



# Final Presentation Summer 2021 **PEDIATRIC EMERGENCY MEDICINE APP**



**Team Member(s):** Anabel Perez, Eduardo Dally, Athenna Martinez, Kelvin Gonzalez, Ana Martinez, Peter Duarte

**Product Owner(s):** Jean Hannan, Bruce Quinn

**Professor:** Masoud Sadjadi

# PROBLEM DEFINITION

- o Whole Project:

- Medical staff should have an application where they can have quick and easy access to critical medical information for pediatric emergencies. In the app, there should also be areas for users to interact with other healthcare workers such as a chatroom. Medical personnel using the application will also be able to handle user account settings for reviewing and/or updating their personal information, active status and important data like medical certifications. Also, users have the option, to create and add significant events to their device's calendar directly from the application. In addition, Administration staff should have an Admin panel with tools to manually add, edit, create, fetch and clipboard medical information within the application, including text and images documentation, without the need of application updates or developer's interaction.



# PROBLEM DEFINITION

- o My Part (Anabel Perez):
  - I worked on the auto link feature for medical categories topic content which includes the functionality of auto detecting URLs in the text content to format them as hyperlinks and enable navigation to external pages from within the app. The application admin can copy and paste content that includes URLs to external references and the application will mark them as hyperlinks and allow navigation for ease of use.
  - I deployed the app in Google Play for beta close testing. The app is now available via the Google Play Store for Android users. Before we were only receiving feedback from Apple users via TestFlight, but now with the Google Play deployment we can test the app on Android systems and get important feedback which increased our visibility to potential issue and areas of improvement.





# PROBLEM DEFINITION

- o My Part (Eduardo Dally):
  - There was a range of devices that had been tested and had been found to have some trouble depending on the screen resolution.
  - We also thought that it would add to productivity for those who have an iPad if we added landscape mode to the app.
  - The PO's were also interested in exploring an online Web-Based admin portal where they could easily edit the information in the app from the comfort of a desktop environment.





# PROBLEM DEFINITION

- o My Part (Athena Martinez):
  - I worked on implementing user roles to give authorized users access to the admin active mode. The admin active mode allows users to edit and delete content in the categories screen. This would prevent accidental edits or deletes being made by non admin users. If a non admin user attempts to go into admin mode they will be prompted with a message letting them know they need admin privileges to access that screen.
  - I worked on the consistency of the app through all devices. The profile placeholder not distorting on iOS devices and buttons being fully on the screen of all devices.
  - I worked on the loading icon to appear on the login screen to allow users to know they are being logged into the PEM App.





# PROBLEM DEFINITION

- o My Part (Kelvin Gonzalez):
  - I worked on creating the first web version of the Pediatric Emergency (PEM) application. The need for a web version stemmed from the fact that the product owner (PO) wanted ease of use for administrative users.
  - Version 1.0.0 of the web PEM application includes a main screen with Login, Contact Us, and About Us functionalities. Currently, only the Login functionality relays the user to a different screen (the Login screen).
  - The implementation of the backend (Google API Login) is functional. Future students will be able to connect the front end and back end structures.





# PROBLEM DEFINITION

- o My Part (Ana Martinez):
  - I worked on the customized subheadings feature for all current categories (Medical, Surgical, Trauma, Toxicology, Foreign Ingestion). All new items added had the same subheadings and regardless of the category the same type of information and terminology used was the same. The goal was to display different subheadings according to the item's category, for instance, within the Admin Panel the admin-user should be able to add and edit new items for which depending on the Category the information required would differ and eventually displayed accordingly
  - I worked on enhancing some components of the app such as:
    - sorting alphabetically the items listed for each category within the Admin Panel
    - image was removed from the list of items for consistency within the Categories screen
    - the items within the Admin panel were rearranged to accommodate them without having an extra gap and background was changed to coincide with the Categories screen theme





# PROBLEM DEFINITION

- o My Part (Peter Duarte):
  - I worked on implementing a Q&A feature where users would be able to ask questions on the app and they could be answered by other users. It would also allow users to search for previously answered questions. The Q&A section would be visible from the Home screen and would be general questions not topic specific. All users would have access to ask questions and respond to questions



# PROJECT MANAGEMENT

| User Stories                                                                                                                                                                 | Sprint 1 | Sprint 2 | Sprint 3 | Sprint 4 | Sprint 5 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|
| #1: As a developer, I need to create GitHub workflow (Branches/Code Owner/Branch Protection) to improve the development process                                              |          |          |          |          |          |
| #2: As a developer, I need to create user roles and separate them into groups to improve application security and grant users different permissions depending on their role. |          |          |          |          |          |
| #6: As a developer, I need to create the front end structure of the Admin Portal (web)                                                                                       |          |          |          |          |          |
| #8: As a developer, I need to create the repo with the proper permissions for the Admin Portal(web)                                                                          |          |          |          |          |          |
| #9: As a user, I need to see the PEM logo on the Main and Home screens                                                                                                       |          |          |          |          |          |
| #4: As a user, I would like something similar to Testflight for Android in order to test the app.                                                                            |          |          |          |          |          |
| #19: As a user I would like new treatments to be sorted alphabetically as I add them.                                                                                        |          |          |          |          |          |
| #16: As a user, I would like to remove the image icon from the treatments                                                                                                    |          |          |          |          |          |
| #21: As a user, I would like the different topics to be sorted alphabetically to make the search easier                                                                      |          |          |          |          |          |
| #13: As a user, I would like to have a Q&A section where I can post questions and also search for previously answered questions.                                             |          |          |          |          |          |



# PROJECT MANAGEMENT

| User Stories                                                                                                                   | Sprint 1 | Sprint 2 | Sprint 3 | Sprint 4 | Sprint 5 |
|--------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|
| #24:As a developer, I would like to research and be able to deploy the app on Google Play for testing.                         |          |          |          |          |          |
| #25:As a user, I would like to be able to add links to topics and be redirected to the content                                 |          |          |          |          |          |
| #26:As a user I would like to have the treatments centered with the first letter of each word capitalized                      |          |          |          |          |          |
| #23: As a user I would like to remove the black gap from the categories Admin Screen                                           |          |          |          |          |          |
| #14: As a user I need to be able to have custom subheading for each category.                                                  |          |          |          |          |          |
| #29:As a user I would like to work on the app in horizontal orientation. (screen orientation vertical and horizontal)          |          |          |          |          |          |
| # 18: As a developer, I would like to fix the missing loading symbol on the login screen (Missing loading symbol on login bug) |          |          |          |          |          |
| #31: As a user, I would like for the edit and delete button text to appear properly on android devices                         |          |          |          |          |          |
| #32: As a user, I would like for the profile placeholder icon to not push buttons off screen on iOS devices.                   |          |          |          |          |          |



# PROJECT MANAGEMENT





# USER STORIES (Anabel Perez)

- o I worked on the following user stories:  
4, 5, 10, 19, 20, 24, 25, 30
- o Of these, the most significant/important are:  
19, 24, 25, 30

**User Story #19:** As a user I would like new treatments to be sorted alphabetically as I add them.

**User Story #24:** As a developer, I would like to research and be able to deploy the app on Google Play for testing.

**User Story #25:** As a user, I would like to be able to add links to topics and be redirected to the content.

**User Story #30:** As a user, I would like to see the topics title vertically aligned and with regular margin/spacing





# USER STORIES (Eduardo Dally)

- o I worked on the following user stories:  
8, 9, 14, 29
- o Of these, the most significant/important are:  
8, 14, 29

**User Story #8:** As a developer, I need to create the repo with the proper permissions for the Admin Portal(web)

**User Story #14:** As a user I would like to have a better experience with different screen resolutions.

**User Story #29:** As a user I would like to work on the app in horizontal orientation.  
(screen orientation vertical and horizontal)





# USER STORIES (Athenna Martinez)

- o I worked on the following user stories:  
2, 18, 22, 26, 31, 32
- o Of these, the most significant/important are:  
2, 31, 32

**User Story #2:** As a developer, I need to create user roles and separate them into groups to improve application security and grant users different permissions depending on their role.

**User Story #31:** As a user, I would like for the edit and delete button text to appear properly on Android devices.

**User Story #32:** As a user, would like for the profile placeholder icon to not push buttons off screen on iOS devices.



# USER STORIES (Kelvin Gonzalez)

- o I worked on the following user stories:  
6, 7

User story #7 is a comprehensive one that encompasses all the front end structure of the web PEM application, version 1.0.0 (several nested user stories are present under it, among which are the creation of a Contact Us, Login, and About Us buttons. The Login button takes a user to the Login screen). Also, as part of the login functionality (user story #6), the back end of the web version was also developed to some extent (communication with the Google API).

- o Of these, the most significant/important are:  
6, 7

**User Story #6:** As a developer, I need to login to the admin portal (web).

**User Story #7:** As a user, I need to create the front end structure of the admin portal (web).

# USER STORIES (Ana Martinez)

- o I worked on the following user stories:  
1, 16, 12, 14, 21, 23
- o Of these, the most significant/important are:  
14, 21, 23

**User Story #14:** As a user I need to be able to have custom subheading for each category.

**User Story #21:** As a user, I would like the different topics to be sorted alphabetically to make the search easier

**User Story #23:** As a user I would like to remove the black gap from the categories Admin Screen



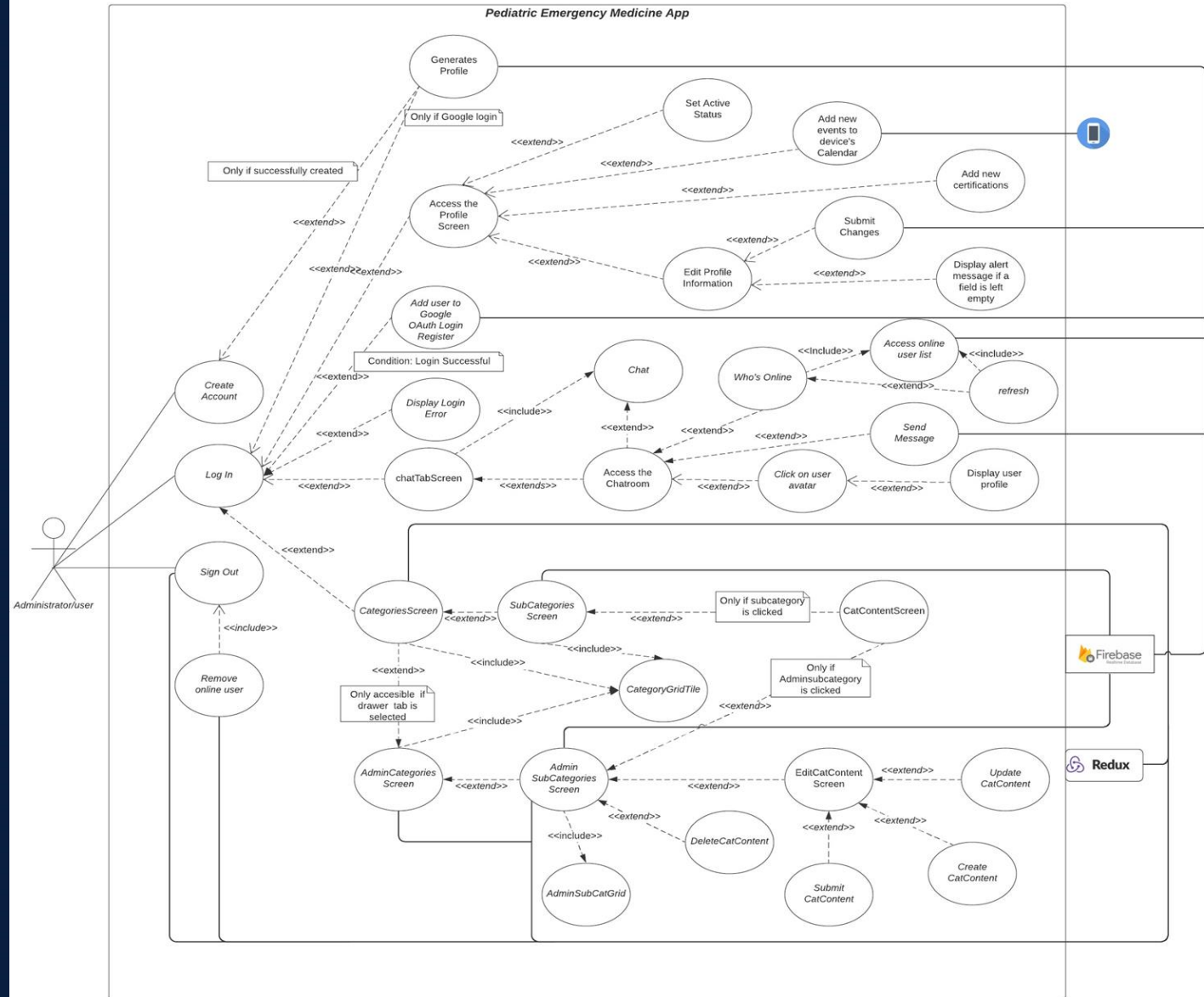


# USER STORIES (Peter Duarte)

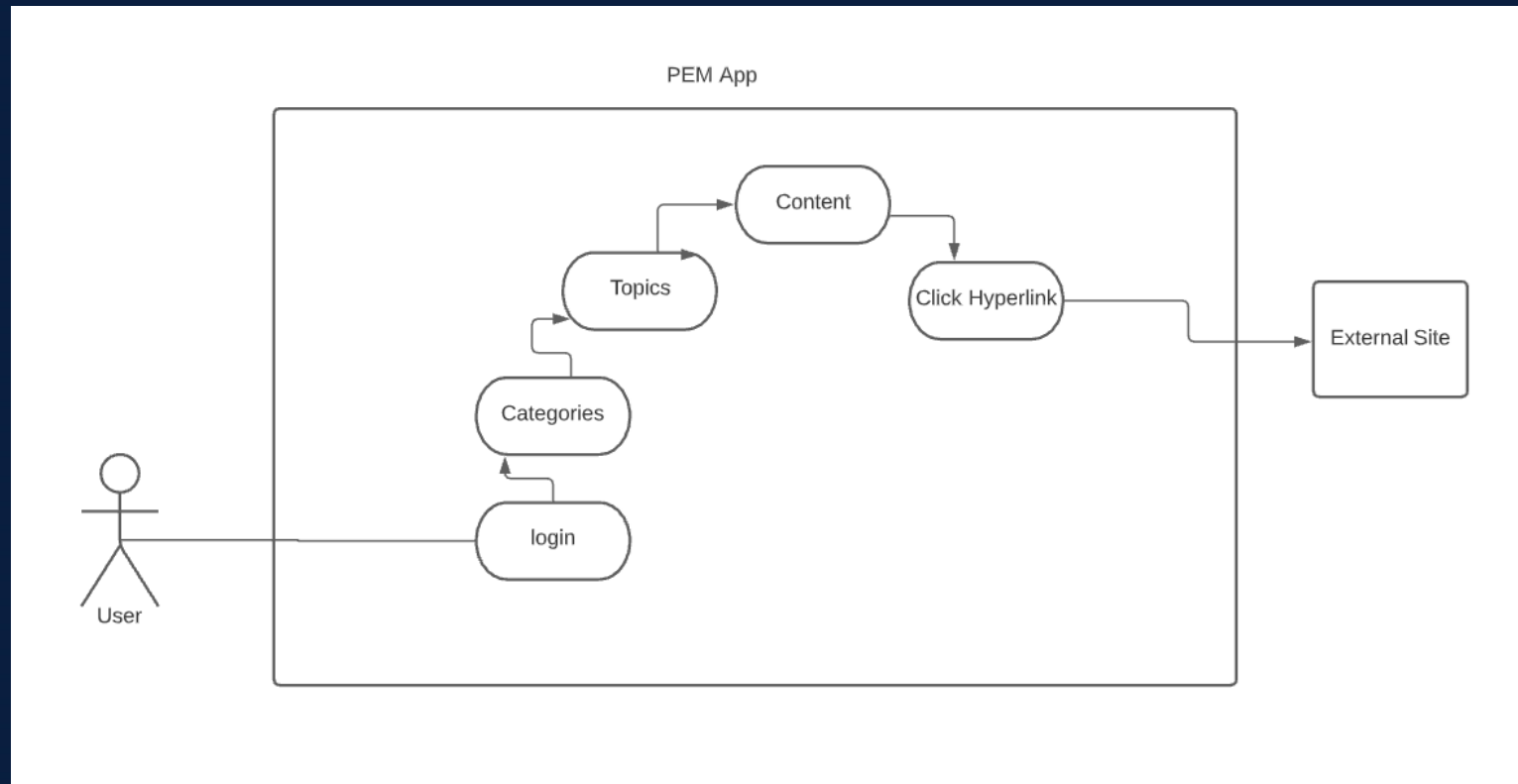
- o I worked on the following user stories:  
6,12, 13
- o Of these, the most significant/important are:  
12 ,13
- **User Story #13:** As a user, I would like to search for answers to Questions already answered (Q&A Section)
- **User Story # 12** As a user, I would like to have a Q & A section where I can post questions and also search for previously answered questions.



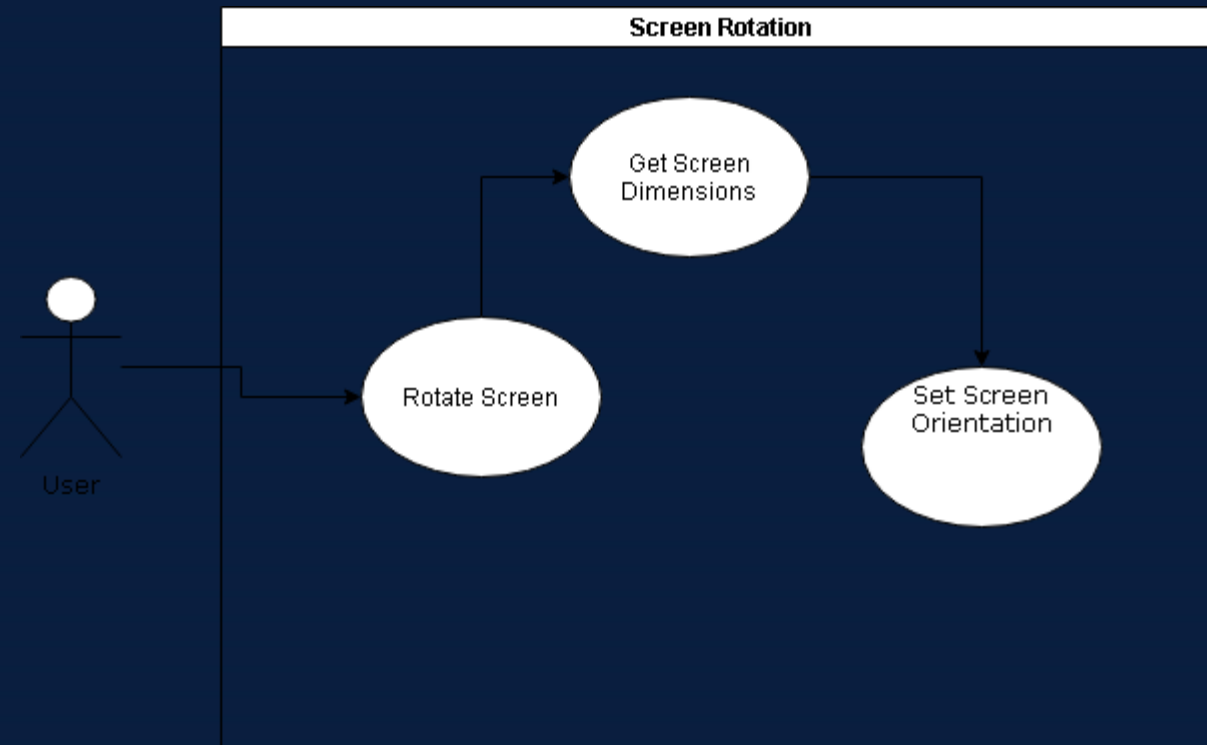
# USE CASE DIAGRAM (Whole Project)



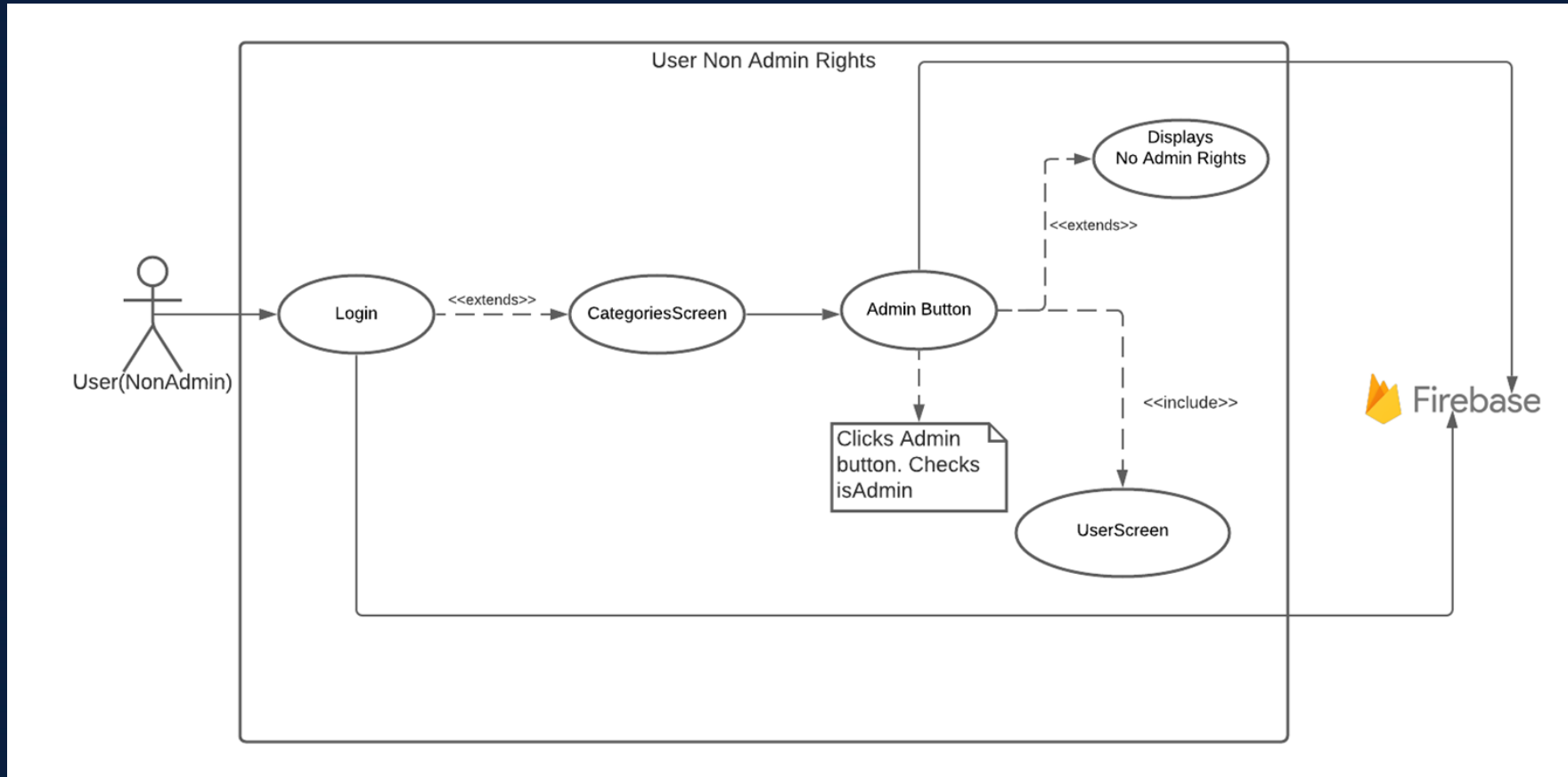
# USE CASE DIAGRAM (Anabel Perez)



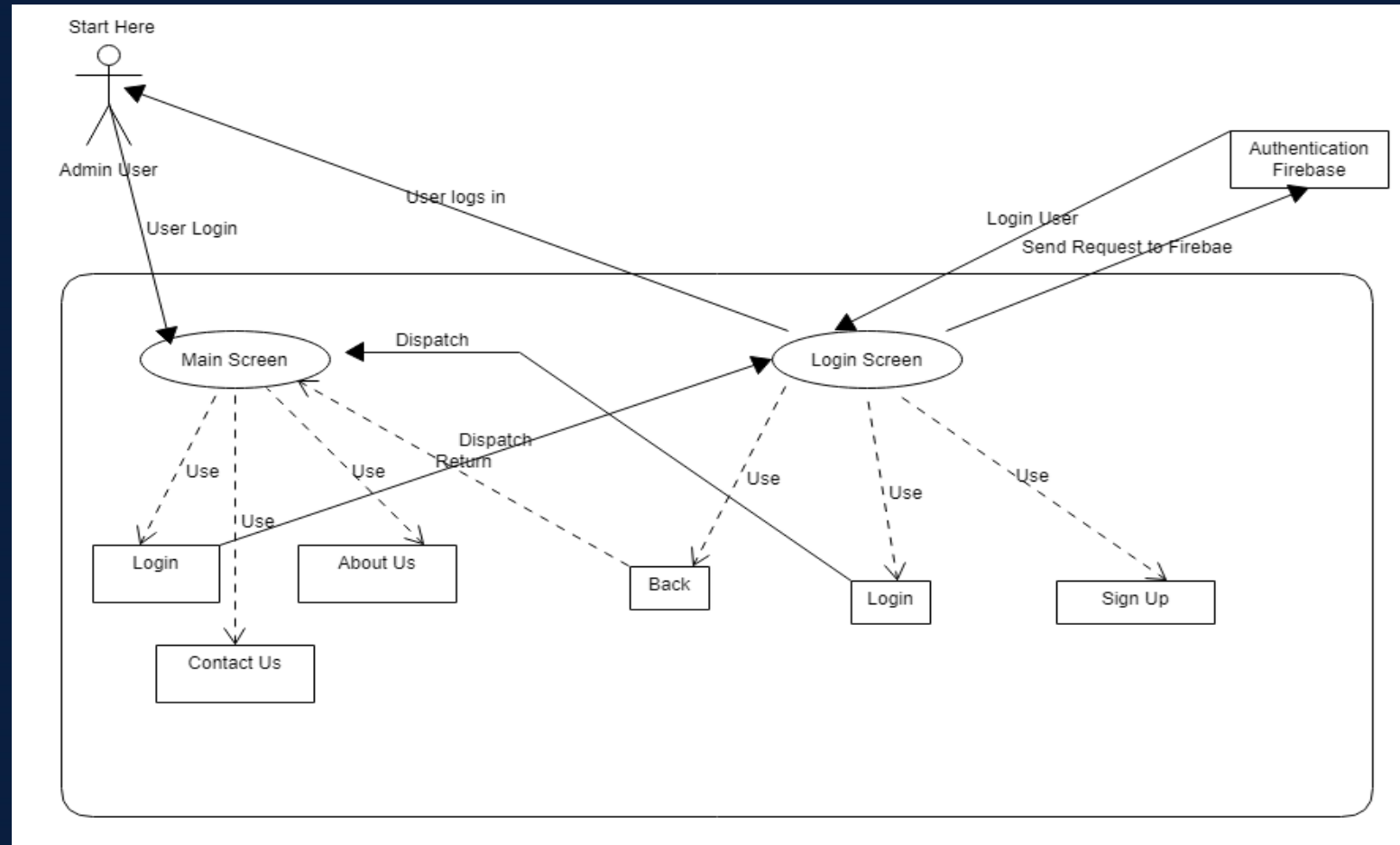
# USE CASE DIAGRAM (Eduardo Dally)



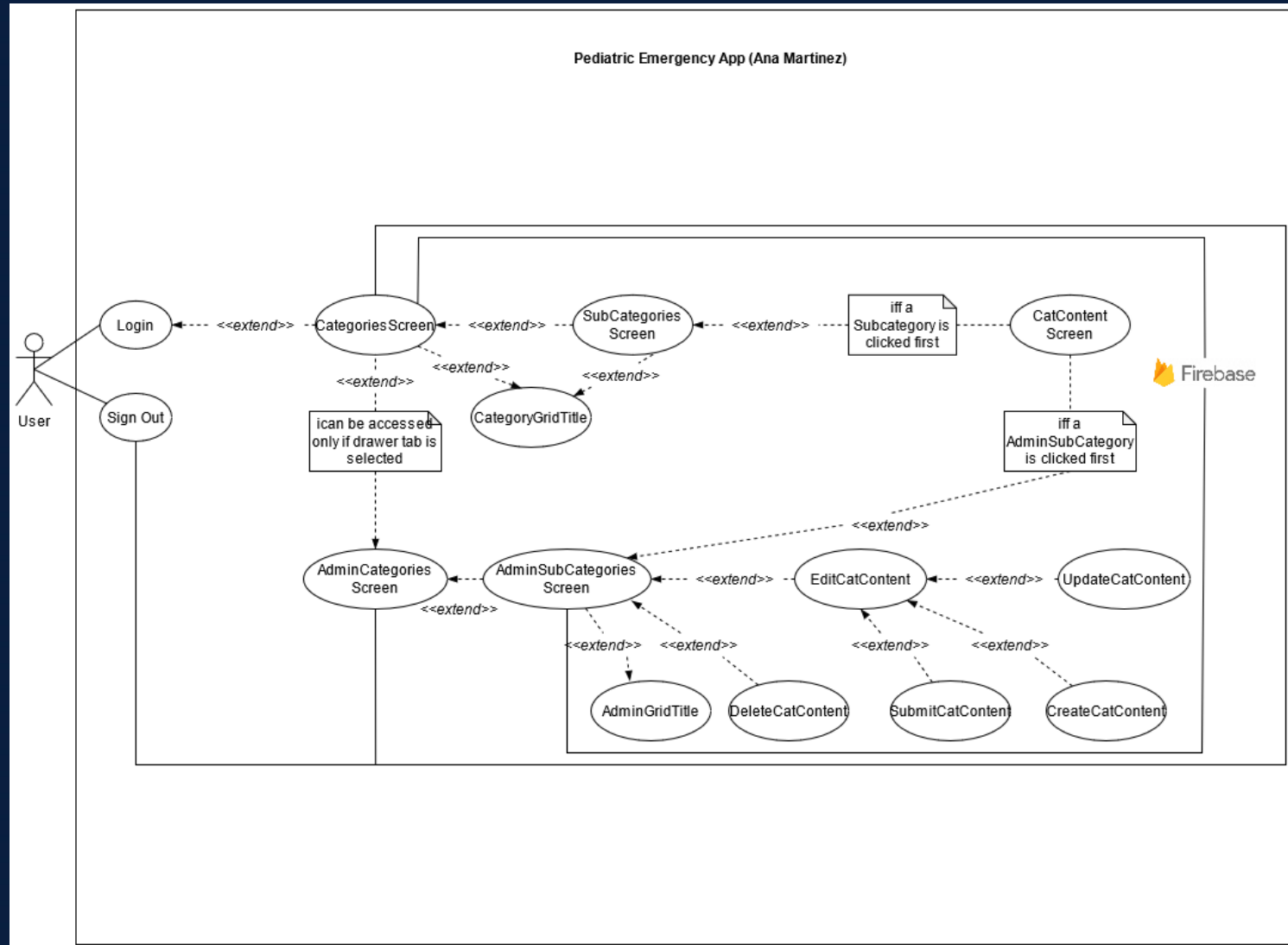
# USE CASE DIAGRAM (Athena Martinez)



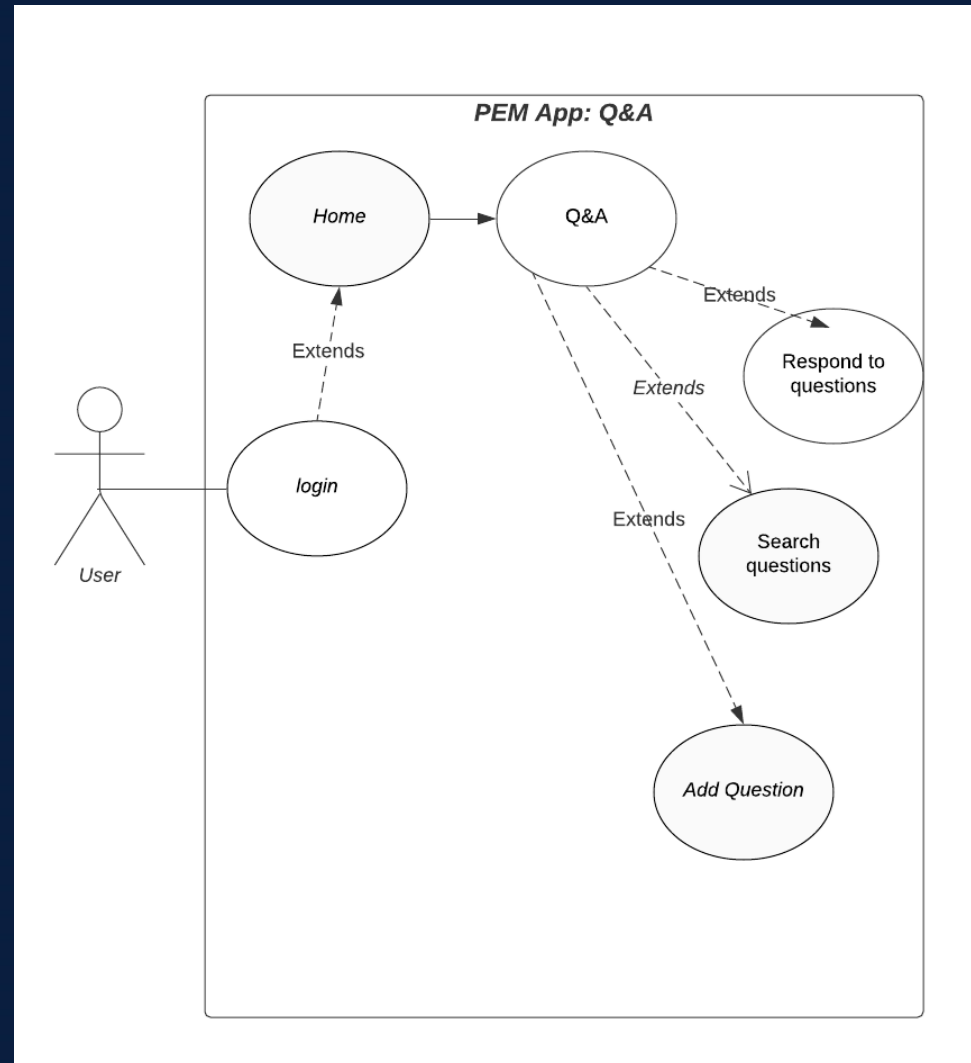
# USE CASE DIAGRAM (Kelvin Gonzalez)



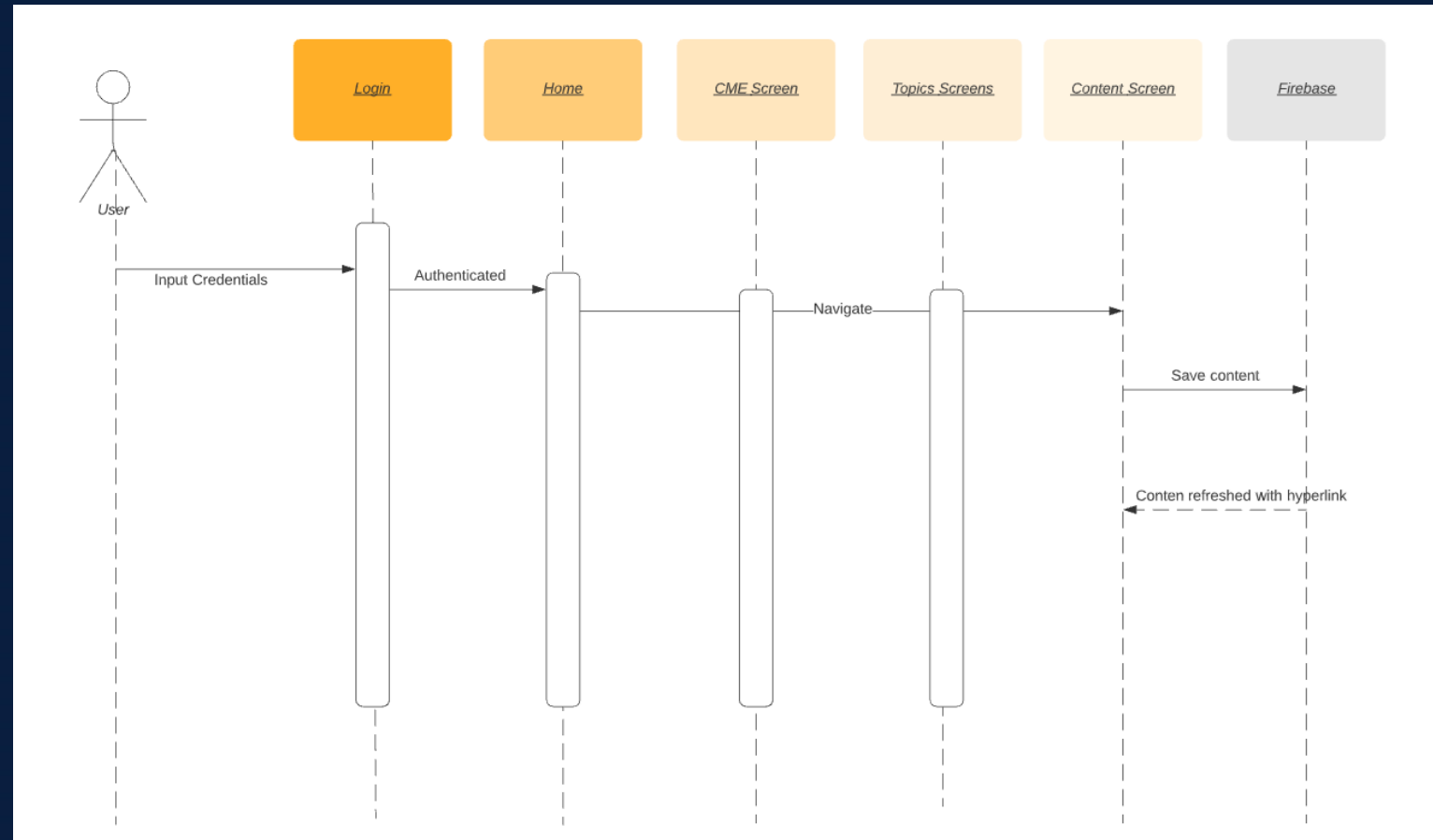
# USE CASE DIAGRAM (Ana Martinez)



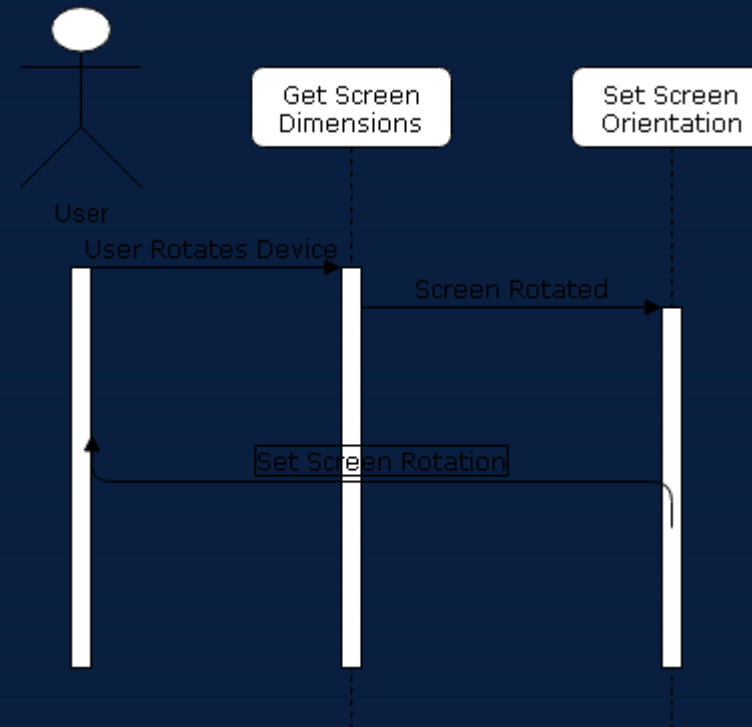
# USE CASE DIAGRAM (Peter Duarte)



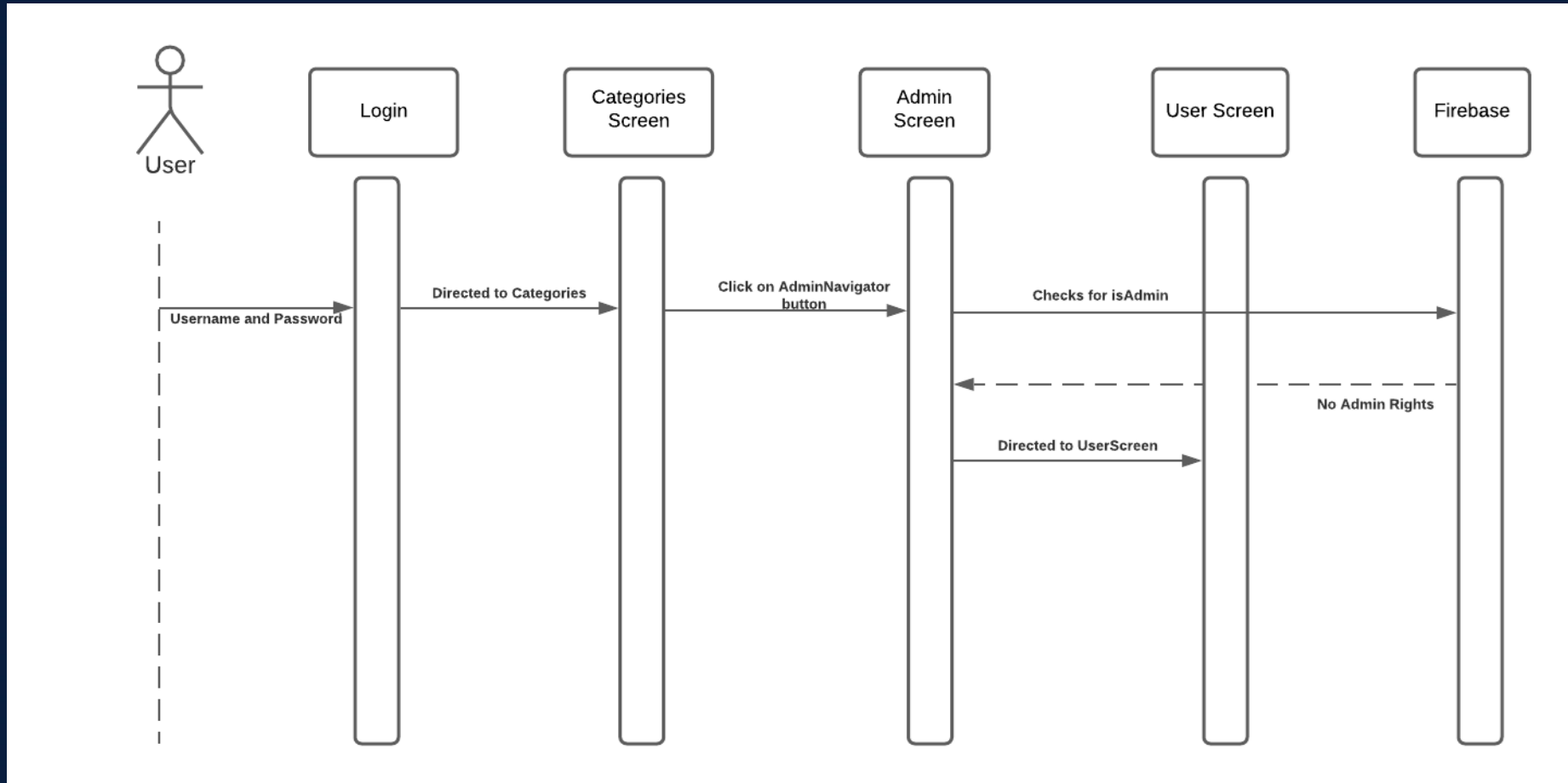
# SEQUENCE DIAGRAM (Anabel Perez)



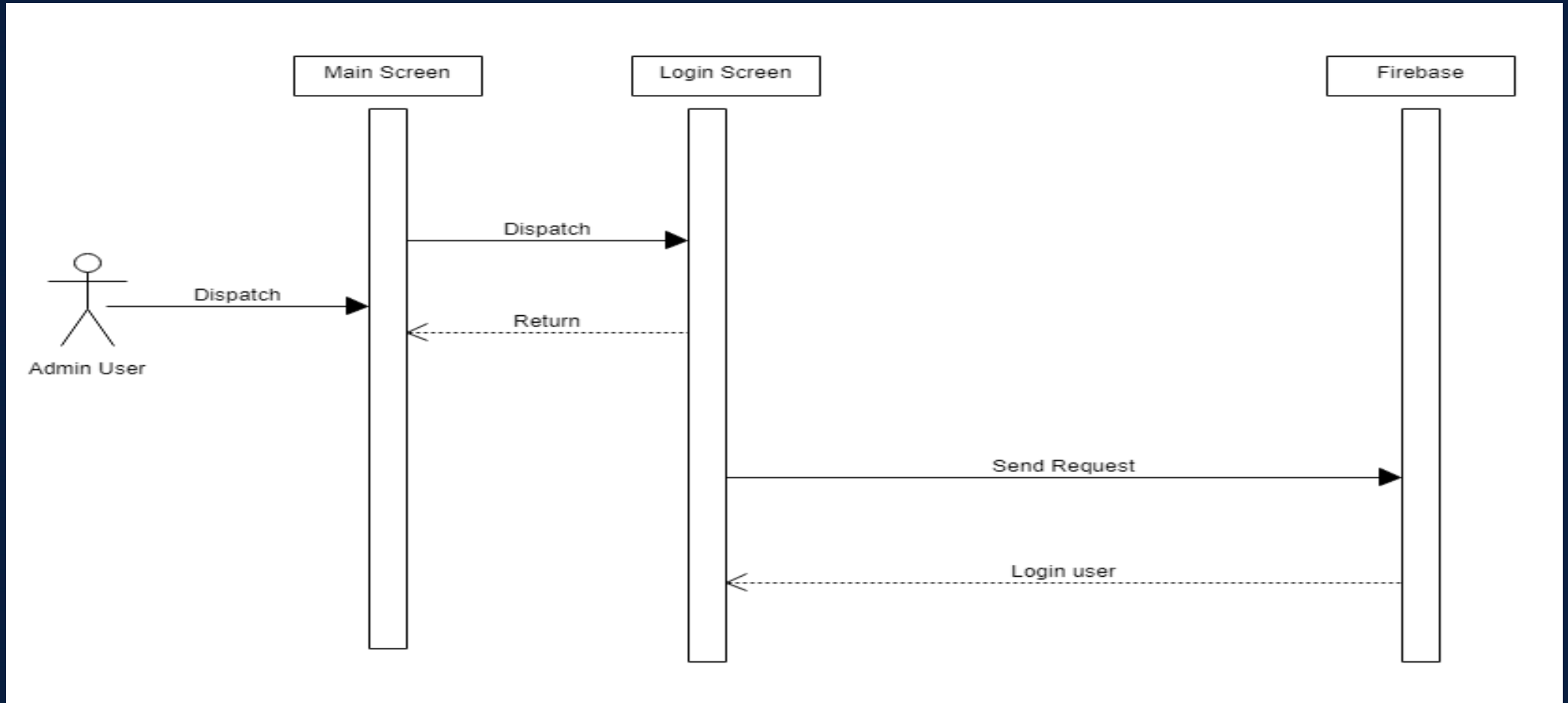
# SEQUENCE DIAGRAM (Eduardo Dally)



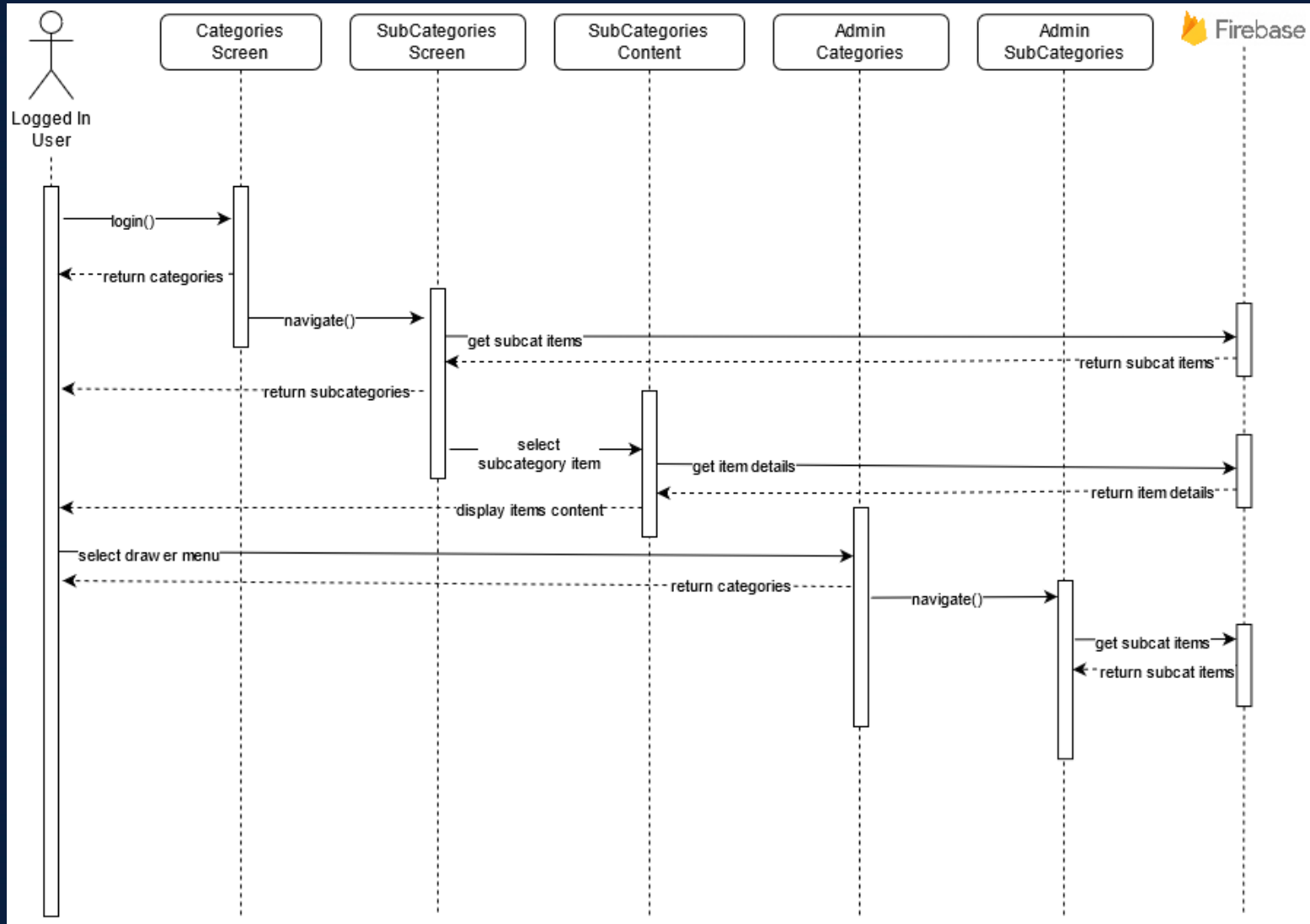
# SEQUENCE DIAGRAM (Athena Martinez)



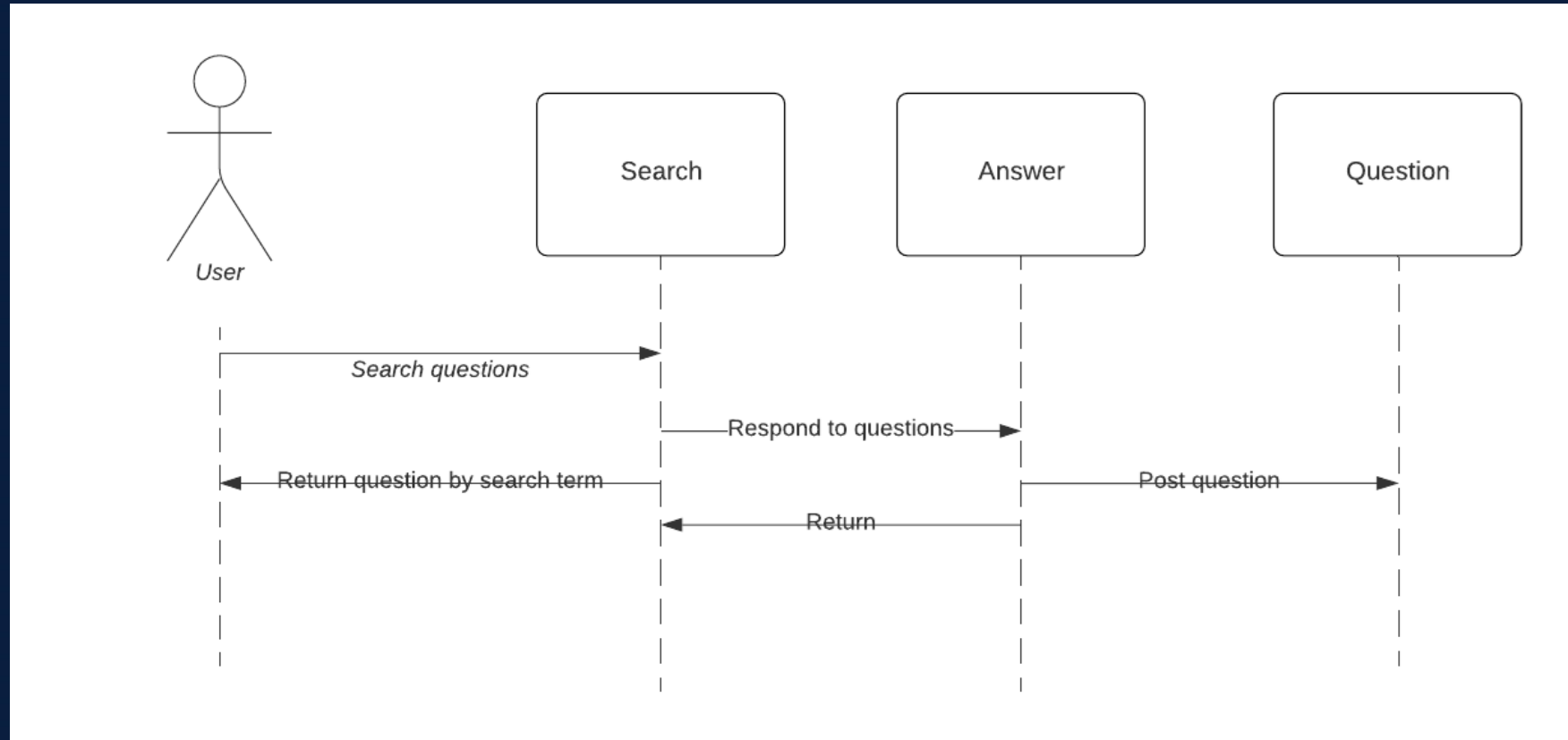
# SEQUENCE DIAGRAM (Kelvin Gonzalez)



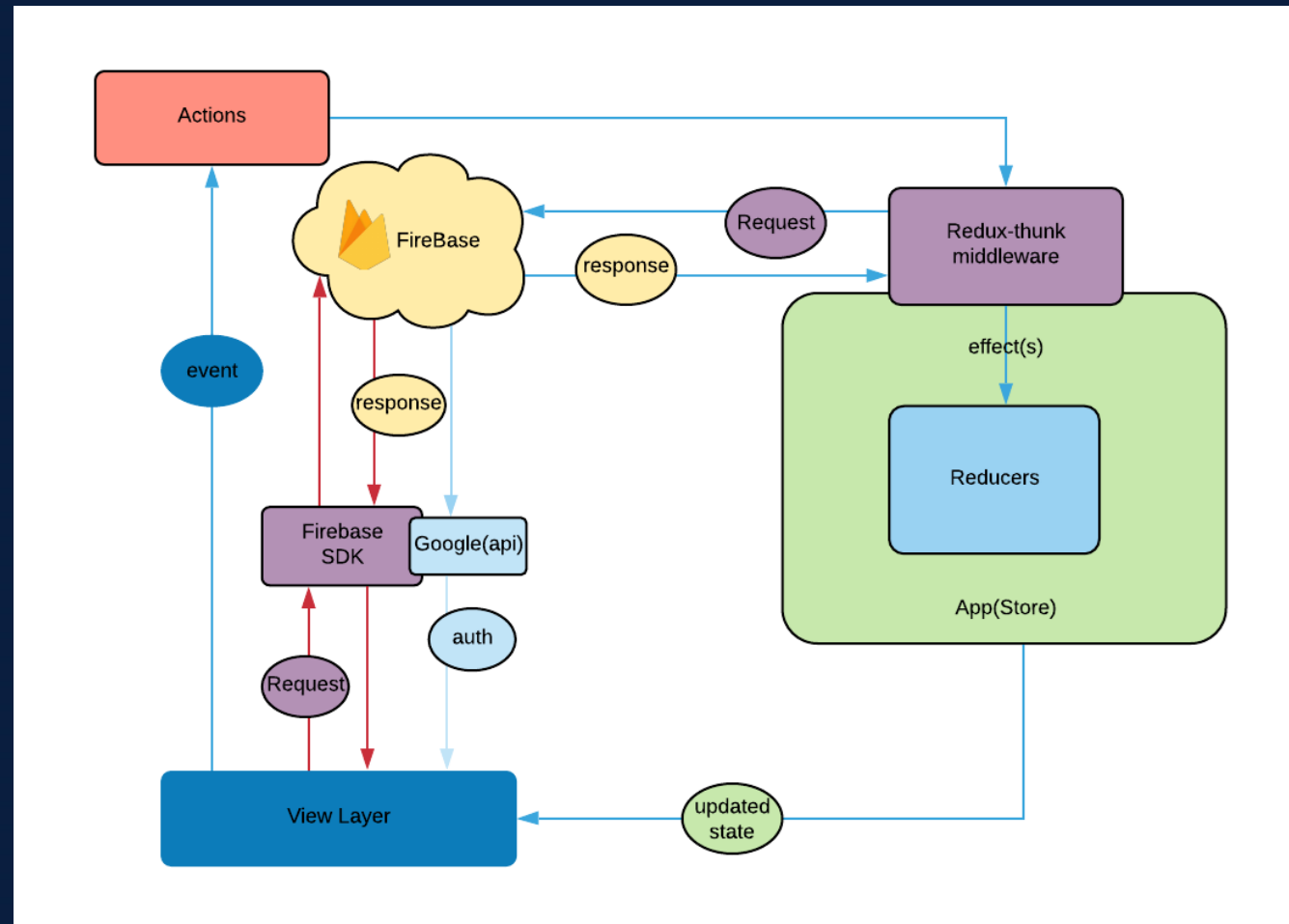
# SEQUENCE DIAGRAM (Ana Martinez)



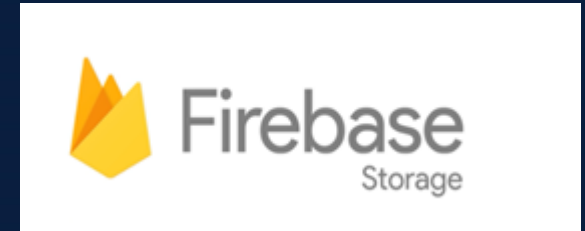
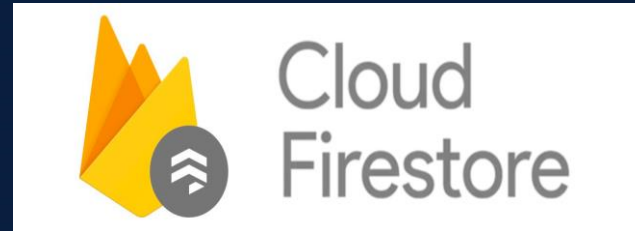
# SEQUENCE DIAGRAM (Peter Duarte)



# SYSTEM DESIGN: ARCHITECTURE & DEPLOYMENT



# SYSTEM DATA DESIGN



All data in the application, except authentication-related data (passwords, emails, etc) and Chat data is stored in Firebase Realtime Database.

- Ideal for dynamic data such as CMEs, user profile info and categories content.

Chat data is stored in Cloud Firestore.

- Allows for more complex queries.

Certifications and Avatar images stored in Cloud Storage.

- Keeps all photos in separate storage.

# SYSTEM SECURITY DESIGN

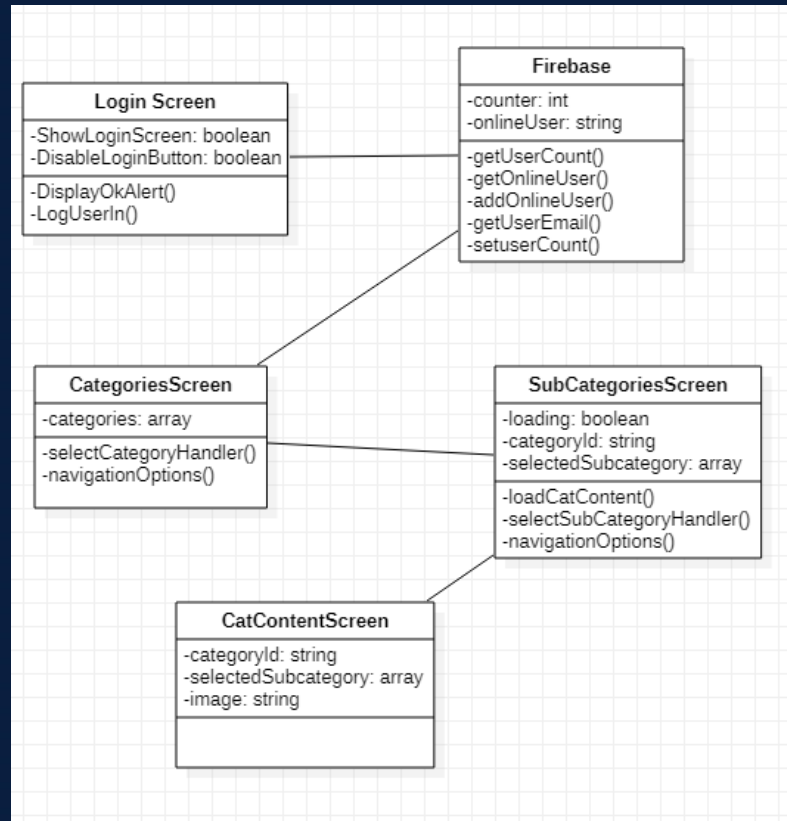


Firebase Authentication used for secure log-in with a variety of different methods like email/password & google login.

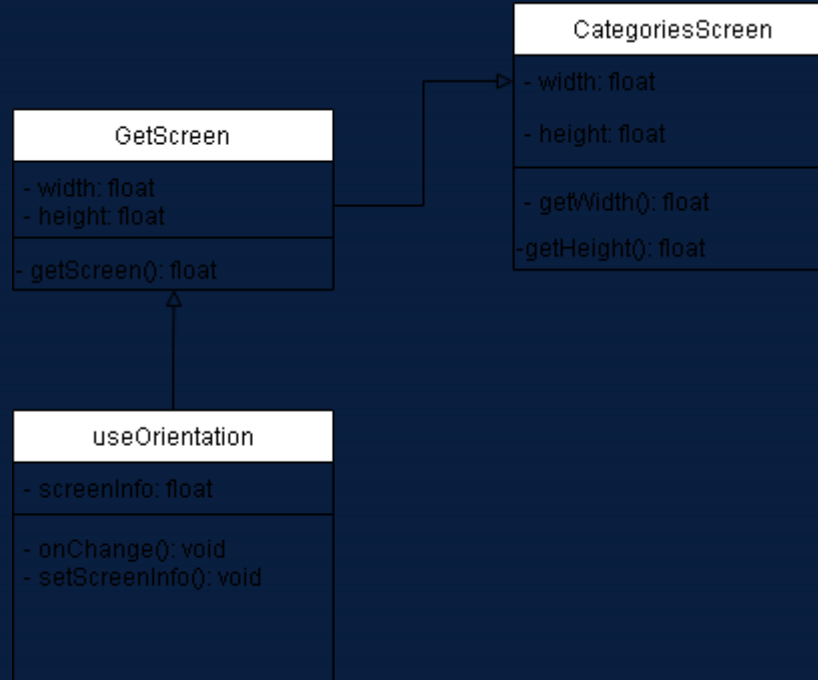
User accounts are securely stored by Firebase.



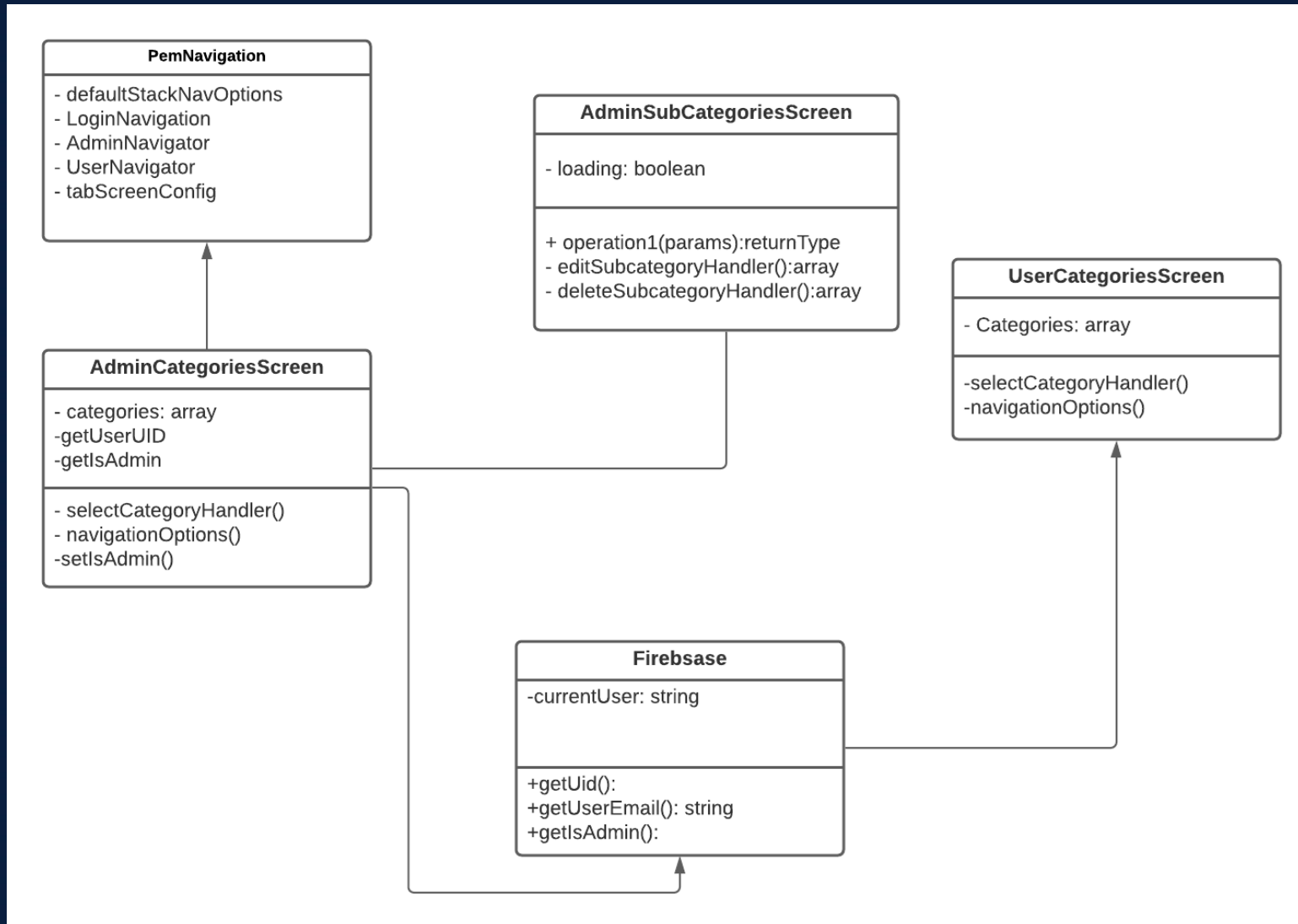
# CLASS DIAGRAM (Anabel Perez)



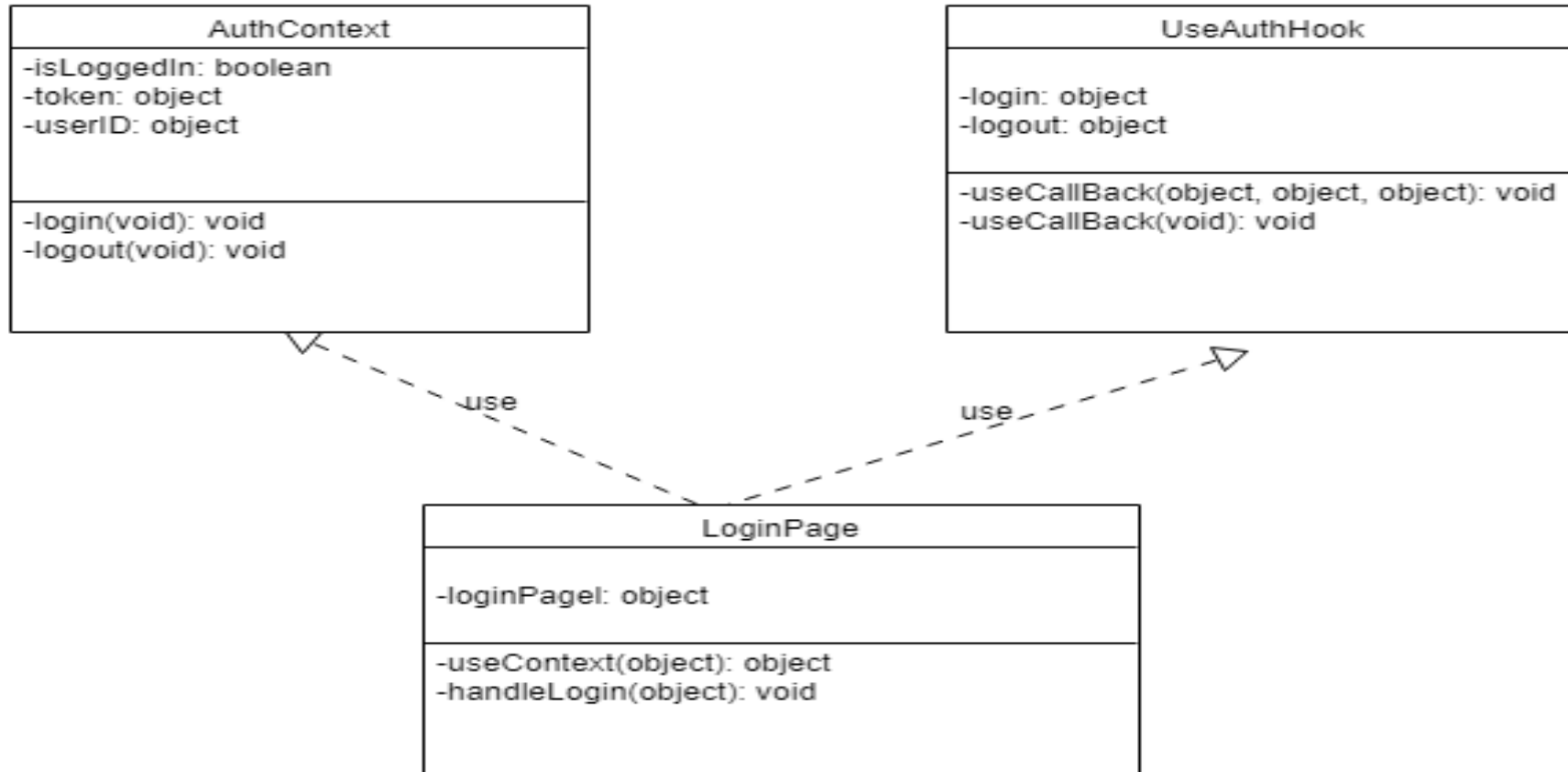
# CLASS DIAGRAM (Eduardo Dally)



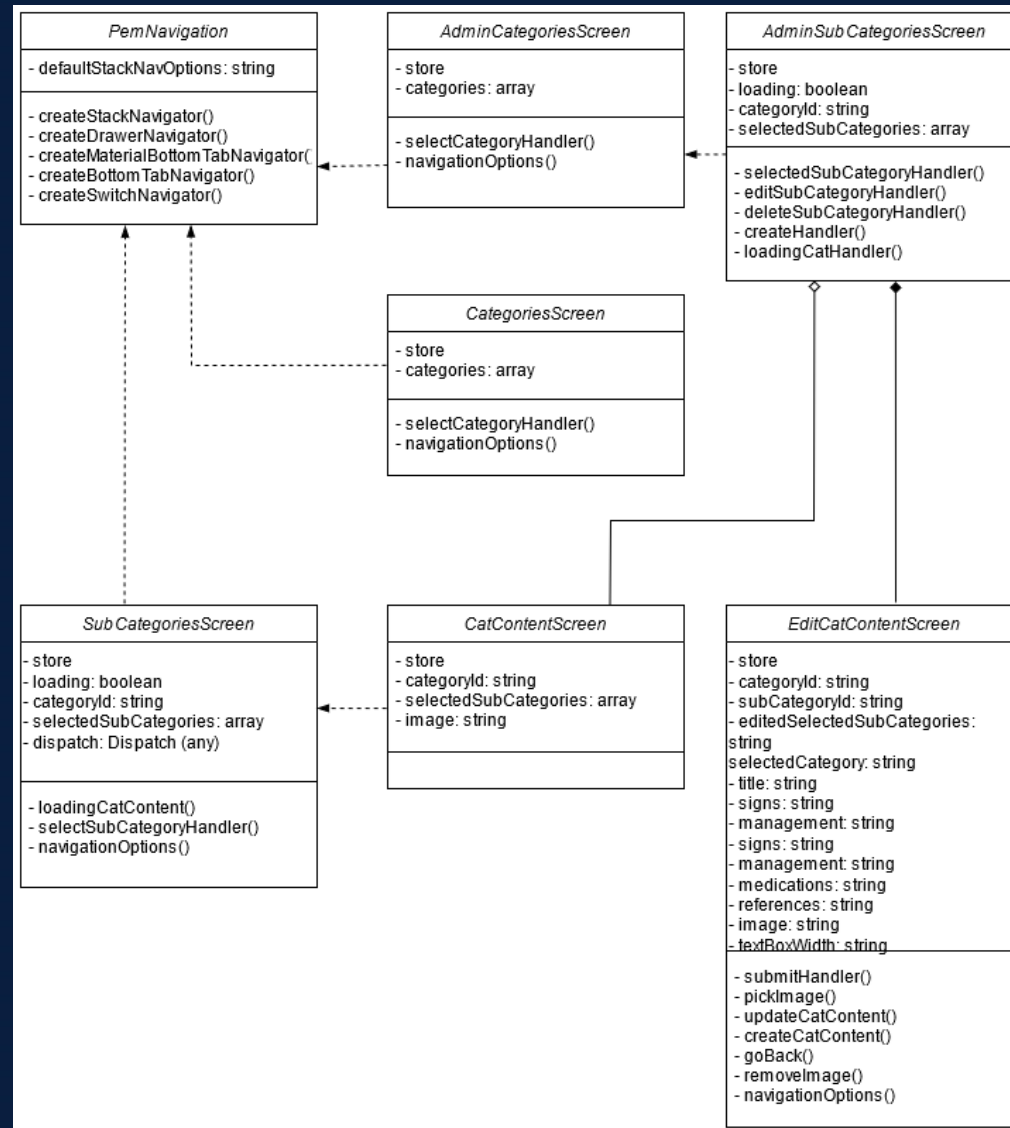
# CLASS DIAGRAM (Athena Martinez)



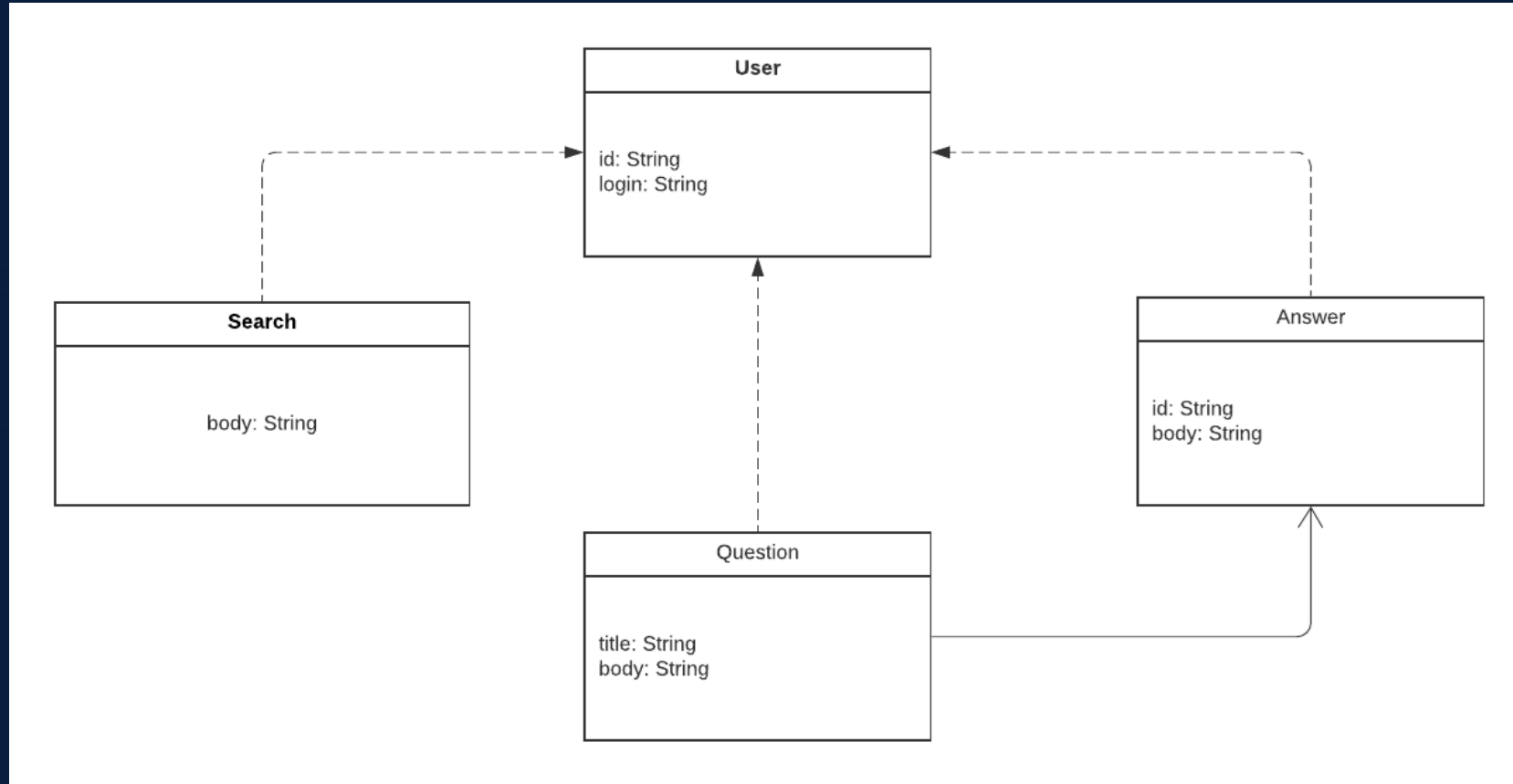
# CLASS DIAGRAM (Kelvin Gonzalez)



# CLASS DIAGRAM (Ana Martinez)



# CLASS DIAGRAM (Peter Duarte)



# TEST SUITES AND TEST CASES (Eduardo Dally)

|                         |                                                                                                                   |
|-------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Test Case ID</b>     | PEM - Screen Orientation                                                                                          |
| <b>Purpose</b>          | Test that the application transitions from portrait to landscape mode depending on device orientation.            |
| <b>Preconditions</b>    | Device must have screen lock disabled.                                                                            |
| <b>Expected Results</b> | The user interface recognizes that the device has been rotated and switches the user interface to landscape mode. |
| <b>Actual Results</b>   | The user interface stays locked in portrait mode.                                                                 |
| <b>Status</b>           | Fail                                                                                                              |

# TEST SUITES AND TEST CASES (Athenna Martinez)

|                         |                                                                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Case ID</b>     | PEM - Non Admin Users                                                                                                                                                                                         |
| <b>Purpose</b>          | To avoid non admin users from editing, deleting, or adding content to categories                                                                                                                              |
| <b>Preconditions</b>    | <ul style="list-style-type: none"><li>-Users need to be on main screen.</li><li>-Navigate to the admin button.</li><li>-Press admin button and wait to see if they have admin rights to gain access</li></ul> |
| <b>Expected Results</b> | User will be granted access to the admin mode and proceed to edit, delete, or add content to the categories                                                                                                   |
| <b>Actual Results</b>   | User does not have admin rights and will be prompted with a message “you do not have admin rights” and to go back. They will navigate to the user panel.                                                      |
| <b>Status</b>           | Pass                                                                                                                                                                                                          |

# TEST SUITES AND TEST CASES (Kelvin Gonzalez)

|                  |                                                             |
|------------------|-------------------------------------------------------------|
| Test Case ID     | (WEB) PEM- Login API Test                                   |
| Purpose          | Application should be able to get a token from the backend. |
| Preconditions    | Users need to have internet.                                |
| Expected Results | Users are expected to receive a token from Google API.      |
| Actual Results   | Users received a token from API.                            |
| Status           | Pass                                                        |



# TEST SUITES AND TEST CASES (Ana Martinez)

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Case ID</b>     | PEM - Categories Subheadings                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Purpose</b>          | To test all functionality of customized subheadings for each Category                                                                                                                                                                                                                                                                                                                                                |
| <b>Preconditions</b>    | Users are logged in: <ul style="list-style-type: none"><li>- From the Categories Screen select a category then select an item and notice the subheadings. Repeat the above to test the rest of the categories' subheadings.</li><li>- From the Admin Categories Screen select a category then select an item and notice the subheadings. Repeat the above to test the rest of the categories' subheadings.</li></ul> |
| <b>Expected Results</b> | Each item listed within the Categories and Admin Categories screens should have the subheadings corresponding to its category.                                                                                                                                                                                                                                                                                       |
| <b>Actual Results</b>   | Subheadings per Category: <ul style="list-style-type: none"><li>- Medical &amp; Surgical: Evaluation, Differential Diagnoses, Management, Medications, References</li><li>- Trauma &amp; Toxicology: Evaluation, Signs/Symptoms, Management, References</li><li>- Foreign Ingestion: Evaluation, Management, References</li></ul>                                                                                    |
| <b>Status</b>           | Pass                                                                                                                                                                                                                                                                                                                                                                                                                 |

# TEST SUITES AND TEST CASES (Anabel Perez)

|                         |                                                                                                                                                                                                                                                                                                         |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Case ID</b>     | PEM - Autolink                                                                                                                                                                                                                                                                                          |
| <b>Purpose</b>          | Allow App Admins to save URLs in the content of the subcategories as plain text and the app will automatically convert them to hyperlinks.                                                                                                                                                              |
| <b>Preconditions</b>    | Users need to be able to log in with their own credentials to their account into the app. Also the users need to have admin permissions in order to be able to add content. Regular users can still test the functionality if some test URLs were previously added in the content of the subcategories. |
| <b>Expected Results</b> | Users are able to navigate to external sites from within the app by clicking on the hyperlink.                                                                                                                                                                                                          |
| <b>Actual Results</b>   | User was able to access external content from within the app and come back to the same screen on the app once the user was done reviewing the external site.                                                                                                                                            |
| <b>Status</b>           | Pass                                                                                                                                                                                                                                                                                                    |

# TEST SUITES AND TEST CASES (Peter Duarte)

|                         |                                                                                           |
|-------------------------|-------------------------------------------------------------------------------------------|
| <b>Test Case ID</b>     | PEM - Q&A                                                                                 |
| <b>Purpose</b>          | Allows users to ask questions that can be answered by other users.                        |
| <b>Preconditions</b>    | Users need to be able to log in with their own credentials to their account into the app. |
| <b>Expected Results</b> | Users are able to post questions that other users can answer.                             |
| <b>Actual Results</b>   | There is no way to access Q&A                                                             |
| <b>Status</b>           | Fail                                                                                      |

# SUMMARY

The PEM App is available, on beta testing, for both Android and iOS devices, allowing a broad spectrum of medical staff to have access to it, worldwide.

- Contact:

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- Peter Duarte: [pduar009@fiu.edu](mailto:pduar009@fiu.edu)

Please let us know if you have any questions, suggestions or comments.

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Thank You!

