

Florida International University
Knight Foundation School of Computing and
Information Sciences
Software Engineering Focus
Final Documentation

Project:
The Coral Safari

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Abstract

The Coral Safari project is a startup and is currently the first version of the application. There is an evergrowing problem in South Florida's ocean ecosystems because of the overpopulation of lionfish. The application is meant to be serve as a tool for users primarily located in South Florida to protect the ecoystems being damaged by lionfish in South Florida's waters. The way the project functions is by allowing users to tap to pin a location on the map on their phone depending on where they see a lionfish, then a popup appears allowing the user to fillout the details for the pin they want to set (depth, name, notes, etc.) , and then the user submits the information which is then connected to a database allowing admins to see the location for the fish. The locations are then showed to fisherman or hunters who can then remove the lionfish located at the pin. The application also includes a separate FAQ page that shows how to clean, cook, and eat lionfish if the user decides to remove the fish themself.

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1. Introduction

Environmental issues have become a major topic that everyone in the world has started to take notice of and new ways to protect or save it are constantly being developed, An environmental issue is a broad term that can be used to describe a number of different things in the world such as: the air, forests, reefs, and the ocean. The environment in the ocean is precious given all the things it provides not just for people but for the animals swimming in it. The beaches and the ocean in South Florida play important roles in the lives of everyone living here. However, one of the many environmental issues that plagues the ocean environments in South Florida is the overpopulation of lionfish that are an invasive species. Over the years the lionfish population in South Florida has grown exponentially due to the species having no natural predators to regulate their numbers. This has led to the lionfish damaging other populations of different fish species since there are so many lionfish hunting and damaging reefs in the ocean as well.

Therefore, in order to combat the evergrowing lionfish population protect South Florida's ocean ecosystems and reefs The Coral Safari was developed. This application allows users to be able to set pins within the interactive map on the location for whenever a person spots a lionfish in the water in South Florida whether it be out far in the ocean, near the shore, or at a reef. The pins are available for fisherman using the app to see and in turn they can go to the pin's location to catch the lionfish for which they can cook or sell. The application also provides users different ways in which lionfish can be caught, cleaned, and cooked. Thus, allowing people in the South Florida community to combat the invasive lionfish population participate in protecting the environment they live.

2. User Stories

The following user stories were implemented successfully into The Coral Safari 1.0:

- #1) Set up Git repository for all future code and documentation entries
- #2) Understanding swift storyboarding and its documentation
- #3) Set up environments for the use of Swift Storyboards (Xcode)
- #4) Begin researching tools to help build map system
- #5) Begin researching tools to help build database and/or CMS
- #6) Establish a ground for code review and documentation
- #7) Create a rough draft of a map interface for the app home screen
- #8) Create a rough draft of a navigation menu for the app
- #9) Create a login system for the app along with basic user data
- #10) Add functionality to the search bar in the map screen
- #11) Add location services to map
- #12) Create Account View and About section in FAQ view
- #13) Begin Collection View for FAQ Section
- #14) Upload pins to database
- #15) Upload pins to database
- #16) Create a survey in the confirmation screen before the user uploads a pin
- #17) Begin to populate FAQ sections with general information about how to locate/catch/safely handle lionfish
- #18) Create a modal screen to pull up information about pins when tapped
- #19) Merge all branches together on github
- #20) Create simple HTML pages to populate FAQ sections
- #21) Create account page for nav bar

- #22) Reform look of nav bar
- #23) Reform look of FAQ section
- #24) Integrate modal pin screen to work with database
- #25) Polish confirm pin modal and map view screen UI
- #26) General bug detection/fixing

3. System Purpose

This is the first official build of The Coral Safari application, and as such, many distinctive features were created for it to function. The application is meant to allow a user to set pins on a map of their location in South Florida that they fill out with information and is sent to a database. The application also has an FAQ section that answers questions for users such as how to clean or cook lionfish once they are caught. As such, the main additions for the current system in the application are map functionality, application to database communication, and the creation of the FAQ section of the application.

4. Project Planning

This section deals with the planning the team did to make this application functional. The first part lists all the hardware and software resources that the team used to make the features. The second part details the sprint plan documents used since the team incorporated Agile techniques to work on user stories for the application.

4.1 Software and Hardware Resources

Apple Xcode

Contentful

PositionStack API

GitHub

TestFlight

4.2 Sprint Plans

Sprint 1:

Attendees: Eddie Brisoë, Mathew Duyvelaar, Daniel King, Daniel Lucès, Rachel Quijano, Sybille Reiz

Start time: 7:00 P.M.

End time: 7:30 P.M.

After discussion, the velocity of the team was estimated to be 13

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

User Story 1:

Set up Git repository for all future code and documentation entries (4)

User Story 2:

Understanding swift storyboarding and its documentation (13)

User Story 3:

Set up environments for the use of Swift Storyboards (Xcode) (13)

User Story 4:

Begin researching tools to help build map system (5)

User Story 5:

Begin researching tools to help build database and/or CMS (5)

User Story 6:

Establish a ground for code review and documentation (3)

The team members indicated their willingness to work on the following user stories.

- Everyone
 - Attempt to link all code together in one git repository (1)
 - Looking at the videos on reviewing swift (2)
 - Download and review Xcode (3)
 - Looking at pros/cons of apple maps/google maps (4)
 - Looking at pros/cons of using a database vs a headless CMS (5)
 - Develop well written and readable code (6)
- Eddie Briscoe
 - Create an environment for all members to participate in and share knowledge they have gained

Sprint 2:

Attendees: Eddie Briscoe, Mathew Duyvelaar, Daniel King, Renier Luces, Rachel Quijano, Sybille Reiz

Start time: 6:00 P.M.

End time: 6:30 P.M.

After discussion, the velocity of the team was estimated to be 45

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

#7) Create a rough draft of a map interface for the app home screen: (15)

- A basic map rendered on a one page view
- The map should be movable/scrollable
- The map should be implemented using the apple maps kit
- One collaborative version should be uploaded to the git repo by the end of the sprint.
- Optionally: center the map based on the user's location
- Optionally: add a nonfunctional search bar to the top of the screen

#8): Create a rough draft of a navigation menu for the app: (15)

- The menu should scalable to easily add more pages to the app
- The menu should use the color scheme from the #faq-team page on the discord
- For now the menu should be capable of navigating between two different blank views, map and faq.
- One collaborative version should be uploaded to the git repo by the end of the sprint.
- Optionally: Create the menu as a toggleable drawer with a hamburger menu button. (See [Here](#))

#9) Create a login system for the app along with basic user data: (10)

- The login page should follow the the color scheme from the #faq-team page on the discord
- The login page should use Contentful to send and retrieve user requests
- One collaborative version should be uploaded to the git repo by the end of the sprint.
- Optionally: Create a sign up feature as well

#6) Establish a ground for code review and documentation: (5)

- Should be completed before the end of week 1

The team members indicated their willingness to work on the following user stories.

- Mathew Duyvelaar:
 - #7) Create a rough draft of a map interface for the app home screen
- Daniel King:

- #8): Create a rough draft of a navigation menu for the app
- Renier Luces:
 - #7) Create a rough draft of a map interface for the app home screen
- Rachel Quijano:
 - #7) Create a rough draft of a map interface for the app home screen
- Sybille Reiz:
 - #8): Create a rough draft of a navigation menu for the app
- Eddie Briscoe:
 - #9) Create a login system for the app along with basic user data: (10)
 - #6) Establish a ground for code review and documentation: (5)

Sprint 3:

Attendees: Eddie Briscoe, Mathew Duyvelaar, Daniel King, Renier Luces, Rachel Quijano, Sybille Reiz

Start time: 6:00 P.M.

End time: 6:30 P.M.

After discussion, the velocity of the team was estimated to be 40

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

#10) Add functionality to the search bar in the map screen: (10)

- Needs to be able to search using:
 - Names of landmarks (Alligator Reef, Pennekamp Park)
 - Addresses/locations
 - Coordinates
- The search bar should pull up the keyboard when tapped and search when the user presses enter
- Needs to pan the map to the searched location
- Must drop a pin (different to the lionfish pin) down on the searched location

#11) Add location services to map: (5)

- Add some kind of button to the lower right corner of the map
- When pressed, the map should center around the user's location
- Must drop a pin (different to the lionfish pin) down on the user's location

#12) Create Account View and About section in FAQ view (10)

- The menu should have 3 options: account information, map, and FAQ section
- The account information and faq buttons should route to separate blank views
- FAQ view should also include About information
- All map and menu related files should be renamed to informative names (i.e. ViewController.swift -> MapViewController.swift, ViewController.swift -> NavigationViewController.swift)
- Views, controllers, assets, etc should all be separated into different folders

#13) Begin Collection View for FAQ Section: (10)

- User can see frequently asked questions and scroll through list.

#14) Upload pins to database: (10)

- Whenever a user adds a pin, the pin should be uploaded to the database to render on the map
- The map should read in all pins from the database and render them on startup

The team members indicated their willingness to work on the following user stories.

- Mathew Duyvelaar:
 - 10) Add functionality to the search bar
- Renier Lucas:
 - 10) Add functionality to the search bar.
- Rachel Quijano:
 - #11) Add location services to map
- Daniel King:
 - 12) Create Account View and About section in FAQ view
 - 13) Begin Collection View for FAQ Section
- Sybille Reiz:

- 12) Create Account View and About section in FAQ view (10).
- 13) Begin Collection View for FAQ Section (10).
- Eddie Briscoe:
 - #14) Upload pins to database:

Sprint 4:

Attendees: Eddie Briscoe, Mathew Duyvelaar, Daniel King, Renier Lucas, Rachel Quijano, Sybille Reiz

Start time: 6:00 P.M.

End time: 6:30 P.M.

After discussion, the velocity of the team was estimated to be 30

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

#14) Upload pins to database (5)

- Whenever a user adds a pin, the pin should be uploaded to the database to render on the map
- The map should read in all pins from the database and render them on startup

#16) Create a survey in the confirmation screen before the user uploads a pin (5)

- User should be prompted to fill in information about water depth (int), number of lionfish spotted (int), and optional comments (string)
- There should be submit and cancel buttons

#17) Begin to populate FAQ sections with general information about how to locate/catch/safely handle lionfish (10)

- Information will be provided to team members
- The FAQ sections should be able to handle videos/images
- The sections should be able to scroll if there is too much information for the screen

#18) Create a modal screen to pull up information about pins when tapped (5)

- Must be able to request information from database
- Database information will be provided for team members

The team members indicated their willingness to work on the following user stories.

- Mathew Duyvelaar:
 - 16) Create a survey in the confirmation screen before the user uploads a pin.
- Renier Lucas:
 - 18) Create a modal screen to pull up information about pins when tapped (5)
- Rachel Quijano:
 - #16) Create a survey in the confirmation screen before the user uploads a pin
 -
- Daniel King:
 - #17) Begin to populate FAQ sections with general information about how to locate/catch/safely handle lionfish.
- Kathryn Reiz:
 - #17) Begin to populate FAQ sections with general information about how to locate/catch/safely handle lionfish.
- Eddie Briscoe:
 - #14) Upload pins to database:

Sprint 5:

Attendees: Eddie Briscoe, Mathew Duyvelaar, Daniel King, Renier Lucas, Rachel Quijano, Sybille Reiz

Start time: 6:30 P.M.

End time: 7:00 P.M.

After discussion, the velocity of the team was estimated to be 50

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

#19) Merge all branches together on github (20)

- We should have one main branch containing user stories 1-18 (sprints 1-4) by the end of the sprint
- If possible, the stories from this sprint should also be merged into main

#20) Create simple HTML pages to populate FAQ sections (10)

- The pages should have information for the Fishing, Cleaning, Cooking, Environmental impacts, and about us pages

#21) Create account page for nav bar (5)

- The “About” page on the nav bar should be replaced with an account page
- The account page should display username, have a reset password feature, a “member since” section, and the amount of pins set section
- Should include a logout button

#22) Reform look of nav bar (5)

- Team members have full freedom to develop their own look
- Only requirement is bigger navigation buttons (maybe explore icons instead of text buttons)

#23) Reform look of FAQ section (5)

- Team members should explore changing margins, button icons, font, etc
- Team members have full freedom to develop their own look

#24) Integrate modal pin screen to work with database(5)

- Must be able to request information from database
- Database information will be provided for team members

#25) Polish confirm pin modal and map view screen UI

- Don't allow the user to put invalid input when confirming lionfish pin
- Fix UI on map view screen such as center location button
- Integrate lionfish information modal screen with the database

#26) Make cohesive icons & app button design with chosen color palette (5)

The team members indicated their willingness to work on the following user stories.

- Mathew Duyvelaar:
 - #19) Merge all branches together on github (20)
- Renier Lucas:
 - #22) Reform look of nav bar (5)
- Rachel Quijano:
 - #25) Polish pin modals and map view screen UI
- Daniel King:
 - #23) Reform look of FAQ section (5)
- Kathryn Reiz:
 - #23) Reform look of FAQ section (5)
 - #26) Make cohesive icons and app button design with chosen color palette (5)
- Eddie Briscoe:
 - #20) Create simple HTML pages to populate FAQ sections (10)
 - #21) Create account page for nav bar (5)

Sprint 6:

Attendees: Eddie Briscoe, Mathew Duyvelaar, Daniel King, Renier Lucas, Rachel Quijano, Sybille Reiz

Start time: 6:30 P.M.

End time: 7:00 P.M.

After discussion, the velocity of the team was estimated to be 50

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

#25) General bug detection/fixing: (10)

- Every team member should sign up for an account (don't use a real password)
- Every team member should place down pins with expected and unexpected values
- Every team member should explore the faq section (including navigation links on any of the web views)
- Every team member should explore the account page to validate values being presented to the user

#26) Work on project deliverables: (30)

- More details on individual posters/videos and other deliverables will be provided to the team members and updated in the backlog grooming meeting of this sprint
- The product owner has decided that 2 weeks is a more appropriate timeframe for working on deliverables in order to ensure a professional look and smooth bundling of the app and other packages.

#27) Merge all new front end aspects into the main branch of GitHub (10)

The team members indicated their willingness to work on the following user stories.

- Mathew Duyvelaar:
 - #25) General bug detection/fixing
 - #26) Work on project deliverables
- Renier Lucas: 25 General Bug
- Rachel Quijano:
 - #25) General bug detection/fixing
 - #26) Work on project deliverables: (30)
- Daniel King:
 - #25) General bug detection/fixing
 - #26) Work on project deliverables
- Kathryn Reiz:
 - #25) General bug detection/fixing

- #26) Work on project deliverables
- Eddie Briscoe:
 - #25) General bug detection/fixing: (10)

5. System Design

This section goes over the design of The Coral Safari and the ways different parts that make up the project are all connected to one another. The class diagram shows the interactions between the different parts of the project. Finally, it also goes over the architecture of the project itself are explained.

Class Diagram



Architecture

The two architectures employed by The Coral Safari are:

Client-Server Architecture:

This is for when a user logs in to their account and also the pin data that is created when a user makes a pin on the map for a lionfish. The client communicates with their phone to the server database that receives the pin data and updates to make the pin in the database system. Once that is done the pin is made visible for users.

Event Driven Architecture:

The application functions are based off the external inputs a user makes while the application is loaded. For example, the program responds to the user when they hold down their finger on a place in the map to make a pin or when they tap a pin that has already been made. This is also true for when the user taps the FAQ button to see the FAQ section of the application.

6. Project Diagrams

Use Case Diagrams

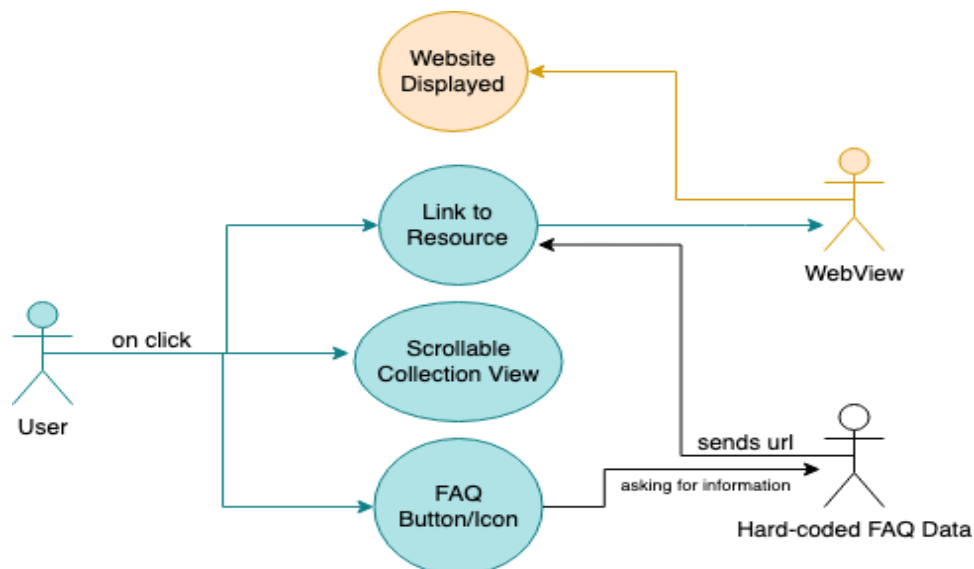


Figure 1. Use case diagram for FAQ section of The Coral Safari

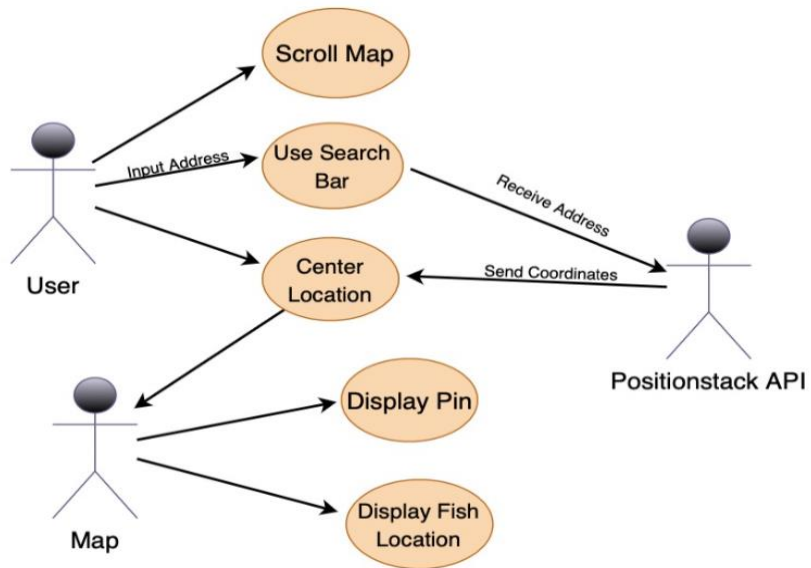


Figure 2. Use case diagram showing user with map functionality

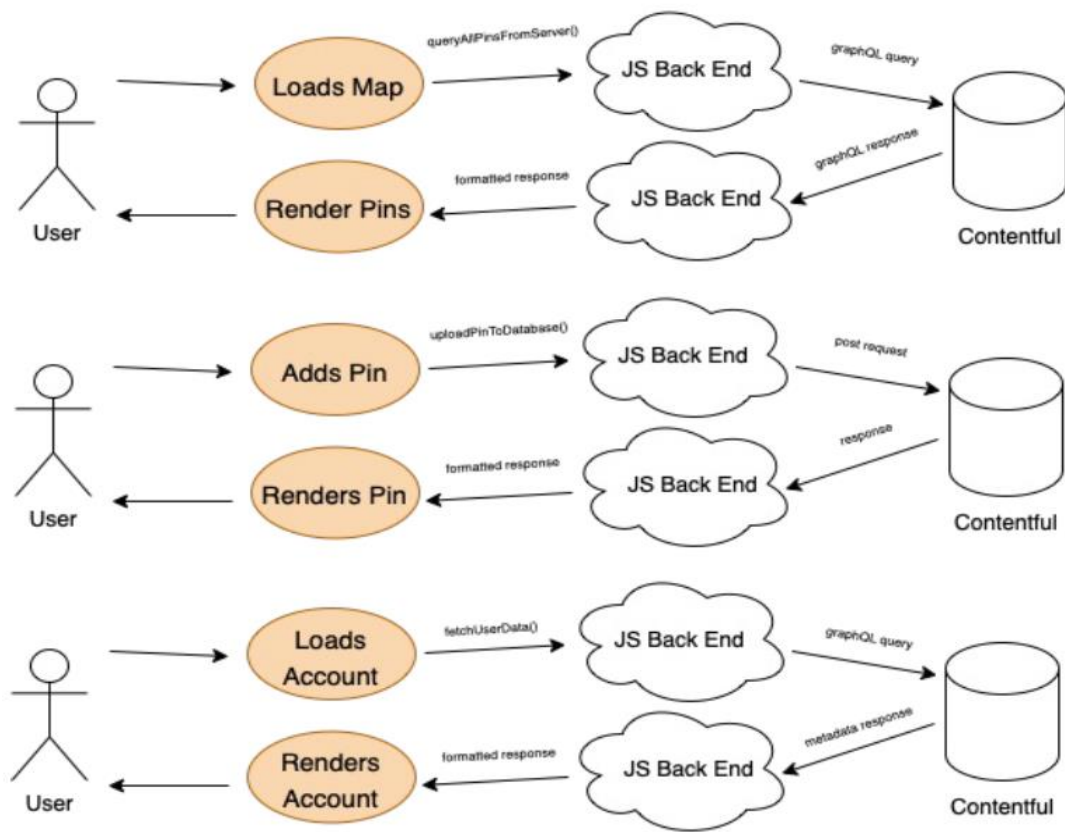


Figure 4. User diagram illustrating the way interaction with map interacts with the Contentful database.

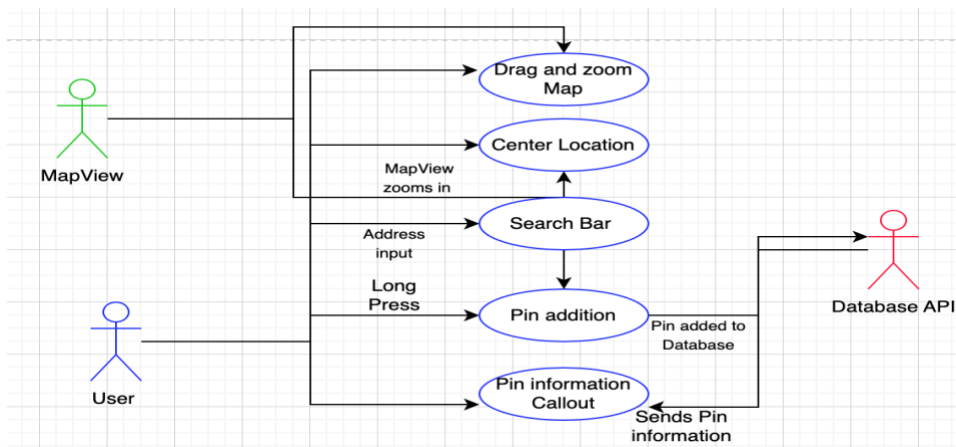


Figure 5. Use case for map view interactions.

Class Diagrams

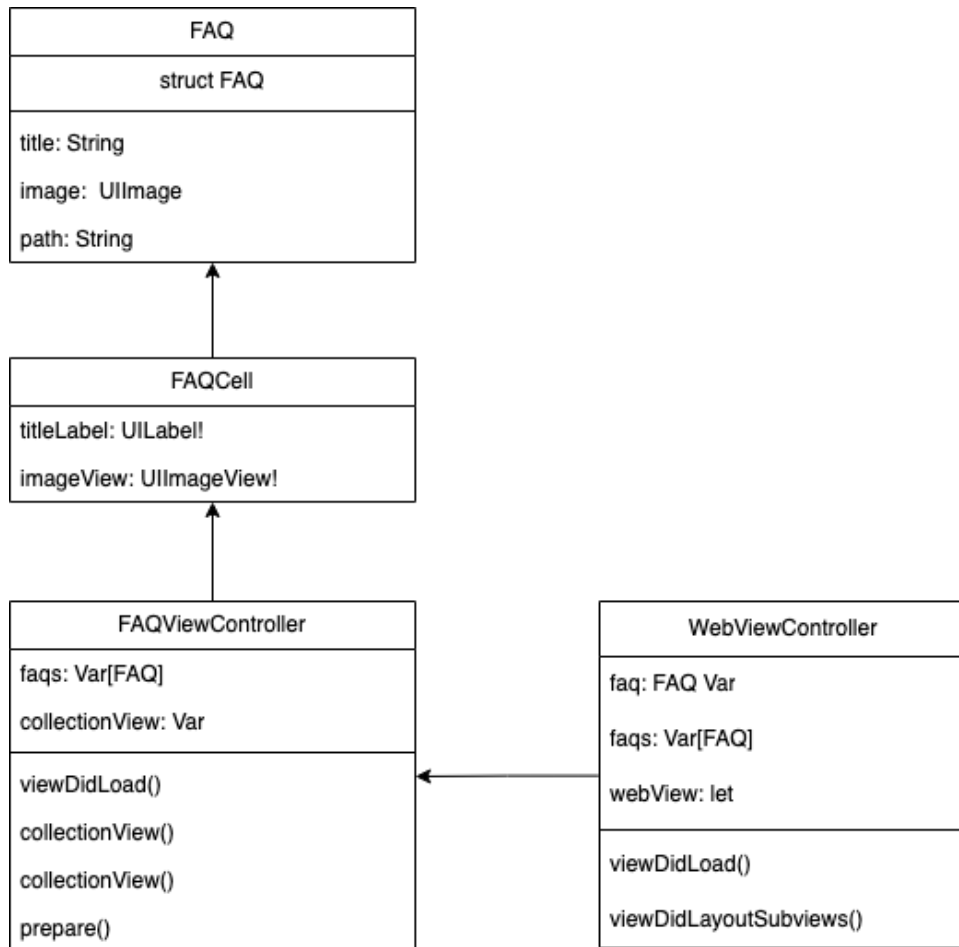


Figure 6. Class Diagram for the FAQ section of the application.

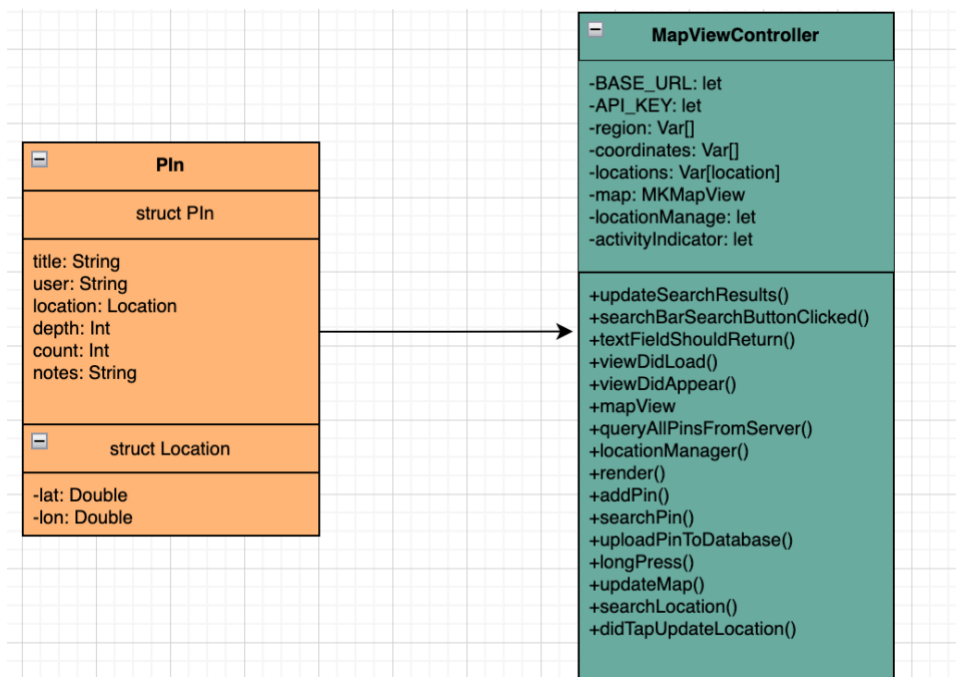


Figure 7. Class diagram for the Pin and the MapViewController.

7. Appendix

7.1 Sprint Reviews

Sprint 1 Review:

Sprint Review Meeting Minutes

Attendees: Eddie Brisoë, Mathew Duyvelaar, Daniel King, Daniel Lucés, Rachel Quijano, Sybille Reiz

Start time: 6:15 PM

End time: 6:30 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners: All.

- User Story 1: Set up Git repository for all future code and documentation entries (4)
- User Story 2: Understanding swift storyboarding and its documentation (13)
- User Story 3: Set up environments for the use of Swift Storyboards (Xcode) (13)
- User Story 4: Begin researching tools to help build map system (5)
- User Story 5: Begin researching tools to help build database and/or CMS (5)

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

- User Story 6: Establish a ground for code review and documentation (3)
- How this should be reflected on the user story definition in Mingle:
 - Coding has not yet begun on the project so the review process will be addressed in the future.

Sprint 2 Review:

Sprint Review Meeting Minutes

Attendees: Eddie Brisoe, Mathew Duyvelaar, Daniel King, Renier Luces, Rachel Quijano, Sybille Reiz

Start time: 5:15 PM

End time: 5:30 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners: All.

- User Story 7: Create a rough draft of a map interface for the app home screen (15)
- User Story 8: Create a rough draft of a navigation menu for the app (15)
- User Story 9: Create a login system for the app along with basic user data (10)
- User Story 6: Establish a ground for code review and documentation (5)

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

- N/A

Sprint Review 3:

Sprint Review Meeting Minutes

Attendees: Eddie Brisoë, Mathew Duyvelaar, Daniel King, Renier Lucas, Rachel Quijano, Sybille Reiz

Start time: 5:15 PM

End time: 5:30 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners: All.

- User Story 12: Create Account View and About section in FAQ view (10)
- User Story 11: Add location services to map: (5)
- User Story 10: Add functionality to the search bar in the map screen: (10)
- User Story 13: Begin Collection View for FAQ Section: (10)
- User Story 15: Add a modal screen for a user to confirm placing a pin: (5)

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

- User story 14: Upload pins to database: (10)

Sprint Review 4:

Sprint Review Meeting Minutes

Attendees: Eddie Brisoë, Mathew Duyvelaar, Daniel King, Renier Lucas, Rachel Quijano, Sybille Reiz

Start time: 5:15 PM

End time: 5:30 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners: All.

- #14) Upload pins to database (5)
- #16) Create a survey in the confirmation screen before the user uploads a pin (5)
- #17) Begin to populate FAQ sections with general information about how to locate/catch/safely handle lionfish (10)

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

- #18) Create a modal screen to pull up information about pins when tapped (5)

Sprint 5 Review:

Sprint Review Meeting Minutes

Attendees: Eddie Brisoë, Mathew Duyvelaar, Daniel King, Renier Lucas, Rachel Quijano, Sybille Reiz

Start time: 6:00 PM

End time: 6:30 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners: All.

- #19) Merge all branches together on github (20)
- #20) Create simple HTML pages to populate FAQ sections (10)
- #21) Create account page for nav bar (5)
- #22) Reform look of nav bar (5)
- #23) Reform look of FAQ section (5)
 - #24) Integrate modal pin screen to work with database(5)
 - #25) Polish confirm pin modal and map view screen UI
- #26) Make cohesive icons & app button design with chosen color palette (5)

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

Sprint 6 Review:

Sprint Review Meeting Minutes

Attendees: Eddie Brisoë, Mathew Duyvelaar, Daniel King, Renier Luces, Rachel Quijano, Sybille Reiz

Start time: 6:00 PM

End time: 6:30 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- #25) General bug detection/fixing: (10)

#27) Merge all new front end aspects into the main branch of GitHub (10)

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

#26) Work on project deliverables: (30)

7.2 User Manual

Coral Safari User Manual Spring 2023

LOGIN/ SIGN-UP PAGE

Starting Out:

Sign-Up: Upon opening the Coral Safari application, the user will be prompted to either login using previous account credentials or to sign-up for an account. If the user is new, select the small sign-up button. This switches the page to the sign-up mode. Here, the user will enter their desired Username and Password into the respective text boxes. Once content with their account details, the user presses the large “Sign Up” button, creating a new account and bringing them into the application.

Already Have an Account:

Login: Upon opening the Coral Safari application, the user will be prompted to either login using previous account credentials or to sign-up for an account. If the user previously created an account, they should enter the Username and Password into the respective text boxes. Upon completion, the user should press the “Log In” button. If the input Username and Password are valid, the user will be logged in and brought into the application. If the input Username and Password are invalid, the user will be prompted to reenter them until they are valid.



Please Log In!

Log In

Sign Up

TAB BAR

Moving Between Tabs:

Map Page: Upon entering The Coral Safari application from the Login/ Sign-up page, the user is shown a page with a world map. At the bottom of the page, is a tab bar navigation system. To get to other pages from the map page, the user must press upon one of the tabs in the navigation system. These names include “Map”, “FAQ”, and “About”. Pressing upon the “Map” tab while on the map page results in zero changes.

FAQ Page: Upon entering the FAQ page from another tab, the user is presented with a list of links as well as the same tab bar navigation system shown on other pages. To get to other pages from the FAQ page, the user must press upon one of the tabs in the navigation system. These names include “Map”, “FAQ”, and “About”. Pressing upon the “FAQ” tab while on the FAQ page results in zero changes.

About Page: Upon entering the About page from another tab, the user is presented with a page of user information as well as the same tab bar navigation system shown on other pages. To get to other pages from the About page, the user must press upon one of the tabs in the navigation system. These names include “Map”, “FAQ”, and “About”. Pressing upon the “About” tab while on the About page results in zero changes.



MAP PAGE

World Map:

Location: Upon entering the application from the Login/ Sign-up page, the user is presented with a pop-up asking for permission to access the user's location. Accepting or declining this is optional; however, certain app functionality will not function if the user declines giving the app their location. Should you wish to change this setting later on, this may be done in your phone settings, under TheCoralSafari App.

Scrolling: Upon entering the application from the Login/ Sign-up page, the user is presented with a map of the world. To move around the map, the user places a singular finger on the map and moves it towards the location they desire. To zoom in and out of the map, the user places two fingers in a pinch like position and separates them to zoom in, and the opposite to zoom out.

Search Bar:

Search Location: On the map page, there is a search bar located at the top of the world map. Upon clicking it, the user keyboard is presented, and the user is allowed to start typing in the address of the location they wish to find. Once the user has entered the address, only a few location nicknames work, they should press the search button present on their keyboard to initialize the search. At this point, the user search information is sent to an external API to gather the location information. Once the search is completed, the map moves to the searched location and a pin indicating the user searched location is placed. Should the user want to cancel the search, they can either delete all text in the search bar or press the cancel button located to the right of the search bar when in use. If the user wishes to remove the pin from the map, opening up the search bar removes any user searched pins.

User Location:

Center Button: On the map page, there is a button located on the bottom right-hand corner of the map, just above the tab bar. Pressing this button moves the map to the location of the user, placing a pin to mark the location. If the user wishes to remove the pin from the map, opening up the search bar removes any user location pins. In the event that the user decided to not allow the application to use their location information, this button will have no functionality.

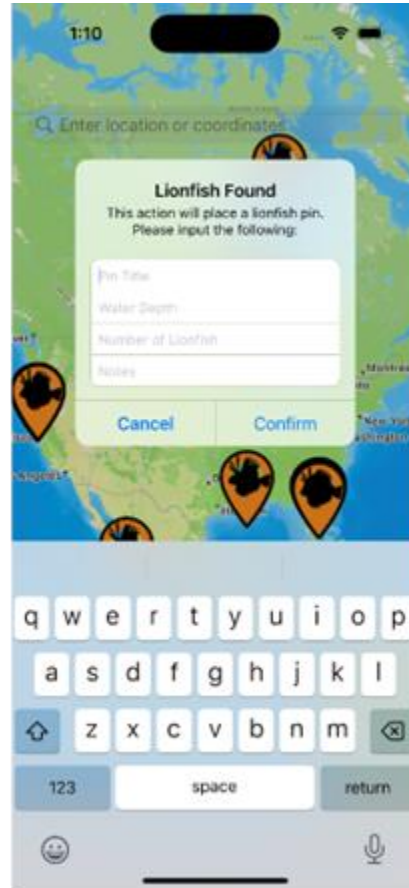
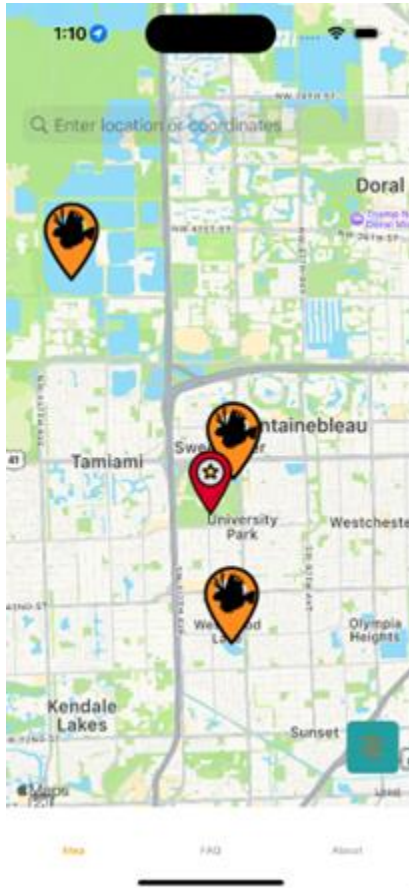
Lionfish Pins:

Placing Pins: On the map page, users are able to manually mark the locations of which they spotted any number of Lionfish. To do this, the user should first locate the area in which they spotted the fish on the map. After, the user places one finger on the spot, holds it there for a couple of seconds and then releases. This prompts the user with a short questionnaire.

Questionnaire: After the user is prompted with the questionnaire, they should begin filling in each question. The user should first enter a title of which this pin will be named. This title can be anything; however, it is asked to be concise and appropriate. Next, the user should enter an approximation of how deep they spotted any number of Lionfish in feet. This number needs to be a positive whole number; it does not need to be exact. For the next question, the user should enter an approximation of how many Lionfish they spotted in the area. Lastly, the user may enter any extra information about the encounter that

they deem important to know. Upon completing the questionnaire, the user can press either the “Cancel” or “Confirm” button. Pressing the “Cancel” button deletes anything related to the questionnaire and does not place a pin. Pressing the “Confirm” button places a pin with all the questionnaire information on the map and uploads the information to our database.

Checking Pin Information: Once there are Lionfish pins on the map, a user may be able to check out information related to the pin. To do this, the user must simply tap on a pin. Should the user want to hide the pin information, clicking elsewhere on the map accomplishes this.



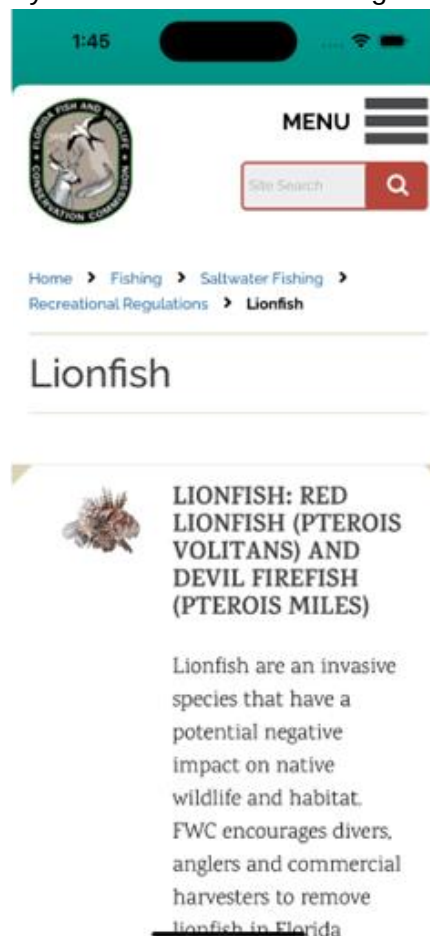
FAQ PAGE

FAQ Sites:

Scrolling: Upon entering the FAQ page from another tab, the user is presented with a list of icons that are all linked to external pages. To go through all the links, the user must place one finger on the screen and swipe up or down depending on where the user wishes to scroll to.

Viewing Pages: For a user to view any of the pages presented, they must click on any of the given icons. Upon pressing an icon, the user's screen presents an internet viewer that navigates to the link chosen. To explore the site, the user should scroll in the same way as the previous screen.

Exiting Pages: Once a user has decided they no longer wish to view a certain page, they may close it. To accomplish this, all the user must do is press their finger on the top of the internet viewer and drag their finger down. Doing this correctly will leave the user back to the original FAQ screen where they are able to continue using the app as normal.



7.3 Installation Guide

The Coral Safari Installation Guide

Welcome to the Coral Safari Installation Guide. To begin with, it is important to note that The Coral Safari Capstone project is an iOS application, and as such, will only be developable on a device running macOS. This means that a mac laptop or virtual machine is **REQUIRED** to further develop the project.

For a video guide to install this project, refer here: [INSERT LINK]

Installing XCode

Once you have access to the project files, you will need to install XCode.

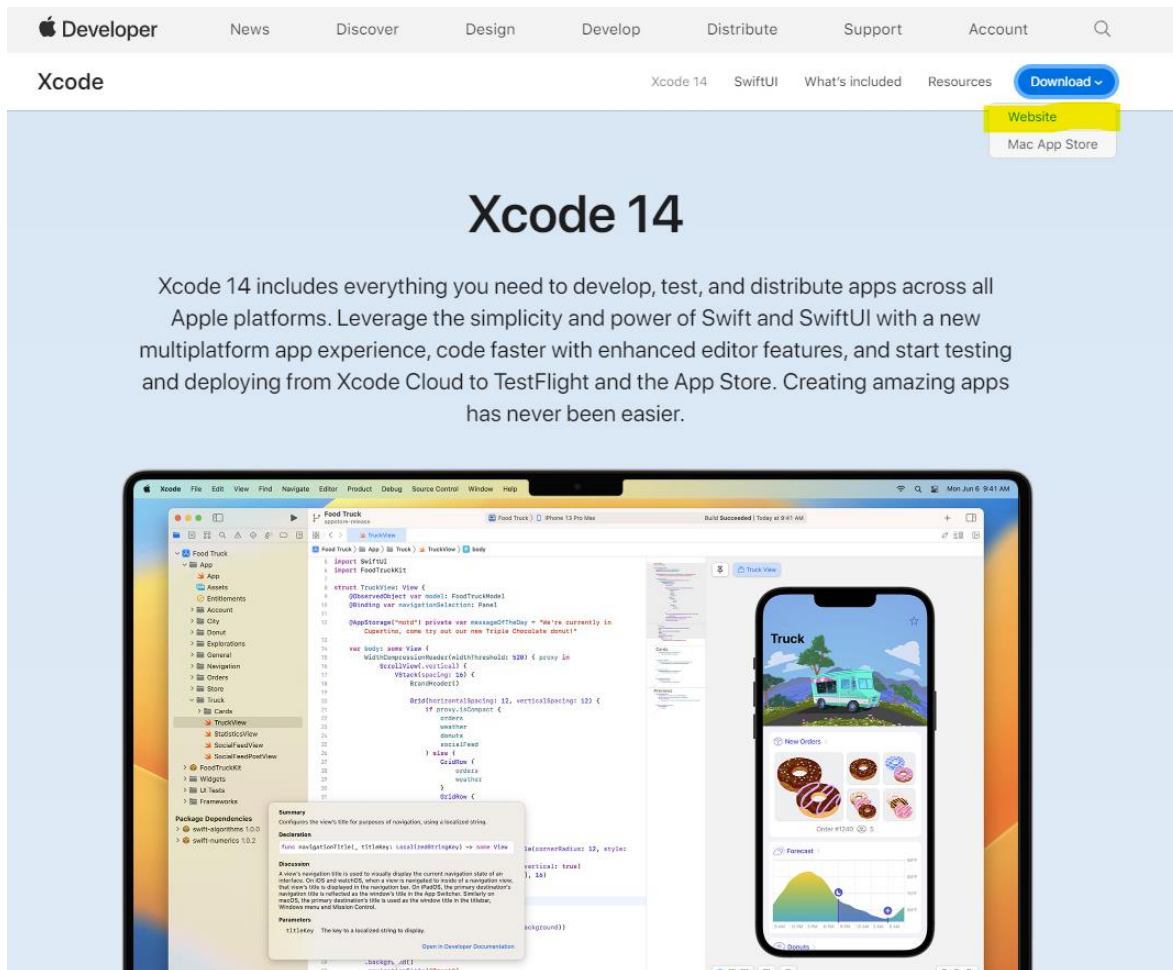
There are **two** ways to install XCode on your machine.

Option #1: Use the App Store to download and install XCode on your machine.

Option #2: Download XCode from the developer site and install it manually.

While option #1 seems like the easier option to take, it has been found that troubleshooting any errors that occur during the installation process to be exceedingly difficult, therefore, it is recommended to go with option #2.

Step 1: Head over to [Apple's developer site](#) and click Develop -> XCode -> Download -> Website



Step 2: Log in using your preferred Apple ID account.

Step 3: Download the latest version of Xcode which would look like: Xcode_x_x_x.xip. This may take longer depending on your internet speed as the XCode file can be taxing in file size.

NOTE: Make sure to check if your mac version is compatible with the version of XCode you are downloading.



Xcode 14.3

March 30, 2023

Hide Details ^

Xcode 14.3 includes everything you need to create amazing apps for all Apple platforms. It includes SDKs for iOS 16.4, iPadOS 16.4 tvOS 16.4, watchOS 9.4, and macOS Ventura 13.3.

⬇ Xcode 14.3.xip
7.01 GB

Step 4: Once the file has been downloaded, double click the file to extract it. This step should take a couple of minutes up to a couple of hours to complete depending on the speed of your machine.

Step 5: Once extracted, drag the application to your applications folder to install it on your machine.

Step 6: Head to the applications folder and open XCode. You will be greeted with an installation menu. Hit “Install.” This will prompt you for permission, simply put in your password to continue.

Opening the project

After installing and opening XCode, you can press “Open project or file” and select The Coral Safari project root directory. This will take some time to load depending on your machine’s speed.

Once it is open, you should be set for development on The Coral Safari! To test that everything is working properly, hit the play button on the top left of the XCode window. This should launch the emulator and run the app.

The app may take some time to load the first time especially on older laptops, so be patient. If it gets stuck, you may stop the task and re-run it.

7.4 Wishlist

The Coral Safari v1.0 Spring 2023 shortcomings/wishlist

Shortcomings:

- Optimization: The backend currently loads all pins every time a map is loaded, even those that are outside the viewable area. This increases loading times for the user. For the app to scale with a larger user base, the pins returned by the backend will need to include only those within the viewable area of the map. Contentful supports queries by area in their location fields, so the database is already set up for this.

Wishlist:

- Pin grouping: When multiple pins are located near each other, they should be grouped into one pin to reduce visual clutter. Google Earth exemplifies this behavior.
- Differently user pins: Pins that a user has placed should stand out from other users' pins. This could be achieved by altering their size or color.
- Pin deletion: Currently a user has no way to delete a pin they have placed. For a pin to be deleted, it has to be removed from the database itself. The user should be able to delete a pin.
- User feedback: The original web version of The Coral Safari had a like/dislike feature for users to give feedback to each pin. If a pin received enough negative feedback, it would be deleted.
- Smart search: The search functionality should be expanded using a smarter system such as the Google Places api. This will allow users to search for reefs, landmarks, and other items that would be included in the Google Earth database.

8. Closing Remarks

As a team we are proud of all we were able to do to make The Coral Safari since we were able to build this application from the ground up. Within the timeframe of this semester we made the application fully functional implementing a functional map that interacts with a database we created, making an interactive tab bar that takes users to a FAQ page that is also interactive, as well as working with the frontend development of the application. The Coral Safari allowed us to learn how to work with Swift storyboards, interact with databases, and learn many other skills. We were also able to collaborate well as team by following the Agile development framework to make the project functional. In the future we hope that The Coral Safari can be improved further in the future by development teams to make it accessible to more users.

