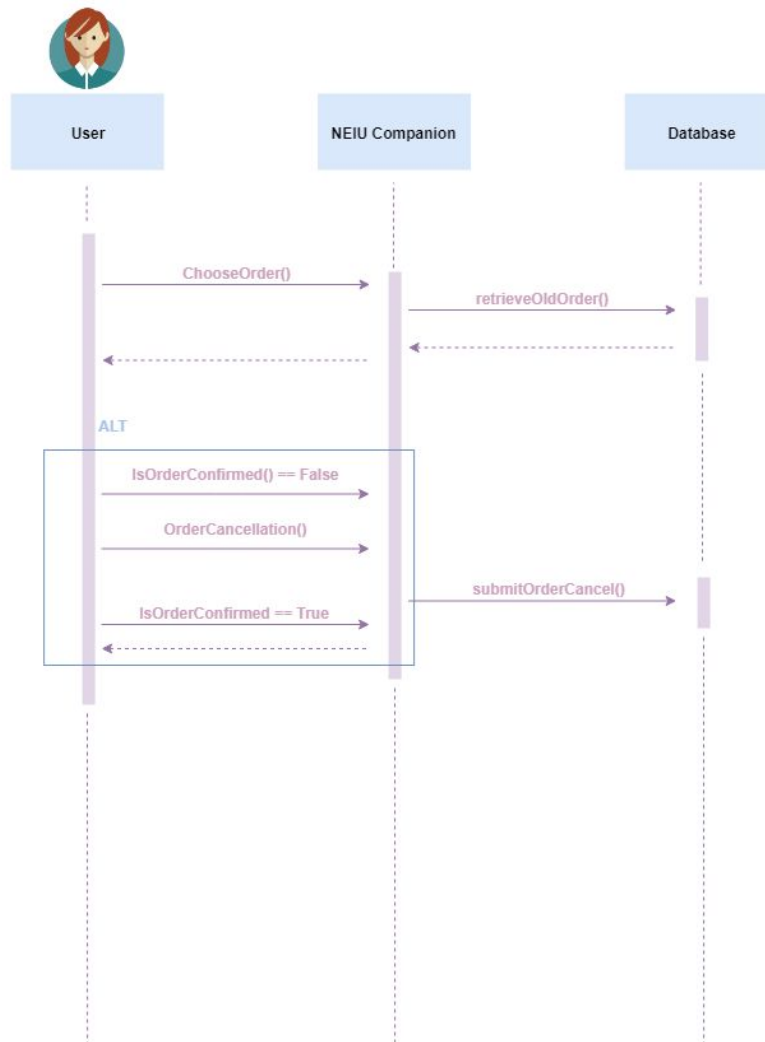
The following diagram details the sequence of method calls between the user, NEIU Companion and the Bookstore database. When the User chooses an order, the NEIU Companion will retrieve the order from the database to display to the User. The NEIU Companion will then check if the order has already been confirmed. If the confirmation is false, the user will be able to provide an order cancellation reason and the NEIU Companion will submit the Order Cancellation to the database. If the confirmation is true, the NEIU Companion will display that the order is unable to be cancelled.

NEIU Companion | Vazquez, Nunez, Luna

Cancel Merchandise Order: Data Model
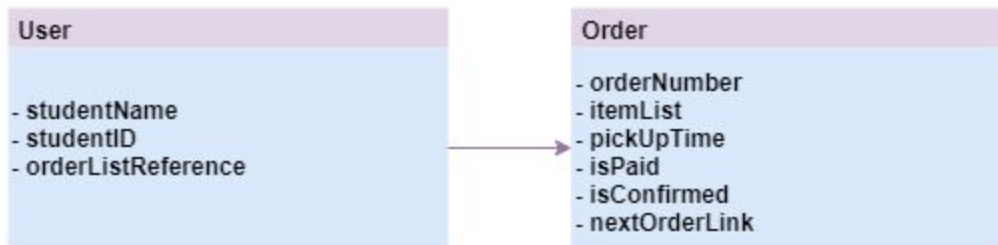
The following diagram includes the two main entities that are involved during the cancel merchandise order use case. These two entities will now be explored further:

User

The user refers to the student that wishes to place an order for merchandise offered by the NEIU bookstore. The entity will have basic information, such as their name, student ID number and ePay information. The user will also hold a reference to their previous orders, which is used to them grab information from the database.

Order

The order is the object which holds all the information for orders that have been placed or are currently confirmed. All orders will contain an order number and item list, as well if they were paid and confirmed. Previously placed orders will not have pick up times set. The order will have a link to the next order placed by the user for easy database management.

NEIU Companion | Vazquez, Nunez, Luna

Student Organization Module

2.1 Register a Club

A Student is capable of registering a club they want to create from the NEIU Companion. The Student will have to select the Clubs Ran by Student tab from the homepage of the Student Organization module. The Student will then tap on the Register New Club button that will be presented at the top of the section should they not be running any clubs already. The Student will then have the opportunity to designate a name and description for the club. The name given will then be run through the database to check if the club already exists. Should it exist, the NEIU Companion will provide a link to the currently existing club page. Should it not exist, the Student will continue on to provide a logo and additional pictures for the club. The application will then be submitted for the NEIU Administration to review.

2.2 Message a Club

A Student has the ability to message club leaders any questions or concerns they may have for the club. They will be able to do this by first going to the page of the club on the NEIU Companion. On the lower part of the page, the Student will be able to tap on the button that reads Message Club. The Student will fill the subject line and message box of the message. After they are done, they will then verify their message. If they are content with their message, they can hit send which will send the message to the Club Leader's email and NEIU Companion app.

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2.3 View Clubs

A Student will be capable of viewing the clubs offered by NEIU as soon as they open the Student Organization module. The Student will then be able to filter and refine their club search by specifying the type of club they are searching for or type in the name of the club on the built-in search bar.

2.4 View Messages

Any messages that are sent through the Student Organization module will be viewable in a specific window on the module itself. This allows for easy access for Club Leaders and Students who send messages to view when they sent messages and what they sent as well.

Student Organization Use Case: Register a Club

The following table showcases the details for the Club Organization Use Case: Register a Club.

ID and Name:	**Register a Club**		
Created By:	Kevin Nunez	Date Created:	4/1/2019
Primary Actor:	Student	Secondary Actors:	NEIU Administration
Description:	A Student wishes to register a new club for NEIU that adheres to the rules that clubs must follow to be recognized by the university. They will be able to provide a name and description for the club, as well as a picture for a logo and additional club pictures if desired. Applications will be reviewed by NEIU to determine if the club can be recognized as an official student organization.		
Trigger:	A Student indicates they want to register a new club for NEIU.		
Preconditions:	*PRE-1.* Student is logged on NEIU Companion.		
Postconditions:	*POST-1*. Club registration is declared as pending under tab for clubs ran by Student..		

The following table showcases expected normal and alternative flows:

Normal Flow:	**1.0 Registering a Club** 1. A Student taps on the Student Organization module of the NEIU Companion app. 2. App displays home page for Student Organizations, which includes a list for all clubs, filters for specific clubs, and a tab for clubs ran by Student. 3. Student taps tab for Clubs ran by Student. 4. Student taps button to Register New Club. 5. Student provides a name and description for their club and taps next. (see 1.0E1) 6. Student provides a picture for a logo and additional pictures for club and taps next. 7. App displays a window which displays information entered by Student and if Student wishes to submit application for club (continue normal flow) or review application (return to step 5). 8. Club registration is placed in the Clubs ran by Student tab as pending. 9. Club application is sent to NEIU for review.
Alternative Flow:	None.
Exceptions:	**1.0 E1 Club Already Exists** 1. If club name or similar names already exist in database, app will display that club already exists and show link to existing club.
Priority:	High
Frequency of Use:	Approximately 5% of the student population throughout the semester, expect a higher frequency of use during club week when students may not find a club they want to join and wish to create their own..
Other Information:	None.

NEIU Companion | Vazquez, Nunez, Luna

Register a Club: Activity Diagram
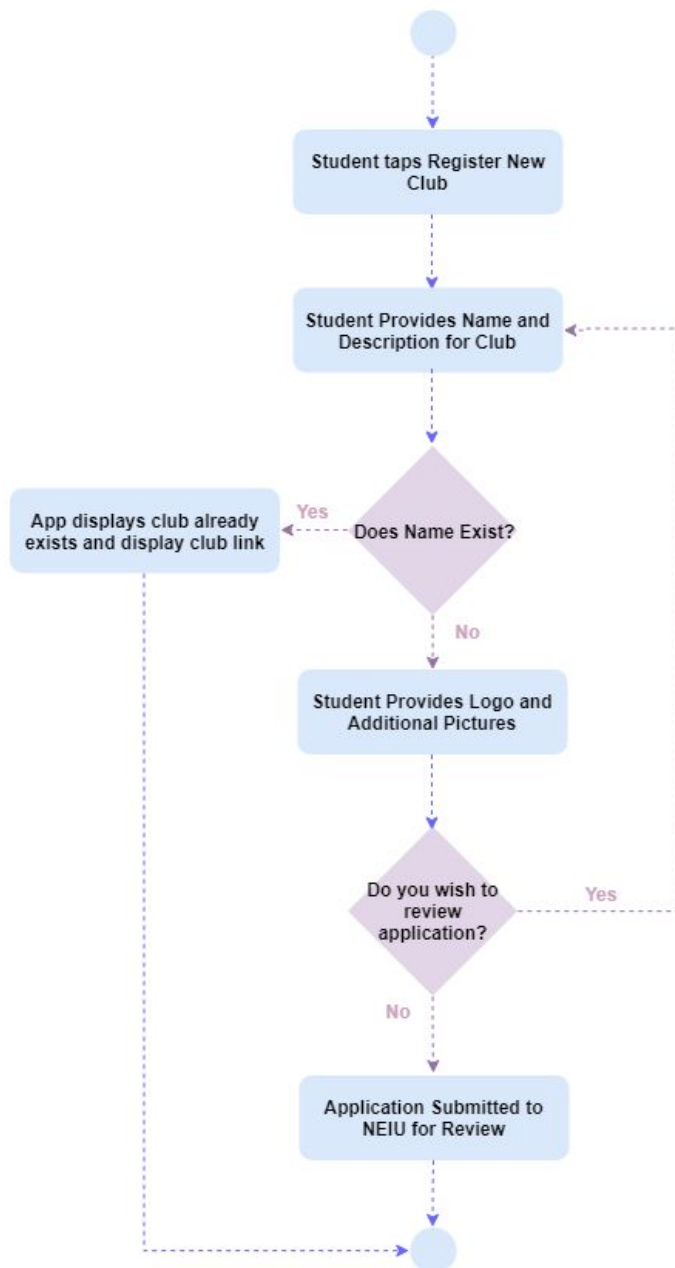
The following flowchart on the left describes the normal flow a Student would take to register a club through the Student Organization module.

The chart begins from the Student tapping on the Register New Club in the Clubs Ran by Student tab of the module. The Student will then provide boxes for the Student to input the club name and description for the club.

The club name will then be run through verification. If the name exists, the app will then display the club exists already and display a link that goes to the club page of the existing club.

If the name does not exist, the student will then provide a logo and additional pictures.

The Student will then be able to review the application if they wish to or submit the application for review.

Register a Club: Data Flow

The diagram on the right specifies the flow of data to register a club through the Student Organization module.

The Student will provide a name and description to the club object they are currently creating.

This data will run through verification in the database to see if the club already exists. If it does, the existing club's data will be retrieved to be displayed to the Student.

If it does not exist, the Student will then add a Logo and Additional Pictures to the club object which can then be reviewed or submitted to the database where the NEIU Administration can access the object for review.

NEIU Companion | Vazquez, Nunez, Luna
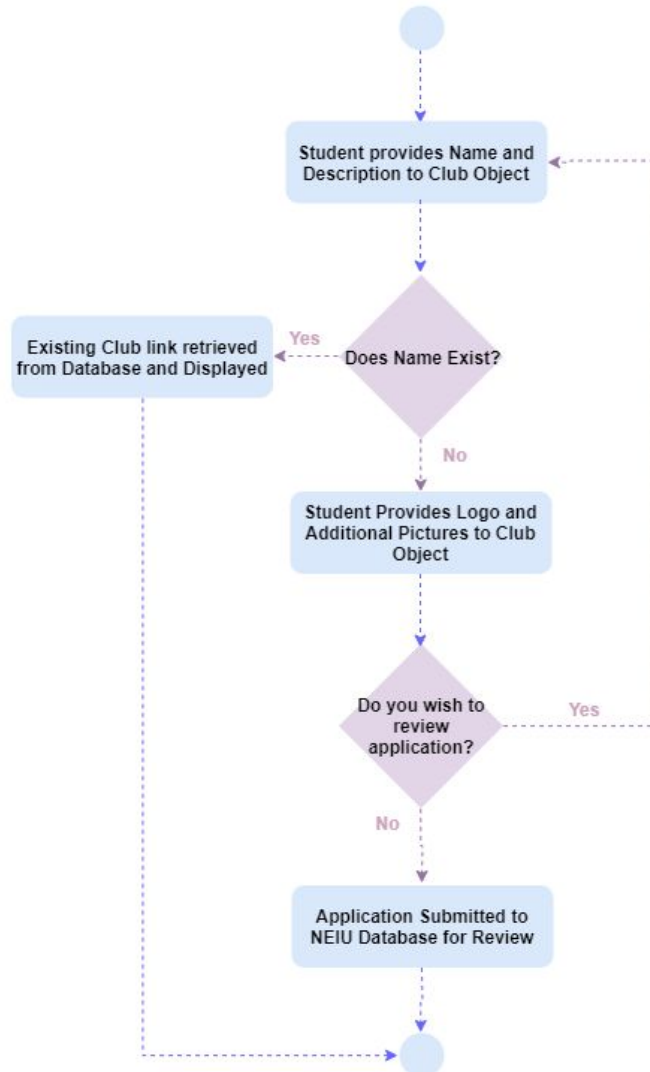
Register a Club: Sequence Diagram
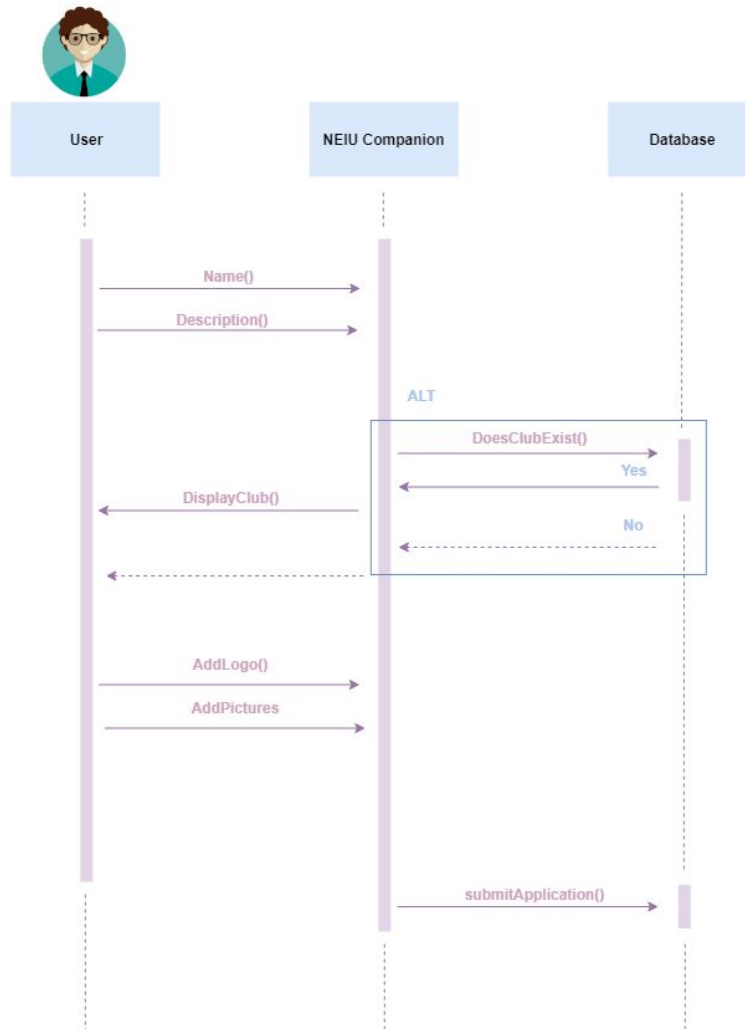
The following sequence diagram outlines the number of method calls that are made between the user, NEIU Companion, and database. The user first provides and name and description to the NEIU Companion as it holds the Club object currently. This information is then run through the ALT section of the diagram. The NEIU Companion will make a method call to check if the club exists. If it does, the data is retrieved from the database and displayed on the NEIU Companion for the user to see. If it does not exist, the user will then provide the logo and additional pictures and then submit the application. This will cause the NEIU Companion to send the Club object to the database.

Register a Club: Data Model
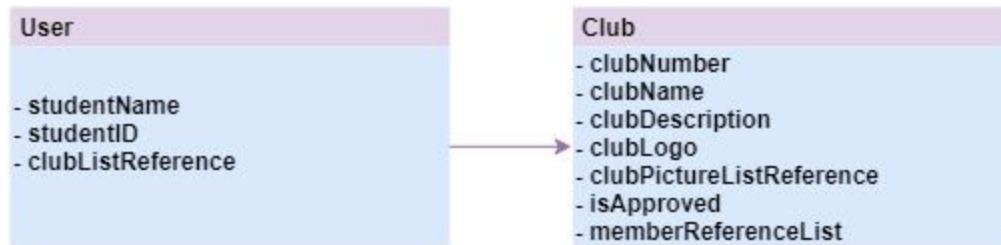
The following diagram includes the two main entities that are involved during the register a club use case. These two entities will now be explored further:

User
The user object will only hold simple references that are used to reference to the Club object. The Student name and Student ID fields are used to identify who the Student is. The club list reference is used in order to retrieve the clubs the Student currently runs from the database.

Club
The Club object is the important object of this use case. The club number will be assigned to the Club object automatically, giving it a way for the club to be referenced by the User object. The club name and description are provided by the User and are used in order to check with any new club applications that may be created after the club has been made. The club logo and club picture list reference are used to display pictures on the club's page on the module. Is Approved is used during the club verification phase by the NEIU administration. This method being checked true or false determines whether or not the club has been approved by the administration. The member reference list will be used by Club Leaders in order to see who is in their club.

NEIU Companion | Vazquez, Nunez, Luna
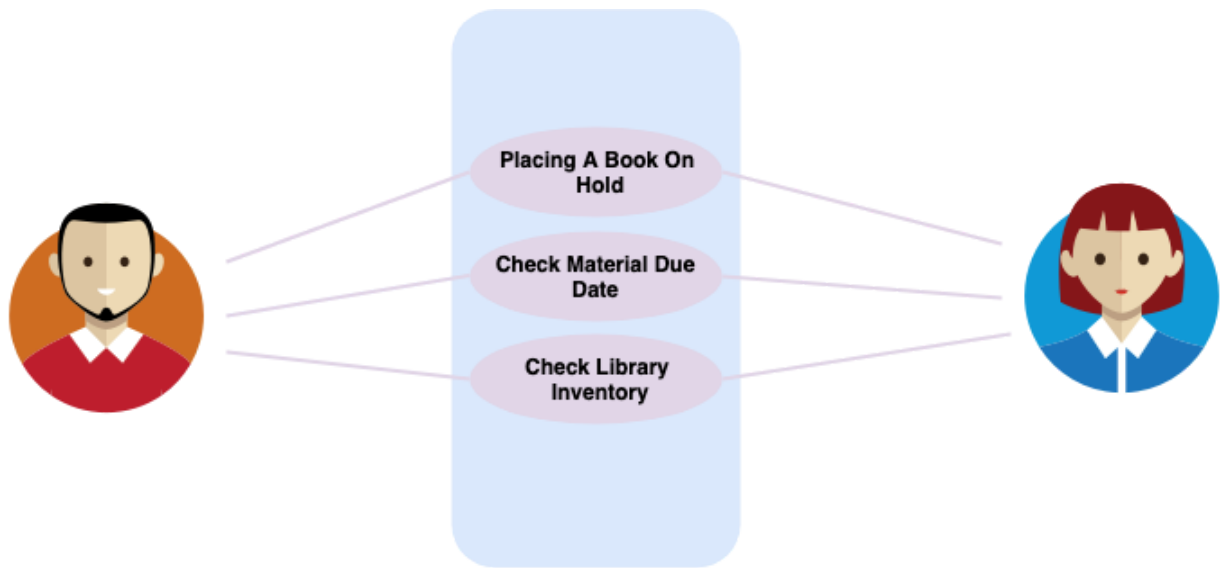
3.1 Placing a book on hold

Students are able to place books on hold from the library through the library module on the NEIU Companion application. The module will present students with the library's collection of books, which they can then browse and search for any book in particular they desire. Our module facilitates the the process of checking out books from the library by making it as simple as possible. Students can either place one or books books on hold and receive a confirmation notifying them when their books will be available for pickup. Once the order is confirmed, library staff will receive the notification and be able to specifically attach the student to their order using their account information and alert them if there is any problem.

3.2 Check Material Due Date

On the check due date tab of the library module, students will be able to check the due date for any materials currently checked out from the library.

3.3 Check Library Inventory

On the check library inventory tab, students will be able to search for individual library materials using either their name, ISBN, and/or author. Once the search is made, all of the available materials connected to that search that are currently carried by that library. This information will include the quantity that the library currently holds for that material along with the various formats of that material.

Library Use Case: Placing a Book on Hold

The following table showcases the details of Library Use Case: Placing a Book on Hold.

ID and Name	Placing Book on Hold		
Created By:	Sergio Luna	Date created:	4/1/2019
Primary Actor	Student	Secondary Actors:	Staff
Description:	A student accesses the library system from the application, browse the current selection of books, place a book on hold, review any materials that are currently checked out		
Trigger:	Student selects the library icon		
Preconditions:	PRE-1. Student is currently registered at NEIU PRE-2. Student is logged into their account		
Postconditions:	POST- 1. Inventory of book is updated to reflect book status availability POST- 2. Book hold order is stored in library system with confirmation status		

The following table showcases expected normal and alternative flows:

Normal Flow:	**4.0 Placing a single book on hold** 1.User taps on library icon 2. User selects the option to browse books 3. Library system displays its book collection 4. Student selects a desired book to place on hold 5. Library system displays a review of the selected book to place on hold 6. Student can either select to confirm hold order (continue normal flow) or continue browsing the library's selection of book (return to step 2) 7. Library system will display when the book will be available for pick up 8. Library system sends a confirmation email to student 9. Library system stores the data and notifies staff of book hold order
Alternative Flows	**4.1 Placing multiple books on hold** 1. Student requests to continue browsing the library book collection 2.Library system stores data from previous selection 3. Return to step 2 of normal flow
Exceptions	**4.0 The selected book is currently unavailable** 1. Library system informs student that the book is not currently available 2. Displays an option to be placed on a queue until book is available 3. Otherwise, removes book from hold order
Priority	Medium
Frequency of Use:	Roughly 50 or more students a day, with an average of at least one. The peak time of use is before the beginning of a semester
Other Information	1.Prior to confirming, a student should be able to cancel their order 2.Anyone should be able to view their current and previous checked out/ order history

NEIU Companion | Vazquez, Nunez, Luna

Placing A Book On Hold: Activity Diagram
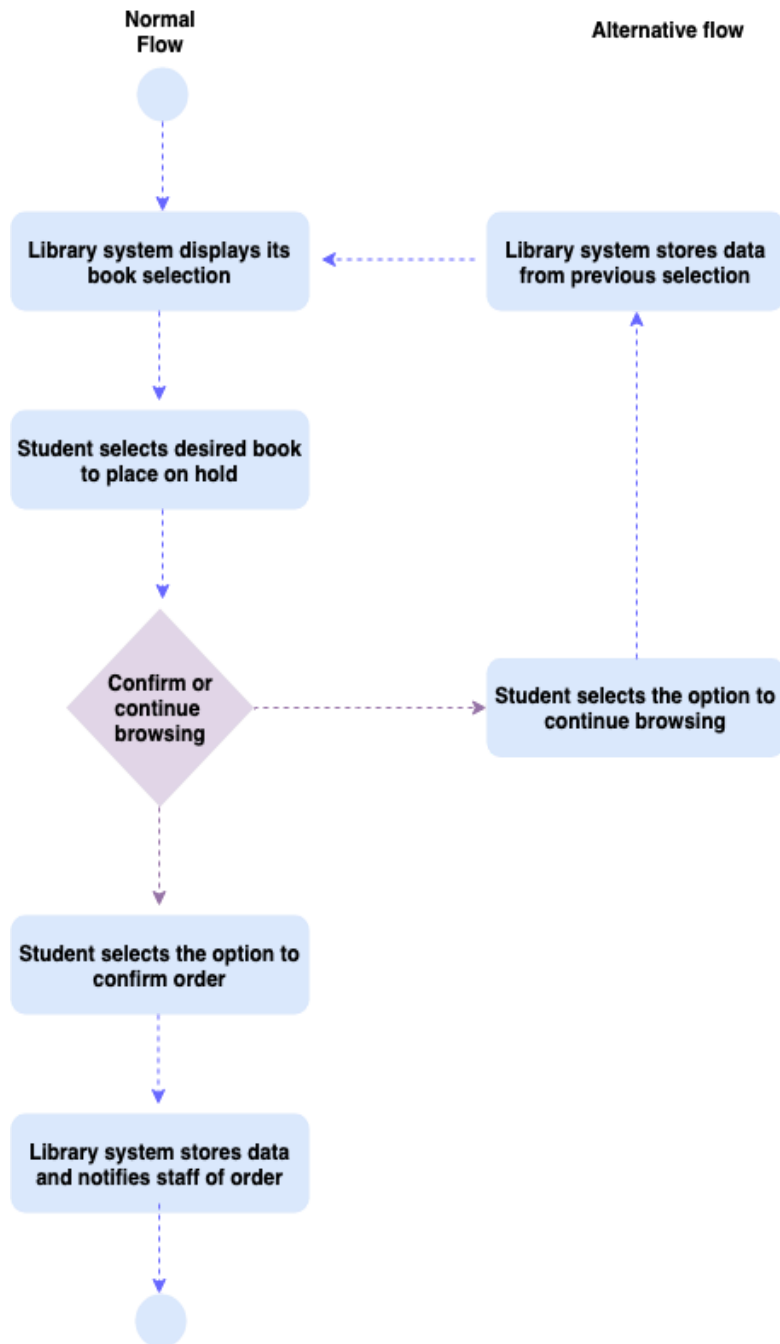
Normal Flow

Alternative flow

Library system displays its book selection

Library system stores data from previous selection

Student selects desired book to place on hold

Confirm or continue browsing

Student selects the option to continue browsing

Student selects the option to confirm order

Library system stores data and notifies staff of order

The diagram on the left displays the normal and alternative sequence that a student would take in the process of placing a book on hold from the library.

The diagram begins with the student viewing the library's book selection and then selecting a desired book to place on hold. If the student only wants one book then the student will follow the normal flow which will then lead them to confirming their order. The library system would then store the data and notify the staff of the order.
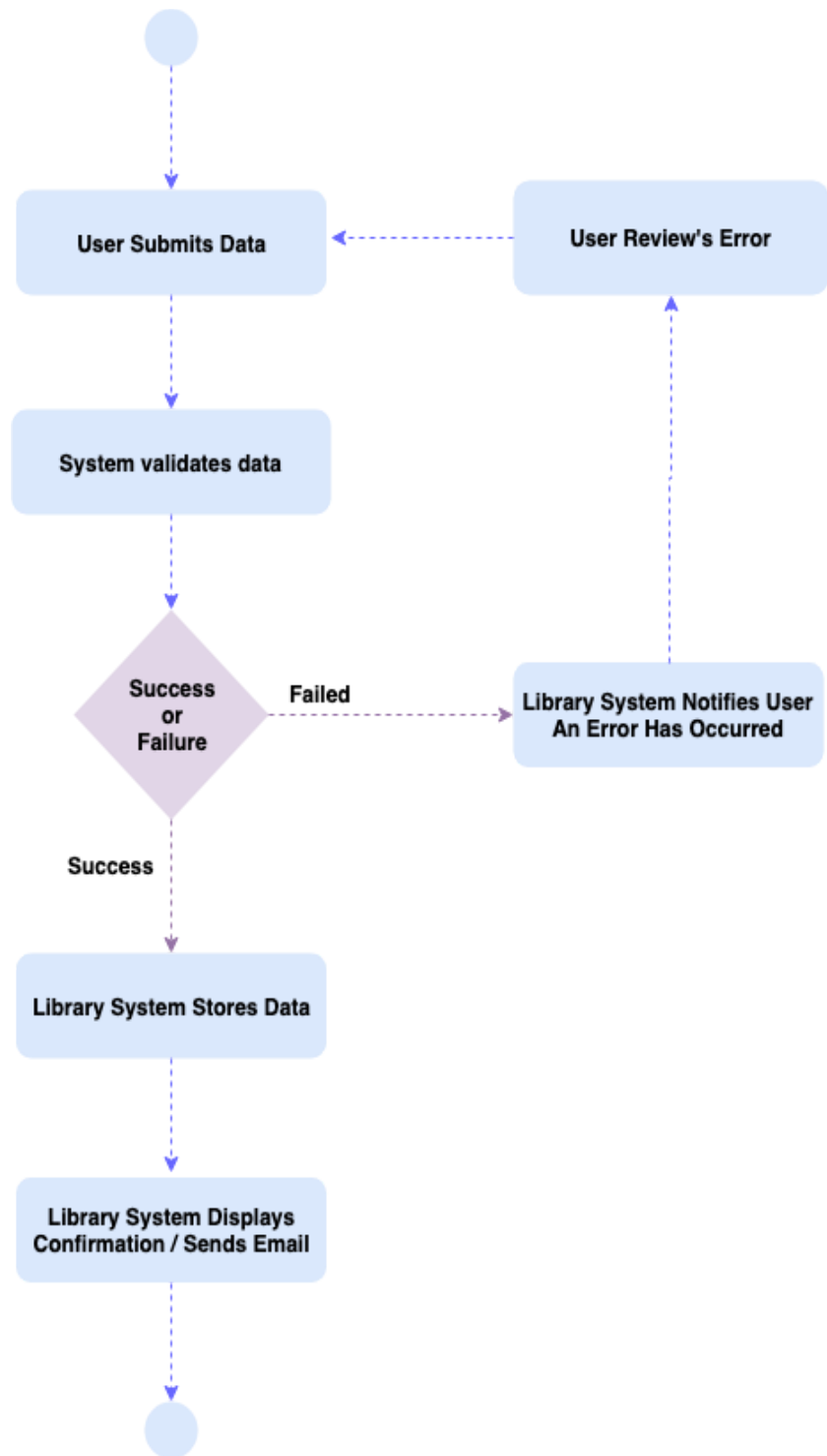
The alternative flow would select to continue browsing the library's book selection and the library system would store the previous data from the previous selection. The student would then return to the library's book selection and the process would continue depending on whether the student wants to place multiple books on hold or not.

Placing Books On Hold: Data Flow

The diagram describes the data process that occurs while a user is placing a book on hold. The user accesses the library selection and places on hold whichever book the user desires. When the user confirms his/her order, the system initiates the process of validating the hold order.

If there is any error in validating the order or there was an error in storing the data, the order is then terminated, and an error message is returned to the user. The user must then review the error message and attempt to place his/her order again until the order processes.

If the order is successful, the data will then be stored within the library system. The system will then display a confirmation message to the user and then email them a separate email confirmation for the user's own records.

```
        ●
        │
        ▼
┌─────────────────┐        ┌─────────────────┐
│ User Submits Data│ ◄──────│ User Review's Error│
└─────────────────┘        └─────────────────┘
        │                           ▲
        ▼                           │
┌─────────────────┐                 │
│System validates data│             │
└─────────────────┘                 │
        │                           │
        ▼                           │
      ◇ Success          Failed   ┌─────────────────────────┐
      or          ──────────────► │ Library System Notifies User│
      Failure                     │ An Error Has Occurred       │
        │                         └─────────────────────────┘
        │ Success
        ▼
┌─────────────────────┐
│Library System Stores Data│
└─────────────────────┘
        │
        ▼
┌─────────────────────────┐
│ Library System Displays    │
│ Confirmation / Sends Email │
└─────────────────────────┘
        │
        ▼
        ●
```

Placing Books On Hold: Sequence Diagram
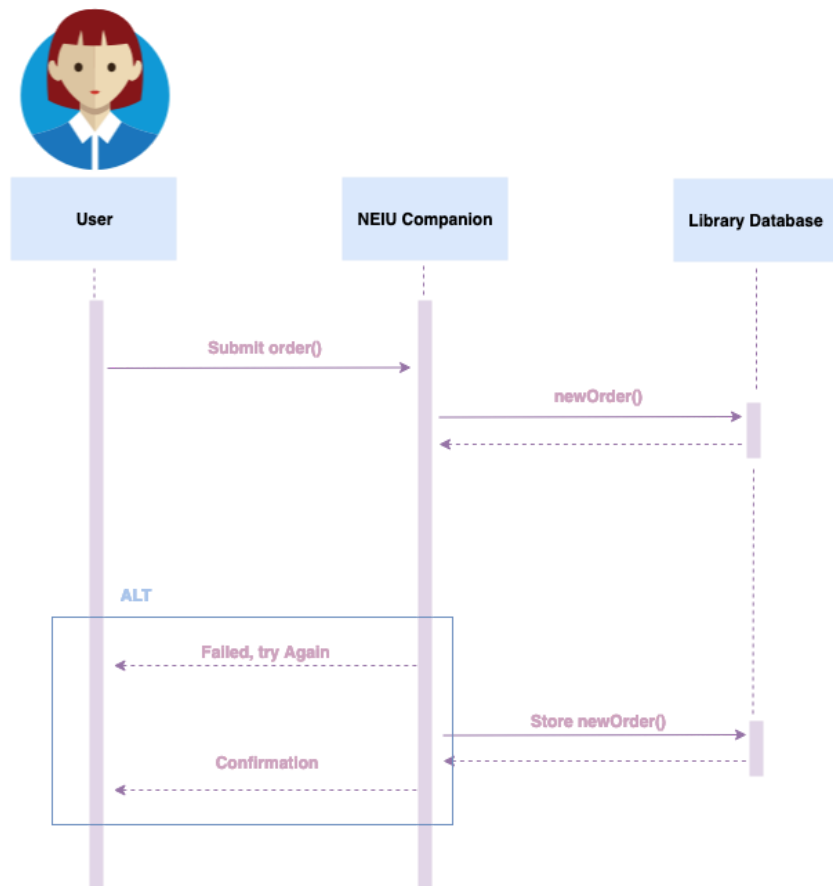
The process that is outlined above represents the data flow in the previous diagram. The NEIU companion is responsible for collecting the users order request and then send that request to the library database. Once the data is validated, the system will then store the new order onto the library database. The system will then return a confirmation to the user and notify it them that the order was a success. If there was an error on validating the account or any other type of error the system will return and error message to the user and notify them to try again. This is illustrated in the 'ALT' sequence highlighted by the blue rectangle on the diagram above.

NEIU Companion | Vazquez, Nunez, Luna

Placing Books on Hold: Data Model
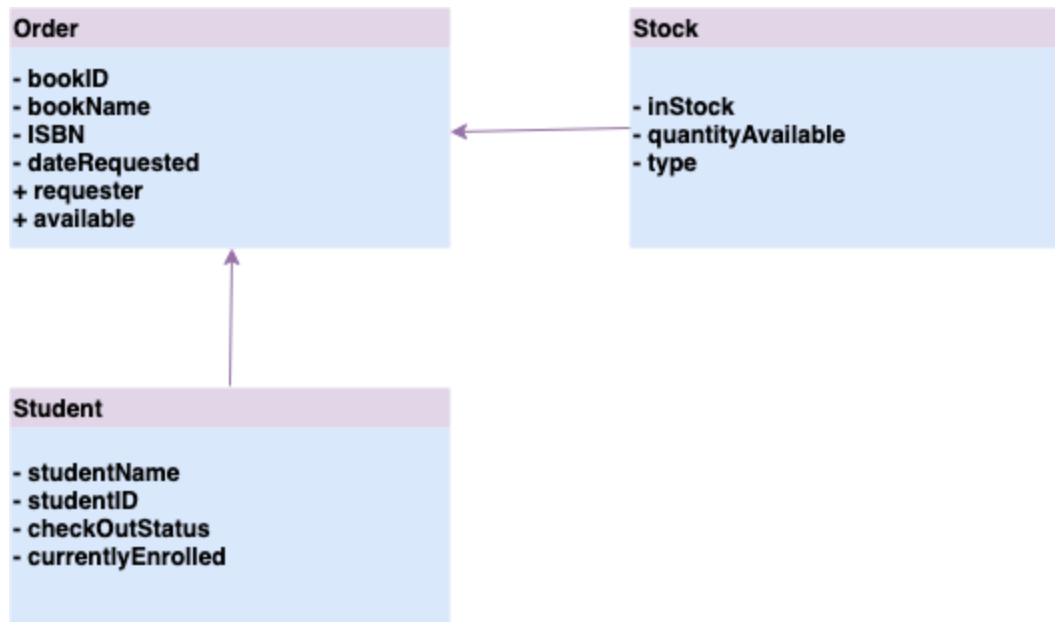
Student
Contains the basic information that is used to attach the user to a specific order. It contains the full name of the student along with the student identification number. The checkOutStatus checks whether the student is able to or not currently check out books due to any outstanding fees or any other issue. This also checks whether the student is currently enrolled or not which may affect whether or not they'll be able to check out books from the application.

Order
The order object manages all of the information related to a confirmed book hold order. It contains the information that is related to a specific book which include its name, author and ISBN number. Along with this, it also receives information from the Student and Stock objects to ensure that the order can be fulfilled.

Stock
The stock object contains the information related to the current stock on a specific order. The inStock attribute validates if it is in stock or not, if it is then it check the current available quantity and its type(hard cover, paperback, etc).

Health Services Module
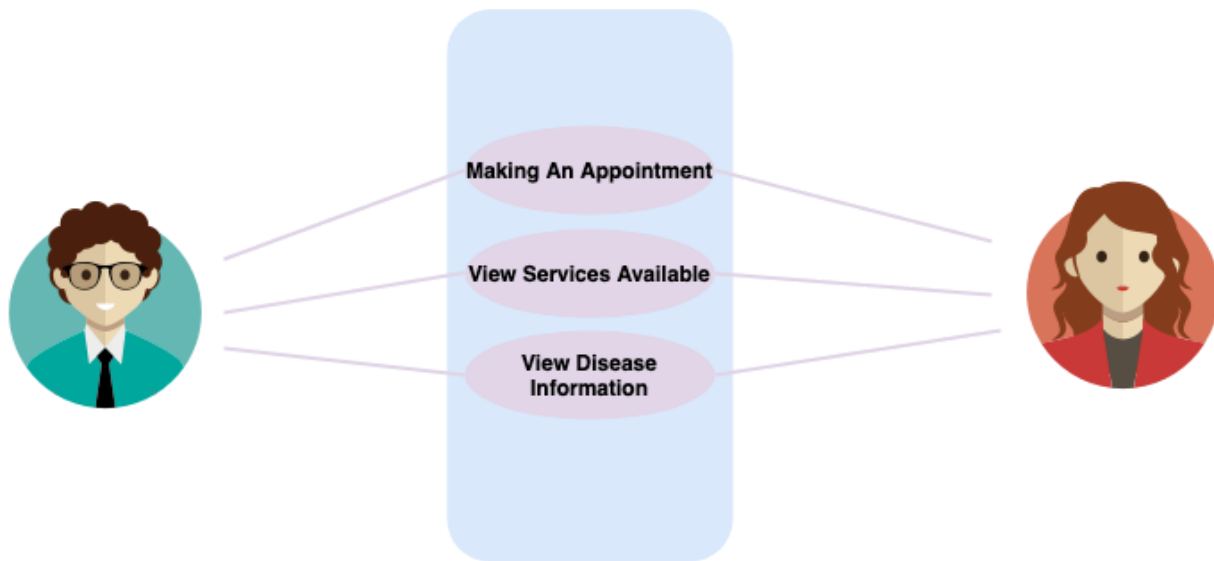
4.1 Making an appointment

Students are capable of booking a medical appointment through the NEIU companion health services module application. When opened, student will be presented with the main NEIU health services interface screen, which will then provide students the option to select their specific need. When selecting the option to make an appointment, students will have the option to select their desired physician, appointment date, and finally the reason for their visit. Once that data is confirmed, the appointment information will then be forwarded to the health services department and they will be notified of the new appointment scheduling.

4.2 View Services Available

Students are able to check the services provided by health services through the health services module. Once the module is opened and the health services interface is presented, students will be able to select the services available option. They'll be able to browse through the many options and see if the services available match their needs along with further information.

4.3 View Disease Information

Students are capable checking information on common illnesses through the health services module. Students will be able to compare their symptoms against information provided by health staff on common illnesses and determine whether their symptoms require a visit to the office.

NEIU Companion | Vazquez, Nunez, Luna
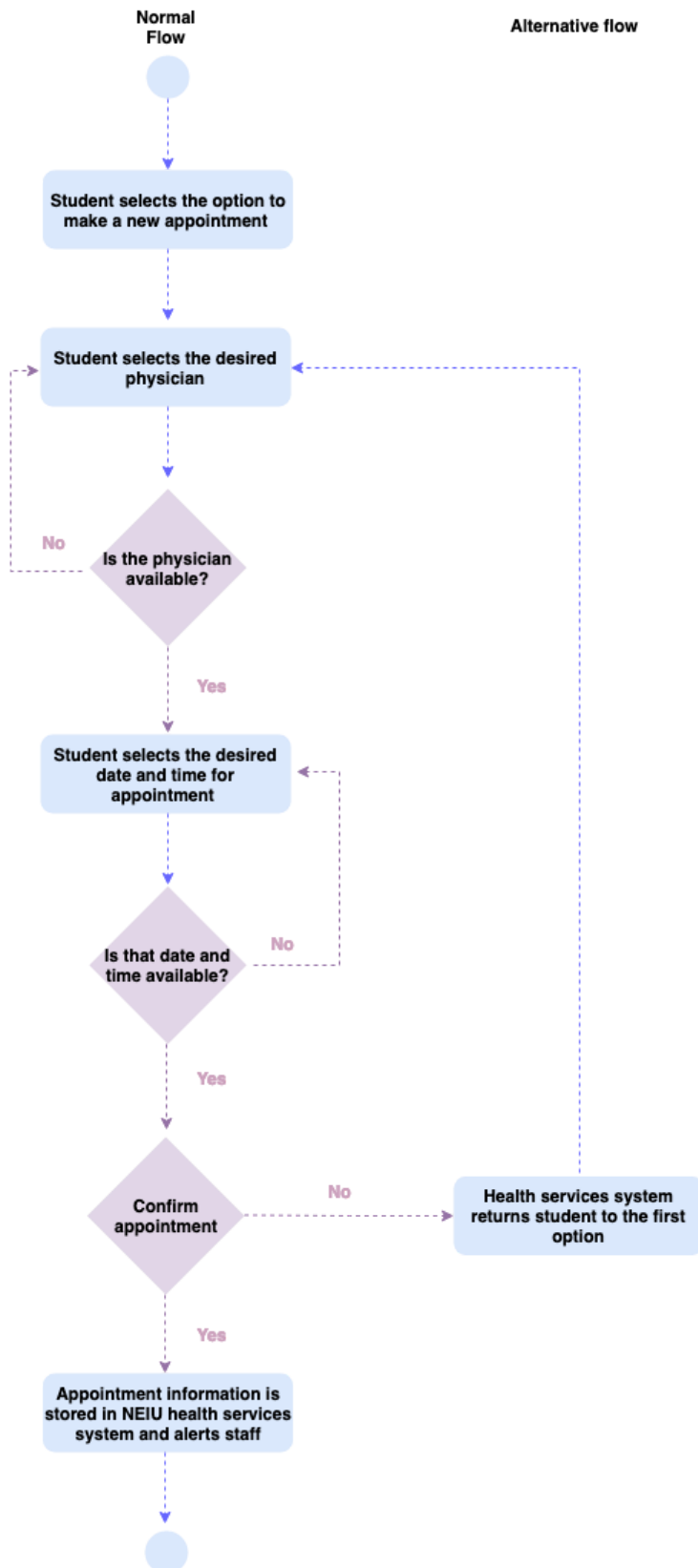
Health Services Use Case: Making an appointment

The following table showcases the details of the health services Use Case: Making an appointment.

ID and Name	Making an appointment		
Created By:	Sergio Luna	Date Created	4/1/2019
Primary Actor	Student	Secondary actors	Staff
Description:	A student accesses the NEIU health services system from the application, select the option to make an appointment, select a date and time, and review the details of his/ her appointment		
Trigger:	Student selects the health services icon		
Preconditions:	*PRE-1.* Student is currently registered at NEIU *PRE-2.* Student is logged into their account		
Postconditions:	*POST- 1.* Appointments are updated to reflect availability times *POST- 2.* Appointment is stored in NEIU health services system with confirmation status		

NEIU Companion | Vazquez, Nunez, Luna

The following table showcases expected normal and alternative flows:

Normal Flow:	**6.0 Placing an appointment** 1.User taps NEIU health icon 2. Student selects the option to place an appointment 3. Health services system displays an option to select a reason for visit 4. Student selects a desired option 5. Health services system displays an option to select the desired doctor or nurse 6.Student selects a desired option 7. NEIU health system displays an option to select the desired date and time 8.Student selects date 9. Student can either select to confirm appointment details (continue normal flow) or change appointment details (return to step 2) 10) NEIU health system will display a confirmation for appointment 11) NEIU health system sends a confirmation email to student 12)NEIU health system stores the data and notifies staff of appointment
Alternative Flows	None
Exceptions	**6.0 The selected date of appointment is unavailable** 1. NEIU health system informs student that the selected date is not currently available 2. Displays the option to select another date 3. Otherwise, cancels appointment **6.1 The selected physician is unavailable** 1. NEIU health system informs student that the selected doctor or nurse is not currently available 2. Displays the option to select another physician 3. Otherwise, cancels appointment
Priority	High
Frequency of Use:	Varies depending on the medical needs of the student population.
Other Information	1.Prior to confirming, a student should be able to cancel their appointment

NEIU Companion | Vazquez, Nunez, Luna

Making an appointment: Activity Diagram

Normal Flow

Student selects the option to make a new appointment

Student selects the desired physician

Is the physician available?

No

Yes

Student selects the desired date and time for appointment

Is that date and time available?

No

Yes

Confirm appointment

No

Yes

Appointment information is stored in NEIU health services system and alerts staff

Alternative flow

Health services system returns student to the first option

The diagram on the left displays the normal and alternative sequence that a student would take in the process of placing a new appointment in the health services system.

The diagram begins with the student selecting the option to make a new appointment. The student is then prompted to select a desired physician from those available. If the selected physician is not available then the student will be returned to the selection of a physician otherwise, it'll present the student with the option to select a desired date and time. If the selected date and time is not available the student will be given the option to select another option otherwise it'll present the student with the option to confirm their appointment.
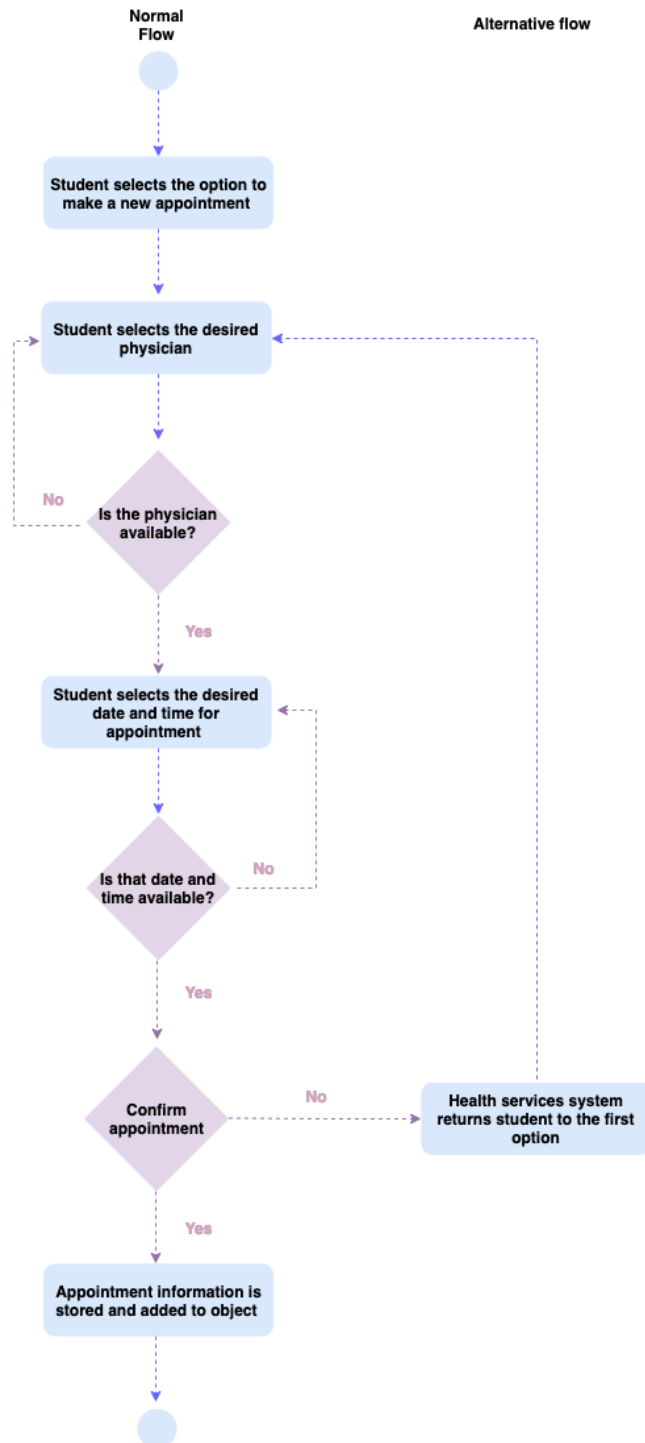
If the student wants to edit their appointment details it'll follow the alternative flow path and return the student to the first option made, otherwise it'll store the appointment details and forward the information to the staff.

NEIU Companion | Vazquez, Nunez, Luna
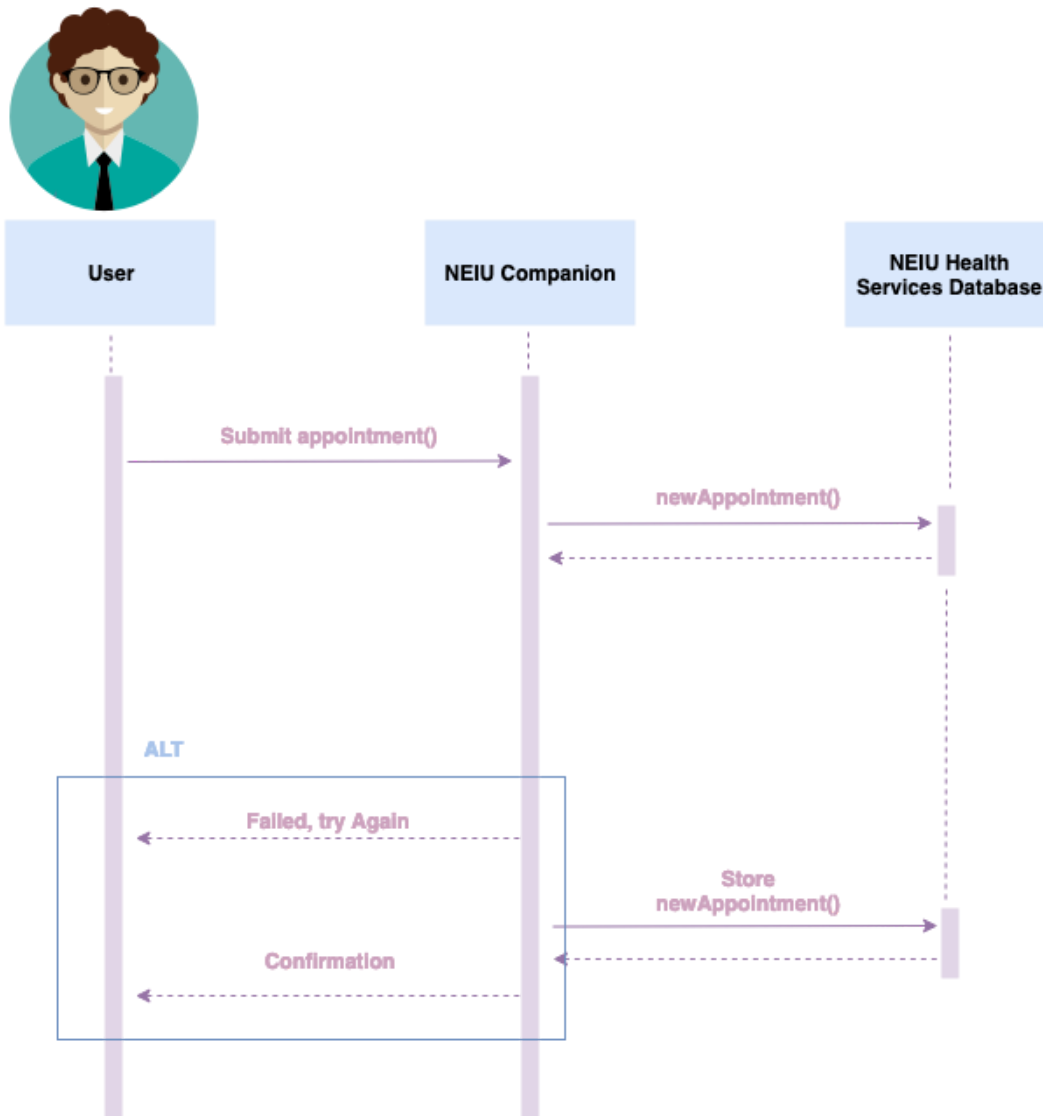
Making an appointment: Data Flow

The diagram on the data displays the normal and alternative sequence that data would move in the process of placing a new appointment in the health services system.

Beginning with the normal flow, the student is prompted to select a desired physician. If the selected physician is not available then the student will be returned to the selection of a physician otherwise, it'll store the physician information and move to the next step. Next,the student will be prompted to select a date and time for the appointment . If the selected date and time is not available the student will be given the option to select another option otherwise, it'll store that information. Once a student confirms their appointment details the information is added to the object and the process is complete.

If the student wants to edit their appointment details it'll follow the alternative flow path and return the student to the beginning of the process and reset the information stored.
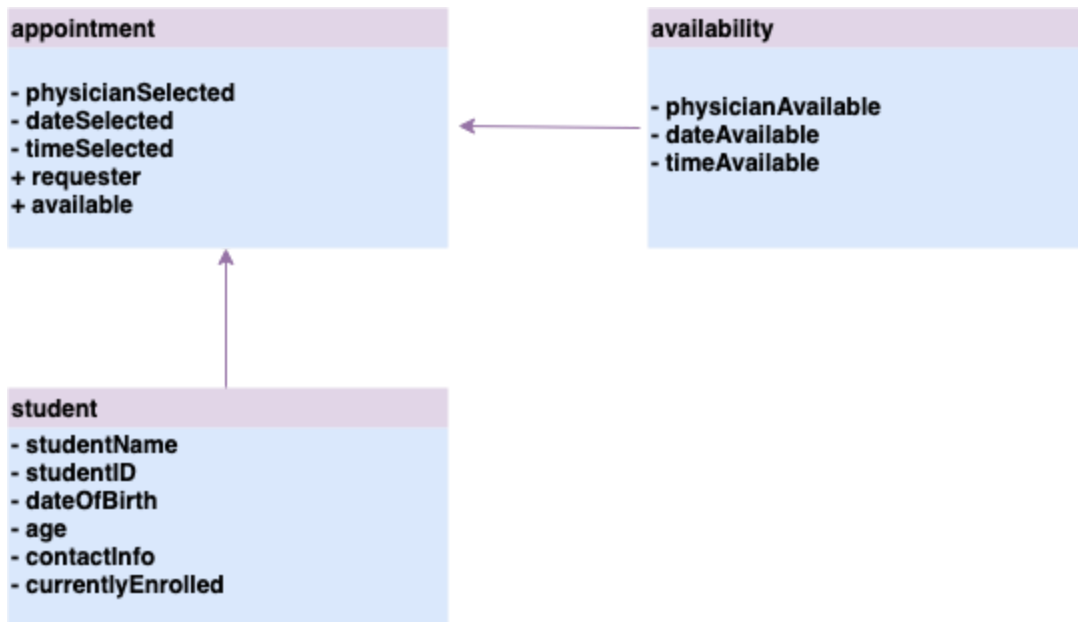
Normal Flow

Alternative flow

Student selects the option to make a new appointment

Student selects the desired physician

Is the physician available?

No

Yes

Student selects the desired date and time for appointment

Is that date and time available?

No

Yes

Confirm appointment

No

Health services system returns student to the first option

Yes

Appointment information is stored and added to object

Making an appointment: Sequence Diagram

The process that is outlined above represents the data flow in the previous diagram. The NEIU companion is responsible for collecting the users order request and then send that request to the NEIU health services database. Once the data is confirmed, the system will then store the new appointment into the NEIU health services database. The system will then return a confirmation to the user and notify it them that the appointment is confirmed.The ALT sequence presents the data flow in the case of an error occuring in confirming the appointment or any other type of error the system. It will return and error message to the user and notify them to try again.

NEIU Companion | Vazquez, Nunez, Luna

Making an appointment: Data Model

```
appointment                              availability

- physicianSelected                      - physicianAvailable
- dateSelected                           - dateAvailable
- timeSelected                           - timeAvailable
+ requester
+ available


student
- studentName
- studentID
- dateOfBirth
- age
- contactInfo
- currentlyEnrolled
```

Student
Contains the basic information that is used to attach the user to a specific appointment. It contains the full name of the student, their student identification number, their date of birth, age, contact information, and whether their current enrolled or not. This information is collected from the user's account in order to verify a student's identity and to be used by their attending physician.

Appointment
Contains the information related to the selected made by the student for their appointment. The physicianSelected link a specific physician to the appointment while the date and time values schedule both the physician and the student a specific slot where they will meet.

Available
Contains the information related to the selections the student has made and whether or not they're available. The physicianAvailable value presents whether a specific physician is able to take appointments or not while the time availableTime and availableDate present whether the selected slots are available or not.
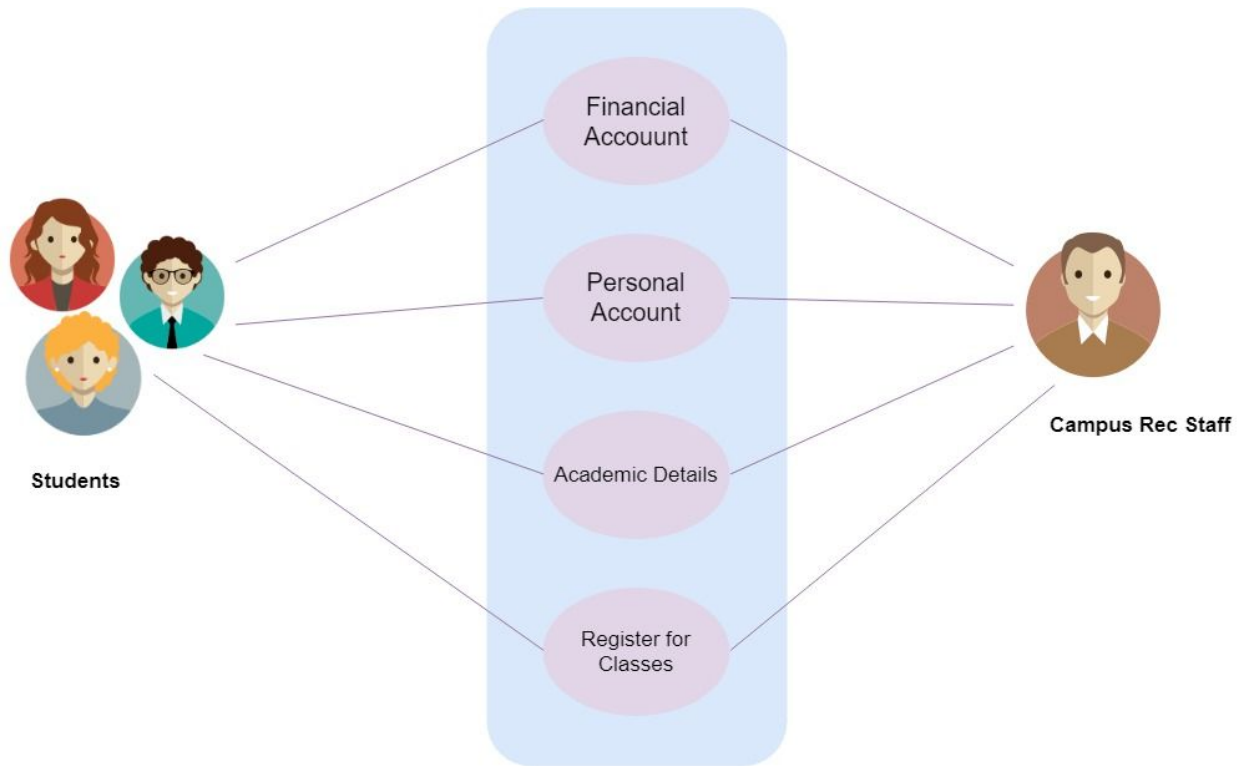
5.1 Financial Account

Students are able to access their personal financial accounts. This module gives students the opportunity to make tuition payments and updates the student's account. The application's module also allows students to submit timesheets and tax forms if they are employed by the university.

5.2 Personal Account

The personal account tab allows students to change their personal information. The application gives the the option of changing/updating their information on sections like: Address & Phone, e-mail addresses, emergency contacts, name and SSN. Once the students have updated their information, the system updates their personal accounts across all platforms.

5.3 Academic Details

The academic details tab gives students access to their academic information. This module allows students to check their registration status and course authorization. Students can also view their detailed student schedule of past and present semesters,, degree Evaluation and transcripts (unofficial and official).

5.4 Register for Classes

The register for classes tab lets students register for classes for upcoming semesters. In addition, this section of the module allows students to add or drop classes and change class options.

NEIUport Module Use Case: Financial Account

The following table showcases the details of NEIUport Use Case: Financial Account.

ID and Name:	**Financial Account**		
Created By:	Carolina Vazquez	Date Created:	4/4/2019
Primary Actor:	Student	Secondary Actors:	Academic Counselors, Financial Aid staff
Description:	The student will be able to access their finances in regards to University life. It will provided access to tuition payments/debts, financial aid, awards and employment (if student is a university employee).		
Trigger:	A student selects the corresponding tabs under the "Student" tab		
Preconditions:	PRE-1. Student logged in to NEIU Companion. PRE-2. Student has payment information set up on ePay .		
Postconditions:	POST-1. Tuition payments are updated into account POST-2. Future payment due dates or financial aid awards will be marked and posted POST-3. Student will be able to submit time sheets and tax forms		

Normal Flow:	**1.0 Making an online payment**
	    1. A Student taps on the NEIUport Module of the NEIU Companion app.
	    2. App displays home page for the NEIUport, including MyNEIU, NEIU Central, and Student
	    3. Student taps on the Student tab, from the tabs shown, student clicks on Payment/Refund tab.
	    4. Student makes the desired payment through ePay
	    5. NEIU Companion sends Financial Aid Office the payment made by the student
	    6. Financial Aid Office confirms payment and updates the student's account
	    7. Student receives email to their NEIU Email that the payment is being process and a confirmation email once it has been applied to their account
	    8. NEIU Companion updates the student's current balance
	1.1 Accessing Financial Aid Awards/ Requirements
	    1. A Student taps on the NEIUport Module of the NEIU Companion app.
	    2. App displays home page for the NEIUport, including MyNEIU, NEIU Central, and Student
	    3. Student taps on the Student tab, from the tabs shown, student clicks on Financial Aid Award or Financial Aid Requirements depending on their choice.
	    4. App launches the corresponding window and student will be able to see account balance from past to present semesters

Alternative Flow:	None.

Exceptions:	**1.0 E1 There is a hold in the student's account**
	    1. The student will be notified of the hold in their account by the Financial Aid Office
	    1. NEIU Companion will display the phone number, hours and location of the Financial Aid Office for students to contact directly

Priority:	High
Frequency of Use:	Depends on how often the student makes payments, but we expect a higher traffic between the end and the start of a new semester as students figure out tuition payments, classes they need to register for and if they have any financial aid or awards.
Other Information:	None.

The flowchart on the left describes the normal flow a Student would take to access financial account through the NEIUport module.

The chart begins from the Student tapping on NEIUport tab followed by student tab. Then, the student chooses between making a payment and looking at financial aid awards.

If student does not have a hold they are able to make a payment through ePay and receive a confirmation email that the payment is being processed. If there is a hold in their account NEIU Companion displays a message with the Financial Aid office contact information for the student to handle personally.

If student selects financial aid wards tab, the system displays the past and present financial aid awards that the student has received.

Financial Account: Data Flow

The diagram on the right describes the way in which data flows through the Financial Account use case in the NEIUport module.

Following the starting point of the normal flow, if the student chooses the payment option, the system checks if the data is available. If the data is available, it displays the payment data and updates after the student makes the necessary changes (sending the information to the financial aid office). If the data is not available the system displays an error message informing of the student's hold in their account.

If the student chooses to see their financial aid award history, the system checks if the data requested is available. If the data is available it displays it, otherwise, the system displays an error message.

NEIU Companion | Vazquez, Nunez, Luna
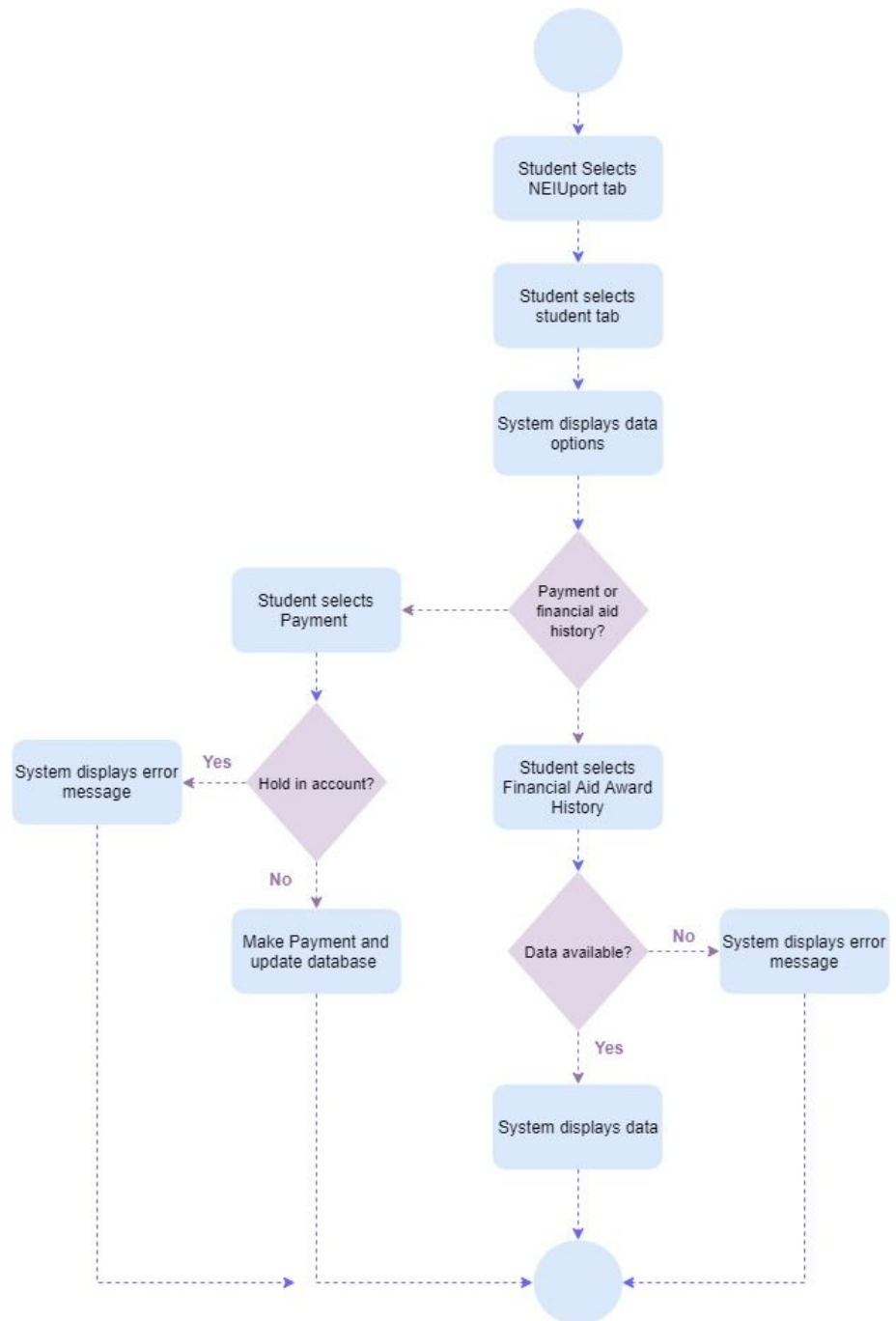
Financial Account: Sequence Diagram
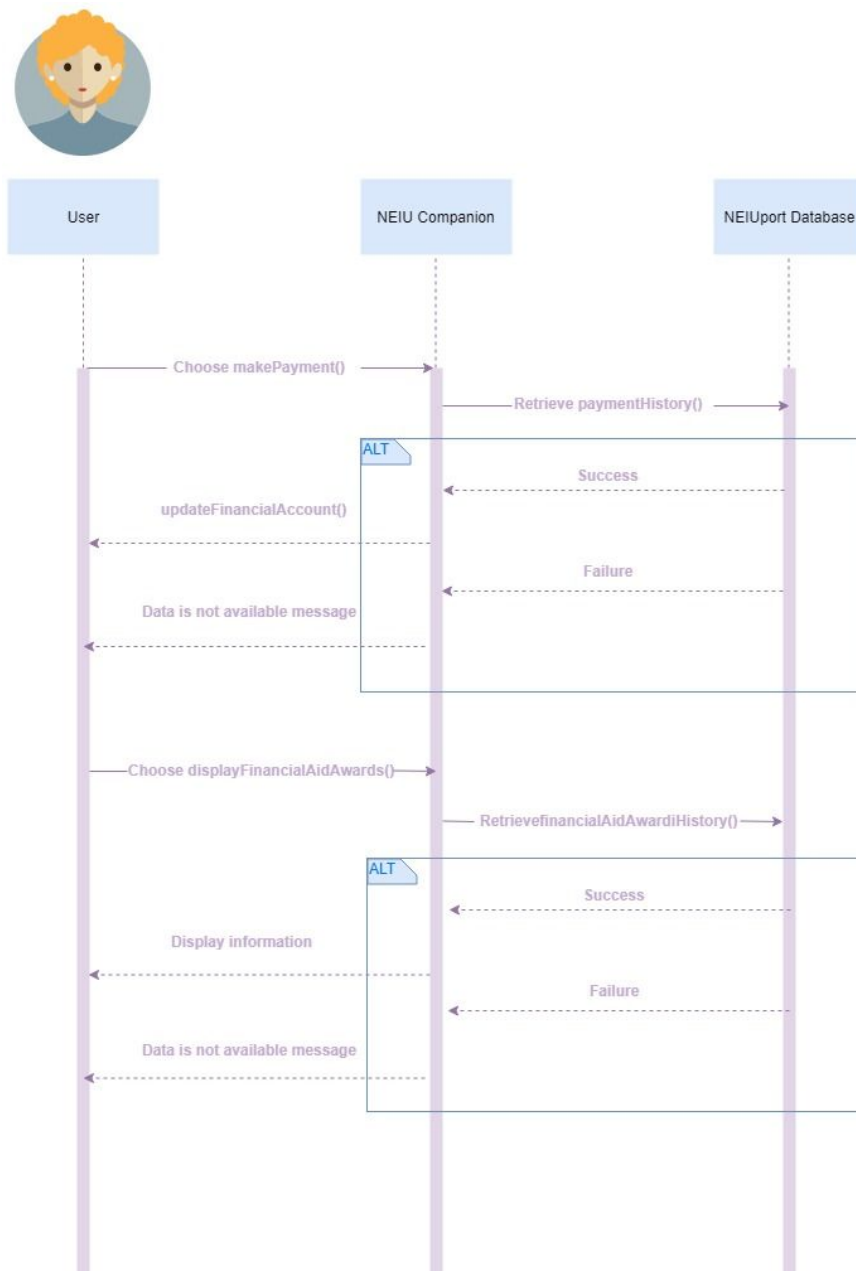
The sequence diagram above is a representation of the functions within the Financial Account data flow diagram. The NEIU companion is responsible for accessing the NEIUport database and responding to student request through the system. If a student wants to make a payment to their student account and the request is successful, the data is sent back and updated by the application. If the paymentHistory method encounters an error, it sends a failure message to the user. If a student wants to access financial aid awards and the request is successful, the student will be able to access the history of past and present awards.
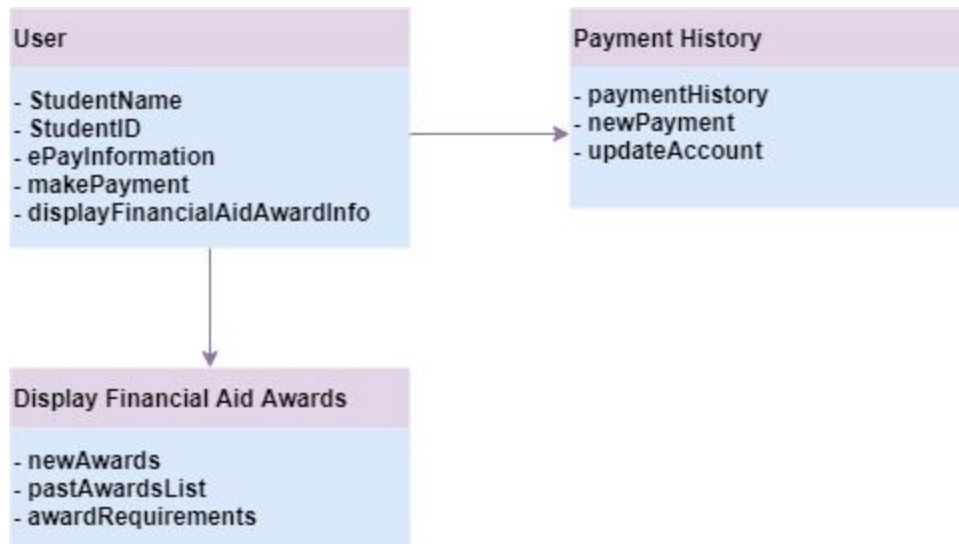
User
The user refers to the student that wished to access the data within the Financial Account use case in the NEIUport Module. The entity stores the student's basic information based on their NEIU Companion data entry. It stores the student's name, identification, ePay information and the option they choose to pick from the use case selection.

Payment History
The Payment History is the object that stores any data that pertains to student's payment history to tuition. This object stores the student's payment history and has a newPayment method that checks if there are any impediments for the student to make the new payment (e.g., hold in their account). The object also has an updateAccount method that stores the updates to the student's financial aid account.

Display Financial Aid Awards
The Display Financial Aid Awards object stores all the data that belongs that option. If the student wishes to see the financial aid awards, it displays different characteristics of the option. The newAwards method stores the newest awards the student has received (e.g., active awards). The pastAwardsList methods displays a list of all the past awards the student has received. Finally, the awardRequirements method displays the requirements for a given award that the student wishes to see more details of.

NEIUport Module Use Case: Personal Account

The following table showcases the details of NEIUport Use Case: Personal Account.

ID and Name	Personal Account		
Created By:	Carolina Vazquez	Date Created:	4/4/2019
Primary Actor	Student	Secondary actors:	Academic Departments, Academic Advisors
Description:	Student will have the opportunity to see their personal information and make changes to it as they see fit.		
Trigger:	Student selects the corresponding tabs under the "Student" tab		
Preconditions:	PRE-1. Student logged in to NEIU Companion.		
Postconditions:	POST- 1. If student has decided to change their personal information, it should be updated		

The following table showcases normal flow and additional details:

Normal Flow:	**1.0 Updating personal information** 1. A Student taps on the NEIUport Module of the NEIU Companion app. 2. App displays home page for the NEIUport, including MyNEIU, NEIU Central, and Student 3. Student taps on the Student tab, from the tabs shown under Personal Information student chooses between Updating Address & Phone, E-mail Addresses, Emergency Contacts, name or SSN 4. Student makes the desired changes
Alternative Flows	None
Exceptions	**1.0 The corresponding office does not accept online submission** 1. Application informs student that the update cannot be done at the moment 2. Displays information of the corresponding office and instructions to follow and fulfill the update
Priority	Medium
Frequency of Use:	Not a frequent use unless the student has had any recent changes

NEIU Companion | Vazquez, Nunez, Luna

NEIUport Module Use Case: Academic Details

The following table showcases the details of NEIUport Use Case: Academic Details.

ID and Name	Academic Details		
Created By:	Carolina Vazquez	Date Created:	4/4/2019
Primary Actor	Student	Secondary Actors	Academic Advisors, Academic Departments, Staff
Description:	Student will have the opportunity to see access their academic records. Students will have access to transcripts, and schedules.		
Trigger:	Student selects the corresponding tabs under the "Student" tab		

The following table showcases the normal flow and additional details of the use case:

Preconditions:	*PRE-1.* Student logged in to NEIU Companion. PRE-2. Student has registered for past or future semesters
Postconditions:	*POST- 1.* If students added or dropped a course, their student schedules would be updated for the semester the changes were made for
Normal Flow:	**1.0 Accessing their academic information** 1. A Student taps on the NEIUport Module of the NEIU Companion app. 2. App displays home page for the NEIUport, including MyNEIU, NEIU Central, and Student 3. Student taps on the Student tab, from the tabs shown under Registration Tools student chooses between Registration Status, Course Authorization, Student Detailed Schedule,Degree Evaluation and Transcripts. 4. Student chooses one of the tabs mentioned on step 3 and the system updates the information accordingly and sends an email to the student if class schedules were changed, they requested an official transcript or if there was a problem with the request
Alternative Flows	None
Exceptions	None
Priority	High
Frequency of Use:	About an 80% frequency of use as students access their classes at the beginning of the semester to find the classrooms and access their progress.

NEIUport Module Use Case: Register for classes

The following table showcases the details of NEIUport Use Case: Register for Classes.

ID and Name	*Register for Classes*		
Created By:	Carolina Vazquez	Date Created:	4/17/2019
Primary Actor	Student	Secondary Actors	Academic Advisors, Academic Departments, Staff
Description:	Student will have the opportunity to register for classes for the upcoming semesters at NEIU. Students will have access to lists of classes offered and add or drop them and registration status.		
Trigger:	Student selects the corresponding tabs under the "Student" tab		
Preconditions:	PRE-1. Student logged in to NEIU Companion. PRE-2. Student has university credentials and is in good academic standing		
Postconditions:	POST- 1. If students added or dropped a course, their student schedules would be updated for the semester the changes were made for		

The following table showcases normal flow for the following use case:

Normal Flow:	**1.0 Accessing their academic information** 1. A Student taps on the NEIUport Module of the NEIU Companion app. 2. App displays home page for the NEIUport, including MyNEIU, NEIU Central, and Student 3. Student taps on the Student tab, from the tabs shown under Registration Tools student chooses between Registration Status, Add or Drop Classes, Look Up Classes, and Change Class Options. 4. Student chooses one of the tabs mentioned on step 3 and the system updates the information accordingly and sends an email to the student if class schedules were changed, they requested an official transcript or if there was a problem with the request
Alternative Flows	**1.0 Registering for class** 1. If the student is not able to register for a class through the app, they will receive a message and should register in person
Exceptions	**1.0 Student cannot register for a class** 1. Application informs student that the request cannot be done whether its due to a hold in the account or student does not have the credentials to register for a specific class 2. Displays information of the corresponding office (Financial Office or their Academic Advisor) and instructions to follow and fulfill the changes
Priority	High
Frequency of Use:	About an 95% frequency of use as students access their classes at the beginning of the semester to find the classrooms, add/drop classes or access their progress .

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Register for Classes: Activity Diagram
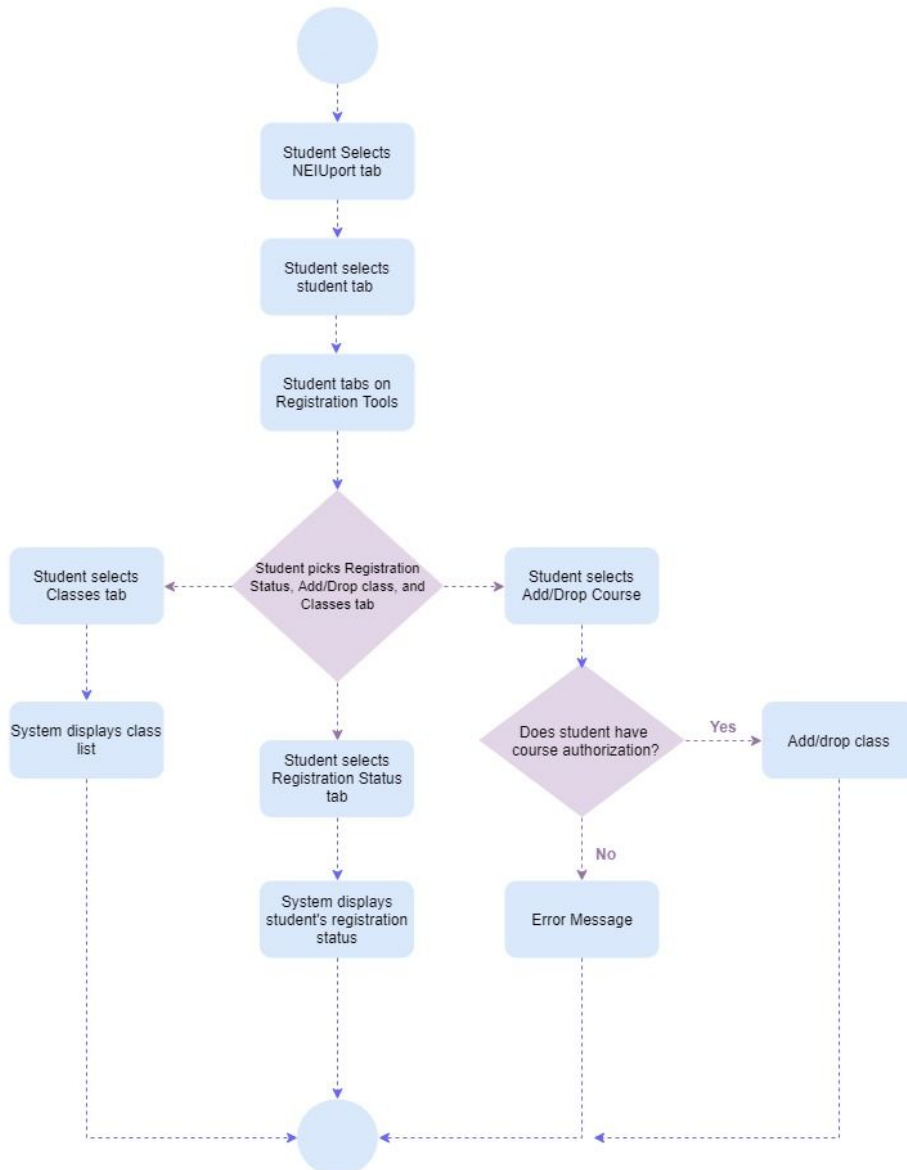
The flowchart on the left describes the normal flow a Student would take to register for classes through the NEIUport module.

Student selects whether they would like to see their registration status, add/drop classes or see a list of the classes being offered.

If the student chooses to add or drop a course the system first verifies that the student has authorization to do so. If the student has permission they can proceed, otherwise, they receive an error message.

Register for Classes: Data Flow
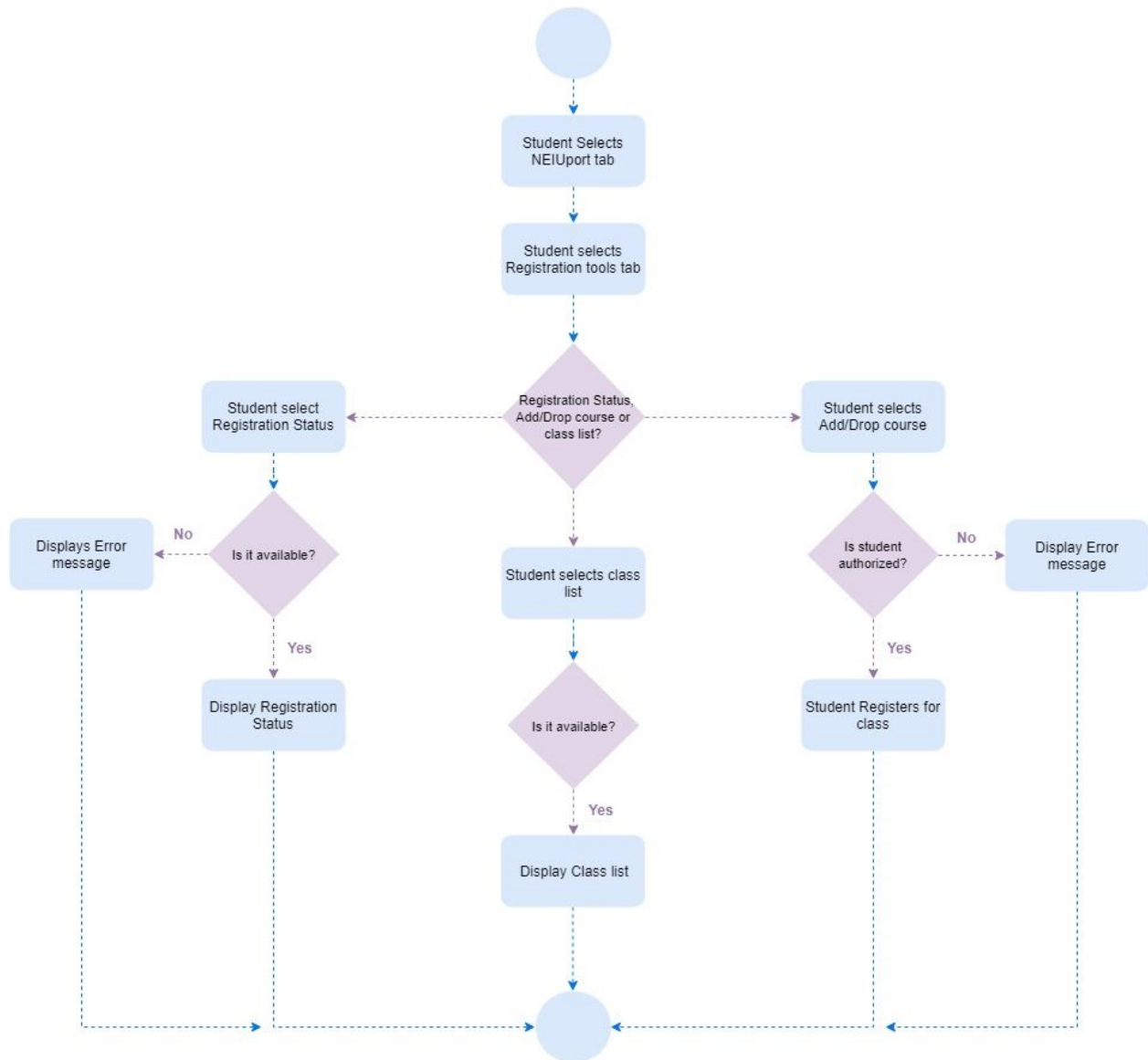
The diagram above describes the way in which data flows through the Register for Classes use case in the NEIUport module. Following the starting point of the normal flow, if the student chooses the NEIUPort tab and Registration Tools tab to later pick between one of three options: registration status, add/drop classes and class list. The system checks if the data is available. If the data is available, it displays the data the student requested. If the data is not available the system displays an error message informing the student the information requested in not available.

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Register for Classes: Sequence Diagram
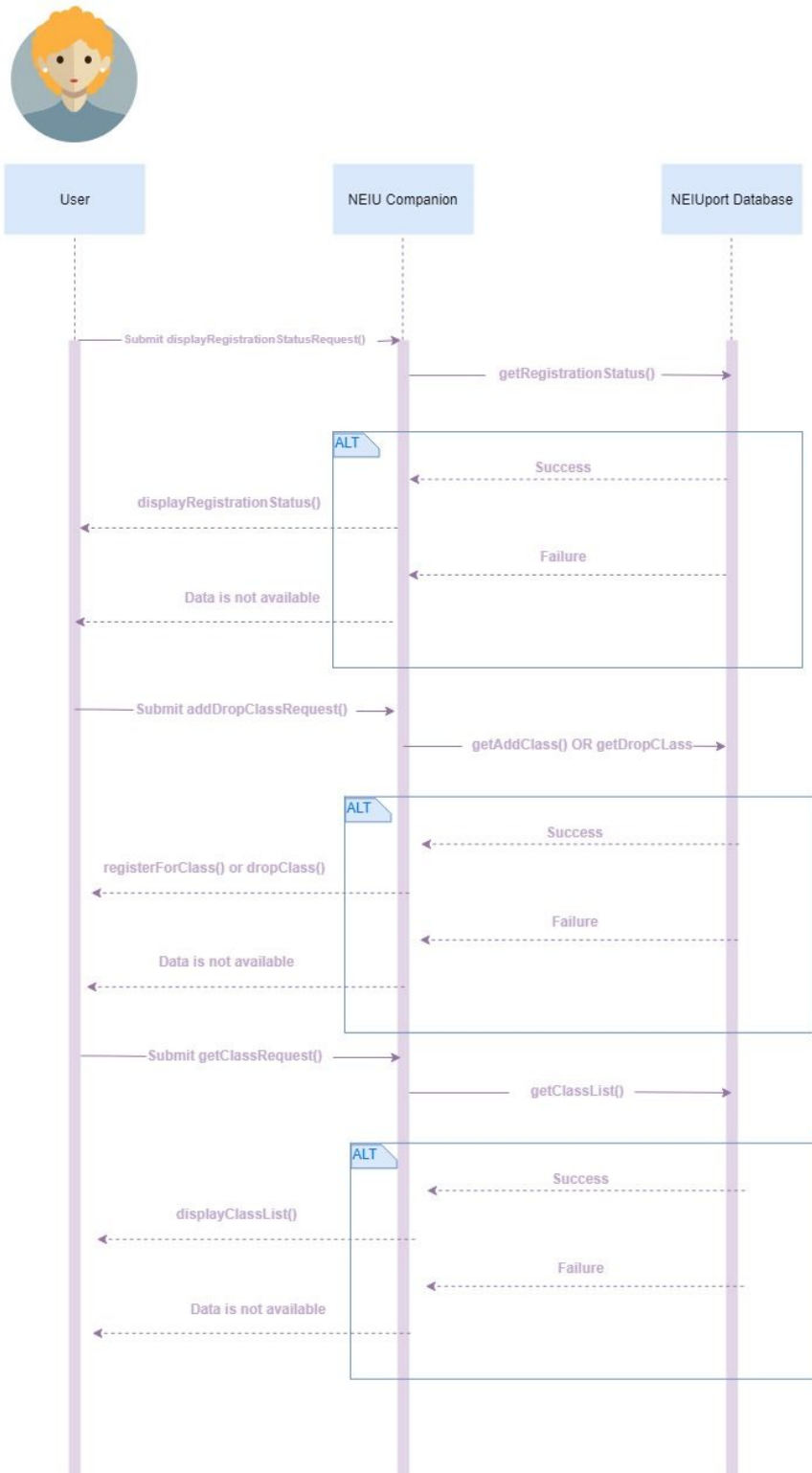
The sequence diagram above is a representation of the functions within the Register for Classes data flow diagram. The NEIU companion is responsible for accessing the NEIUport database and responding to student request through the system. If a student wants to access their registration status and the request is successful the system displays the data. Otherwise, the system displays an error message. The add/drop requests are not successful unless the students have full authority to make the changes. Finally, the students can access the class list. If the student's request is successful, the system displays the list of all classes per given semester. If the request is not successful, the student is notified that their request failed.

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Register for Classes: Data Models
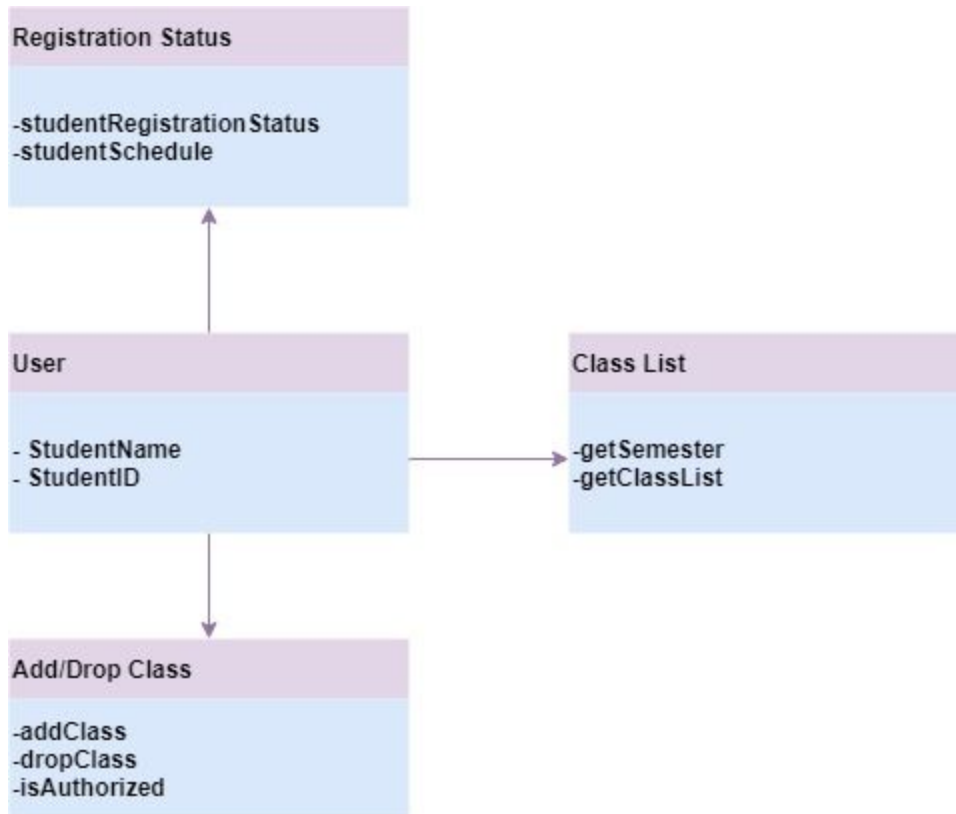
Registration Status

This object retrieves the students Registration Status. In addition, the studentSchedule method displays the students current schedule if they are registered.

User

The user refers to the student that wished to access the data within the Register for Classes use case in the NEIUport Module. The entity stores the student's basic information based on their NEIU Companion data entry. It stores the student's name and identification.

Class List

The object's purpose is to give students the class list per chosen semester. The getSemester method prompts the user to enter the semester from which they wish to see the list of classes. Once the system has the semester the student wants, it implements the getClassList to display the correct list of classes.

Add/Drop Class

With this object students will be able to add or drop classes as they see fit. The methods adsClass and dropClass help the student tailor their class schedules as they see fit. The isAuthorized method ensures that the student has the correct credentials to make the chances they want.
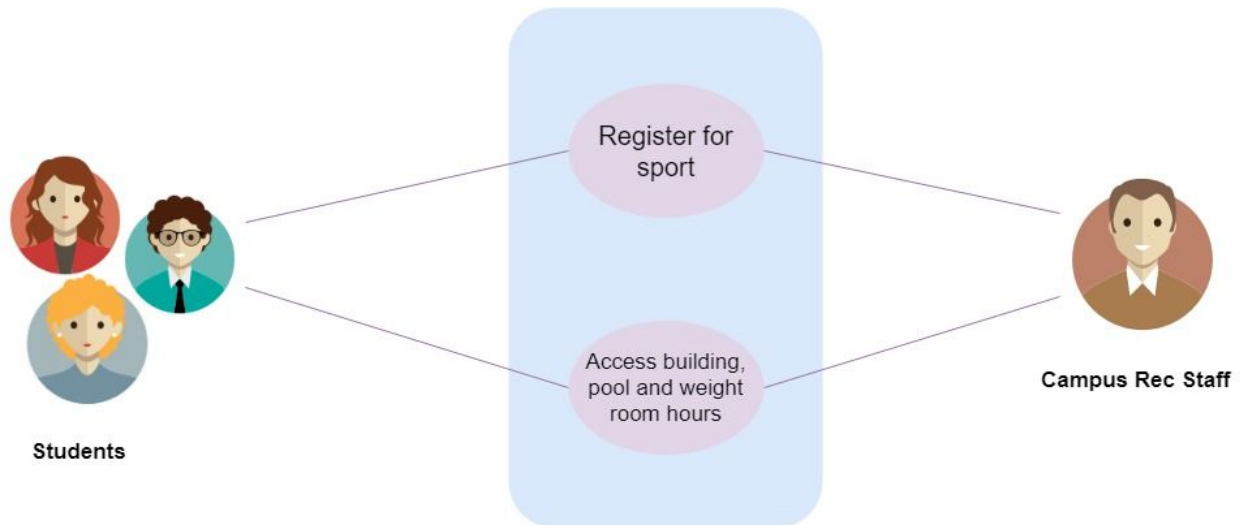
6.1 Manage IMLeagues Profile

Students are able to access their IMLeagues profile in this use case. This module gives students the opportunity to see the teams for a given sport, upcoming events and team statistics. The student also has the option to register for any of the available sports at the given time of the search.

6.2 Access to Campus Recreation Building, Pool and Weight Room hours

Students are able to access different hours of the campus recreation building. The use case allows students to access building, pool and weight room hours depending on their choice.

Campus Recreation Use Case: Manage IMLeagues Profile

The following table showcases the details of Campus Recreation Use Case: Manage IMLeagues Profile.

ID and Name	Manage IMLeagues Profile		
Created By:	Carolina Vazquez	Date Created:	4/4/2019
Primary Actor	Student	Secondary Actors	
Description:	Student will have the opportunity to register for recreational sports offered by the university: basketball, soccer, volleyball, ultimate frisbee (depending on the season).		
Trigger:	Student selects the Campus Rec tab		
Preconditions:	PRE-1. Student logged in to NEIU Companion.		
Postconditions:	POST- 1. Students register for a sport and receive updates on games, wins-losses, and upcoming registrations		

The following table showcases normal flow and additional details:

Normal Flow:	**1.0 Registering for a sport**
	1. A Student taps on the Campus Rec Module of the NEIU Companion app, student clicks on IMLeagues.
	2. App displays home page for the IMLeagues
	3. Student taps on the desired tab: teams, events or stats
	4. Student chooses one of the tabs mentioned on step 3 and registers for the sport they want to be part of that semester
Alternative Flows	None
Exceptions	**1.0 There are not current sports**
	1. If there are no current sports, the application asks the user if they would like to be notified if a new sport post appears on the site.
	2. If student decides to be informed, they will receive a notification
Priority	Low
Frequency of Use:	Depends on the sports offered per semester and interest from students
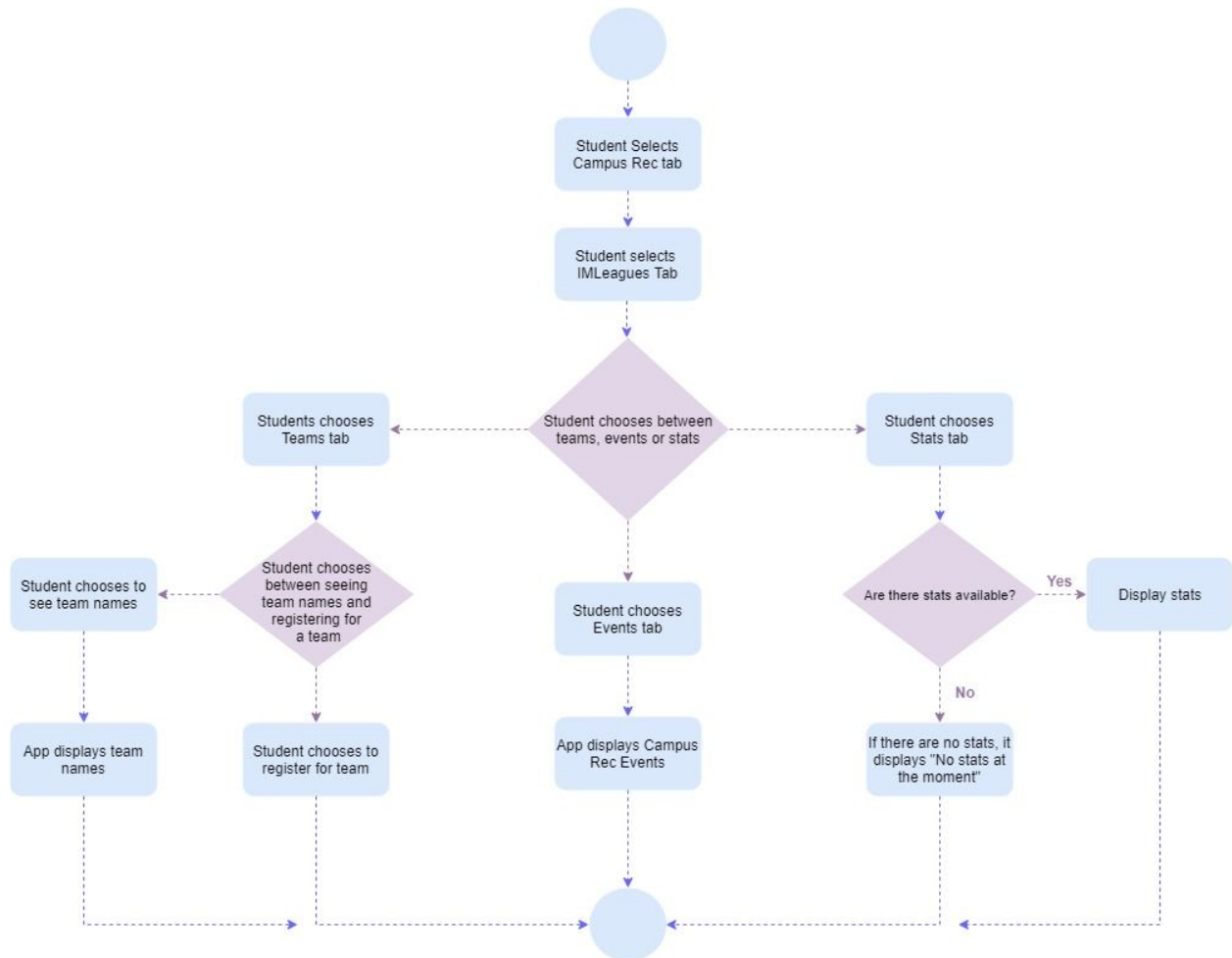
The diagram above specifies the normal flow a student would take to manage their IMLeagues account through the Campus Recreation Module. The diagram starts when the Student is deciding to order a previous order they have made (which moves through an alternative flow on the right), or they wish to create a new order. The diagram then follows through the Student searching for and adding items to their order. At this point, the Student will very if their order is complete.If complete, the Student will then select an available pick-up time and pay automatically through their ePay information that has been provided in the NEIUport module of the NEIU Companion app.

Manage IMLeagues Profile: Data Flow

The diagram on the right describes the way in which data flows through the Manage IMLeagues Profile use case in the NEIUport module.

Following the starting point of the normal flow, if the student chooses the IMLeagues tab, and picks from one of three options: teams, team events and team stats. The system checks if the data is available. If the data is available, it displays the data the student requested. If the data is not available the system displays an error message informing the student the information requested in not available.

Student Selects
Campus Rec tab

Student selects
IMLeagues Tab

System displays
options: teams,
events, and stats

Student selects from
data options

Is data available?

No

System displays data
error

Yes

System displays data
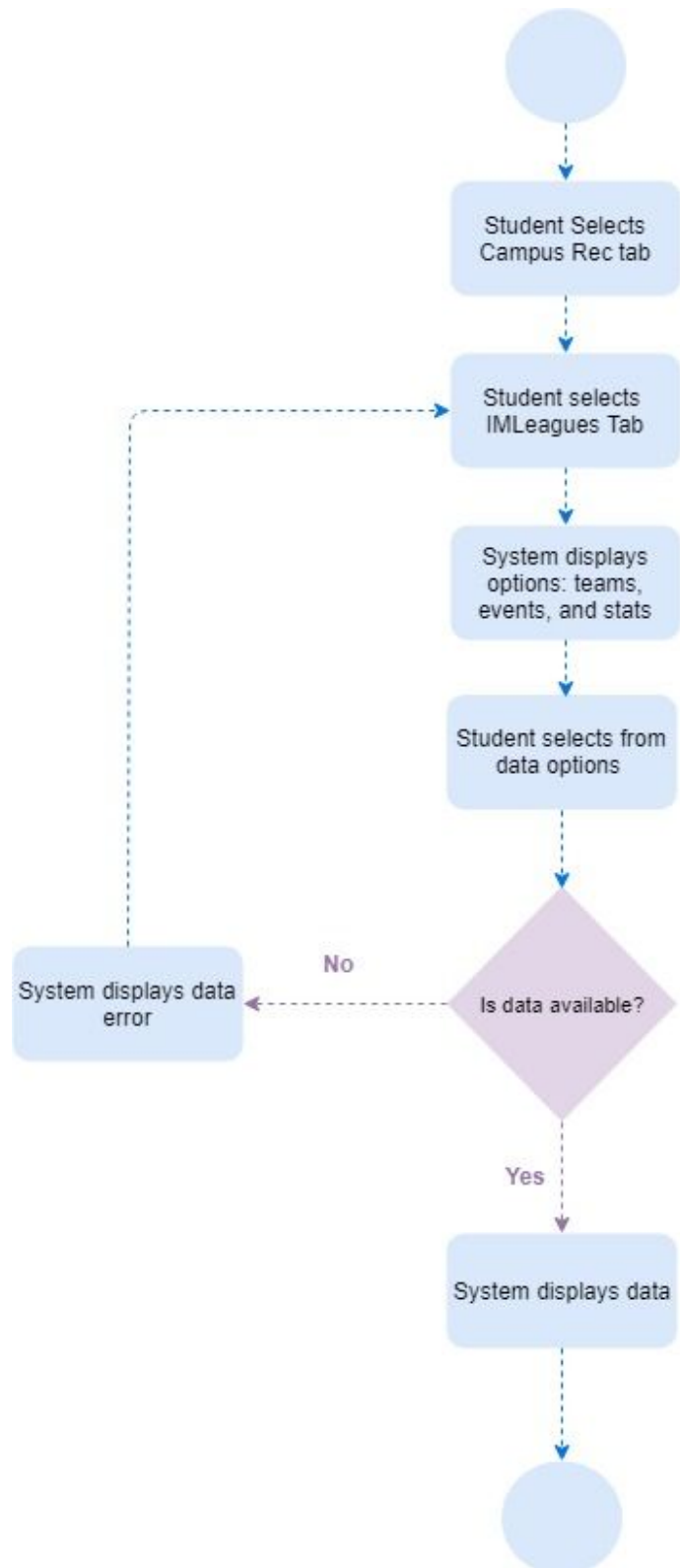
Manage IMLeagues Profile: Sequence Diagram
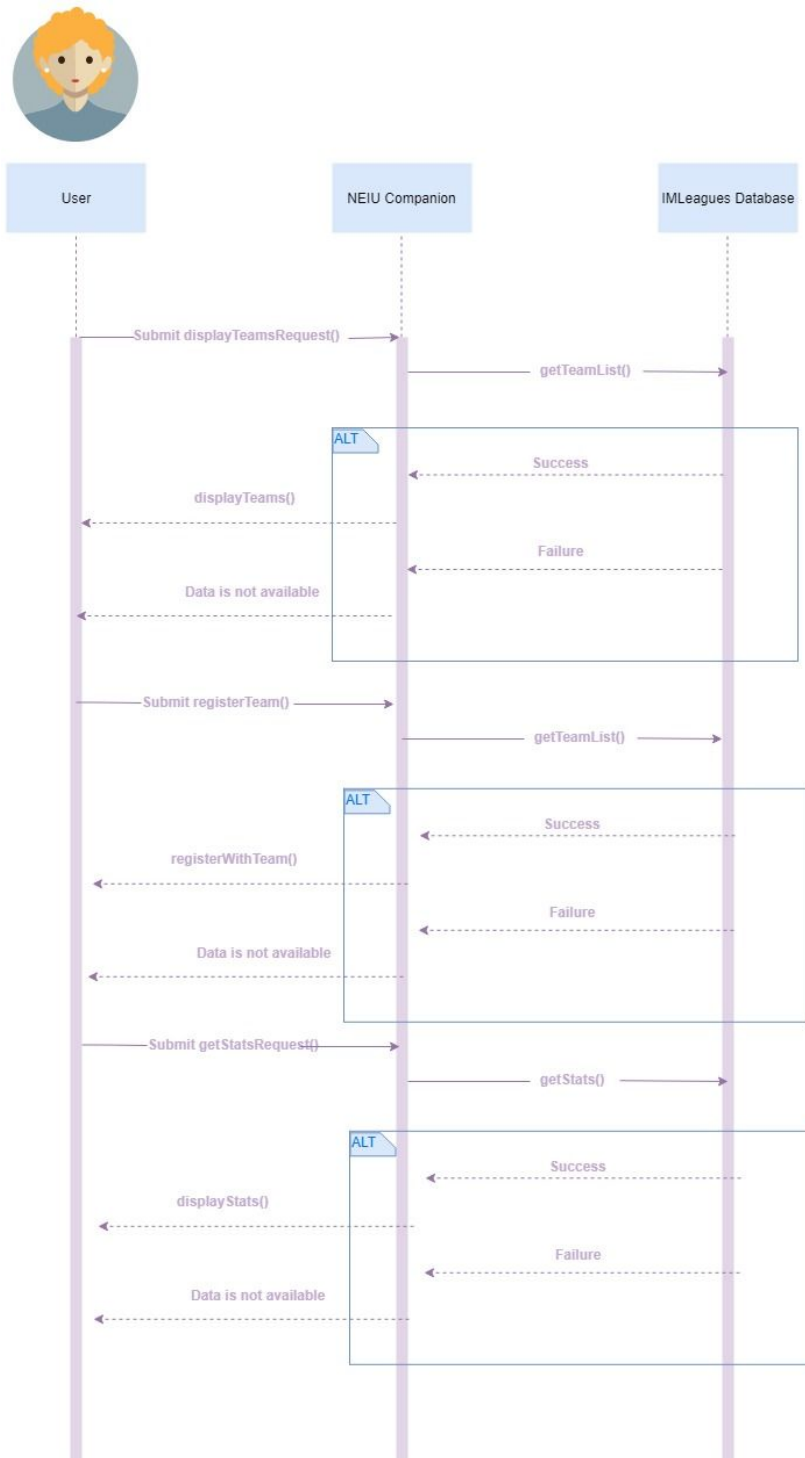
The sequence diagram to the left is a representation of the functions within the Manage IMLeagues Profile data flow diagram. The NEIU companion is responsible for accessing the IMLeagues database and responding to student request through the system. If a student wants to access the list of teams, the system receives the request. If the application has a list of all the teams currently available, it displays it. Otherwise, the user receives an error message. If a student wants to register with a team, the system retrieves the team list and asks the user what team they would like to register with. If there is availability, the student can register, otherwise, the system displays an error message. The student can also access team stats if they are available, if not available, the system displays another error message.
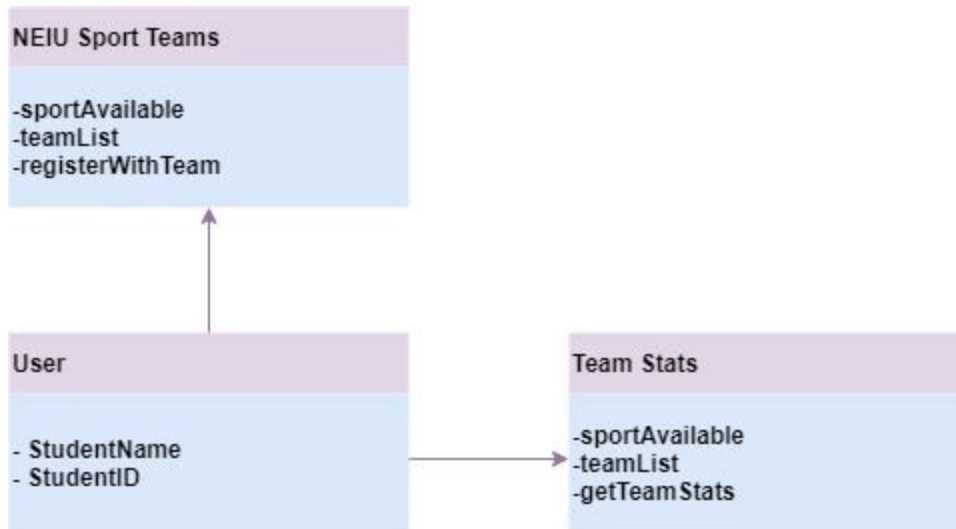
NEIU Sport Teams

This object has the main functionality of telling the user the teams available on campus. The sportAvailable method gives the student the opportunity of narrowing down their team search based on sport. The team list method gives the student a list of all the teams available along with names of those registered and emails. The registerWithTeam method allows students to register with the team of their choice.

User

The user refers to the student that wishes to access the data within the Manage IMLeagues Profile use case in the NEIUport Module. The entity stores the student's basic information based on their NEIU Companion data entry. It stores the student's name and identification.

Team Stats

This object informs the student of the current and past team statistics (e.g., wins, losses, game times, opponents). This object also has the sportAvailable and team list methods seen in NEIU Sport Team. In addition, it has the getTeamStats method that gives students the possibility of selecting a specific team from which they would like to get stats.

Campus Recreation Use Case: Access to Campus Rec Building, Pool and Weight Room hours

ID and Name	Access to Campus Rec Building, Pool and Weight Room hours		
Created By:	Carolina Vazquez	Date Created:	4/4/2019
Primary Actor	Student	Secondary Actors	
Description:	Student will have the opportunity to see the schedule of the classes being offered that semester: yoga, pilates, boxing, cardio, zumba, swimming, lifeguard, etc. In addition, they will have access to the hours of the pool and weight room.		
Trigger:	Student selects the Campus Rec tab		

The following table showcases normal flow and additional details:

Preconditions:	*PRE-1.* Student logged in to NEIU Companion.
Postconditions:	None

Normal Flow:	**1.0 Accessing the information from Campus Rec**
	1. A Student taps on the Campus Rec Module of the NEIU Companion app, student clicks on Campus Rec.
	2. App displays two different tables
	    ● Table 1: displays classes and instructors
	    ● Table 2: Building, pool and weight room hours

Alternative Flows	None
Exceptions	**1.0 Campus Rec is closed at a given day** 1. Student will be notified of unplanned and planned changes to the schedules
Priority	Low
Frequency of Use:	Depends on interest from students

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Activity Diagram - An analysis model that depicts a process flow proceeding from one activity to another. Similar to a *flowchart*.

Actor - A person performing a specific role, a software system, or a hardware device that interacts with a system to achieve a useful goal. Also called a *user role*.

Administrator- The person of a multi-user computer system also called *system admin*. The system administrator designs the system and manages its use

Alternative Flow - A path through a use case that leads to success but that involves a variation from the normal flow in the specifics of the task or in the actor's interaction with the system.

Data - Information; raw facts. Data can be input into a computer and processed in various ways.

Data Flow Diagram - An analysis model that depicts the processes, data stores, external entities, and flows among them that characterize the behavior of data flowing through business processes or software systems.

Data Models - The particular objects, including their specific properties, that are part of a *process*.

Database - A large collection of data stored together and organized for rapid search and retrieval.

Exception - A condition that can prevent a use case from concluding successfully. Unless some recovery mechanism is possible, the use case's *post-conditions* are not reached and the *actor's* goal is not achieved.

Field - A specific area, within the record, used for a particular category or item, for example, name, zip code, city.

Flowchart - An analysis model that shows the processing steps and decision points in the logic of a process. Similar to an *activity diagram.*

Input - To enter data into the application.

Method Calls - Processes that are created within the program's code that make references to other processes.

Modules - An independent piece of software which forms part of one or more larger programs.

Normal Flow - The default sequence of steps in a use case, which leads to satisfying the use case's *post-conditions* and letting the user achieve his goal. Also known as the *normal course, main course, normal sequence,* and *main success scenario.*

Pre-condition - A condition that must be satisfied or a state the system must be in before a use case can begin.

Post-condition - A condition that describes the state of a system after a use case is successfully completed.

Requirement - A statement of a customer need or objective, or of a condition or capability that a product must possess to satisfy such a need or objective. A property that a product must have to provide value to a stakeholder.

Sequence Diagram - An analysis model that depicts the process of *method calls* that occur between different *data models* within a *process.*

SQL - Structured Query Language - A language used to interrogate and process data in a relational database.

System Models - A description of observed behavior, simplified by ignoring certain details. Models allow complex systems to be understood and their behavior.

User - A customer who will interact with a system either directly or indirectly (for example, by using outputs from the system but not generating those outputs personally). Also called *end user*.

Use Case - A description of a set of logically related possible interactions between an actor and a system that results in an outcome that provides value to the actor. Can encompass multiple scenarios.