Cidio - Mobile App Design Specification

Lachlan MacPhee - 33109176

October 24, 2023

1 Application Concept

1.1 Introduction

Cidio is a mobile application that helps university students optimise their unit choices through the use of hybrid learning.

It provides students with a database of their course's units with accompanying information on the format, including whether it follows a synchronous (live), asynchronous (in the student's own time), or hybrid learning model.

The purpose of the application is to make it easier for students to find units that fit their schedule, learning style, and interests. This can help balance academic workload with other responsibilities, such as work or family obligations.

1.2 Target Audience

The target audience for Cidio is primarily university students interested in tailoring their university schedule to suit their lifestyle. It is designed to be useful to students of any demographic, from those who need to balance their academic work with a job or family responsibilities to those who wish to take advantage of the flexibility and convenience that university has to offer.

Currently it can be difficult and time-consuming to determine the structure of a unit. Students may need to search through their university's website or consult with their academic advisors. This information can sometimes be incomplete or vague, not containing the nature of each class specifically.

Cidio intends to be a single source of truth, meaning any user who requires information on their unit can rely upon it. Information can be found quickly and easily, and due to the fact that users can contribute to the database (Section 3.3), it will be more accurate, up-to-date, and detailed than existing alternatives.

1.3 Key Functionality

- A comprehensive database of units available at the student's university, with up-to-date information about the unit's structure
- Easily understood visualisations of the assessments within a unit, and mix between synchronous and asynchronous learning
- User contributions to the database result in higher accuracy for information about the unit, as information will be relevant to the most recent semester.
- Per unit discussion forums and reviews
- Ability to search units using a variety of unique parameters
- Ability to save units to refer back to
- Notifications for responses in the discussion forum and when unit structure changes
- User-friendly interface that makes it easy for students to navigate and use the app

2 Competition and Innovation

2.1 Competitor Analysis

After thorough research on currently available iOS and Android apps, only one competitor came close to matching the aims and features of Cidio as a result of its unique feature set and target audience. As a result, the second comparison is to university websites in general, as they are typically the existing solution used by students to find information on available units at their university.

2.1.1 SWOT on Rate My Classes Pro

Strengths

- Elaborate class review system
- True user accounts with multiple authentication providers
- Deep linking to share units with others
- Support for other devices such as the Apple Watch

Rate My Classes Pro's features are ultimately not that valuable to the end user, whose primary goal is to easily access information about a unit that is up to date and more detailed than what they could find on their university's website.

Weaknesses

- The app has a severely limited target audience, as it is developed exclusively for students of New York University. Since it doesn't incorporate user contributions or allow for other universities to integrate easily, this app misses majority of the audience that Cidio plans to serve.

Opportunities

- Adding compatibility with third party applications

Threats

- The developer/s must maintain the unit information themselves to be in line with updates from New York University

2.1.2 SWOT on University Websites in general

Strengths

- Highly focused on information relevant to that university
- Has to be kept up to date

Weaknesses

- May contain limited information on units and their location
- Only has units for that university
- Information on university websites has to cater to users other than students, and thus it is not specifically tailored to the majority of Cidio's target audience.

Opportunities

- Have more extensive search parameters
- University websites are complex by nature due to the size of the organisation. A significant opportunity for most university websites is to make the information on the website more accessible.

Threats

- Typically slow-moving organisations, so rapid changes are unlikely
- The rise of mobile apps is threatening their position as the go to source of information

2.2 Innovations

2.2.1 Built for use at any university in the world

As Cidio is built upon a foundation that allows for user contribution, it partially eliminates the need for administration. Users can contribute to the database themselves, ensuring that the information for each university is kept up to date.

2.2.2 Includes visualisations across various areas of the app

Utilising Swift Charts, Cidio will enable users to view unit information at a glance, requiring little to no reading to make comparisons between unit offerings.

2.2.3 Inbuilt discussion and unit review

For more informed choices, students can also look at reviews from students who have taken the unit previously, or even have discussions with students who are planning to or currently taking the unit.

2.2.4 More search parameters than existing alternatives

Existing alternatives provide only a select few search parameters, while Cidio will include many more parameters and search features.

2.2.5 Notifications

Enables students to keep up to date on:

- when the structure of a starred unit changes
- when a new review is made for a starred unit
- when there is a new discussion for a starred unit

While Cidio only makes five key innovations in the space of unit information for students, these innovations are each of incredible value to the end user, since that functionality is - from the research conducted for this report - not available anywhere else.

3 Feasibility and Technology

3.1 Unit Database

To store the database of units for each university, Cidio will use Firebase's Cloud Firestore. Cloud Firestore is an improvement of the Firebase Realtime Database, and features "richer, faster queries", and "scales further" than its predecessor. It also features "sophisticated querying capabilities on local data" which will improve the experience for users with limited connectivity on their mobile device. To implement Cloud Firestore into Cidio, it will require the addition of the Firebase SDK.

3.2 Visualisations

SwiftCharts will be used to create views for the charts in the Unit Information Page, and any other visualisations required in future improvements to the app. This will allow users a quick and simple way to view unit information in a graphical format.

3.3 User Contributions

For users to make valuable contributions to Cidio's database, they require a number of input options. These will be implemented with UIKit, which provides a set of features and components to construct core app infrastructure. Combined with the Firebase SDK, the user will be able to create new data, or updating existing data in the database.

3.4 Reviews and discussion forums

Using a similar implementation to User Contributions, the reviews and discussion forums (future functionality) on Cidio would utilise UIKit and Cloud Firestore's low-latency capabilities for real time reviews and discussions of units with other students.

3.5 Unit Search

Using the querying methods available in the Firebase SDK and predicates available in Core Data, users can perform initial discovery of units and filter them further at a more responsive device level.

3.6 Saving Units and Account Details

Using Apple's Core Data framework, any units that a user saves will be persisted to local storage where they will reappear on the next app launch. Core Data's capability to mirror a schema to a CloudKit container will also enable users to save their units across devices using the same iCloud account. To implement this functionality will require the creation of data models that represent the different objects in Cidio, and creating managed object contexts for users to create or update their saved units and account information.

3.7 Notifications

Cidio will use a mix of online and local notifications. While majority of Cidio's functionality requires access to the internet, local notifications will enable various offline functionalities such as reminders to check or contribute to a unit. Online notifications will help alert users of changes to their units from updates to Cidio's database. To accomplish the notification functionality requires the creation of notification content, trigger, and request objects. From initial research, this requires UNMutableNotificiationContent, various objects to trigger based on a set of conditions, and UNNotificationRequest paired with UNUserNotificationCenter to create and register a notification request.

4 Interface Design and Storyboard Mock-ups

4.1 Navigation Hierarchy and Flows

Figure 1: Navigation Hierarchy

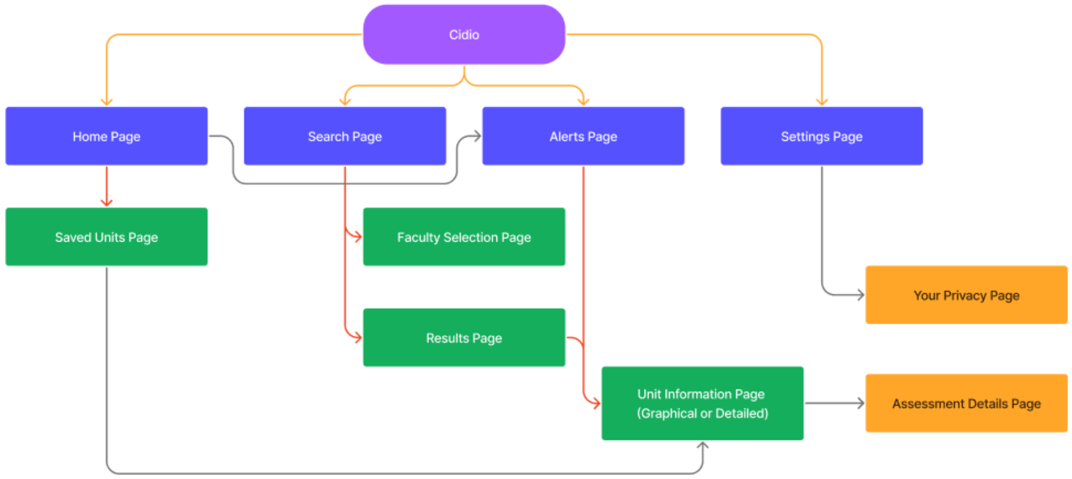


Figure 2: Home Page Flow

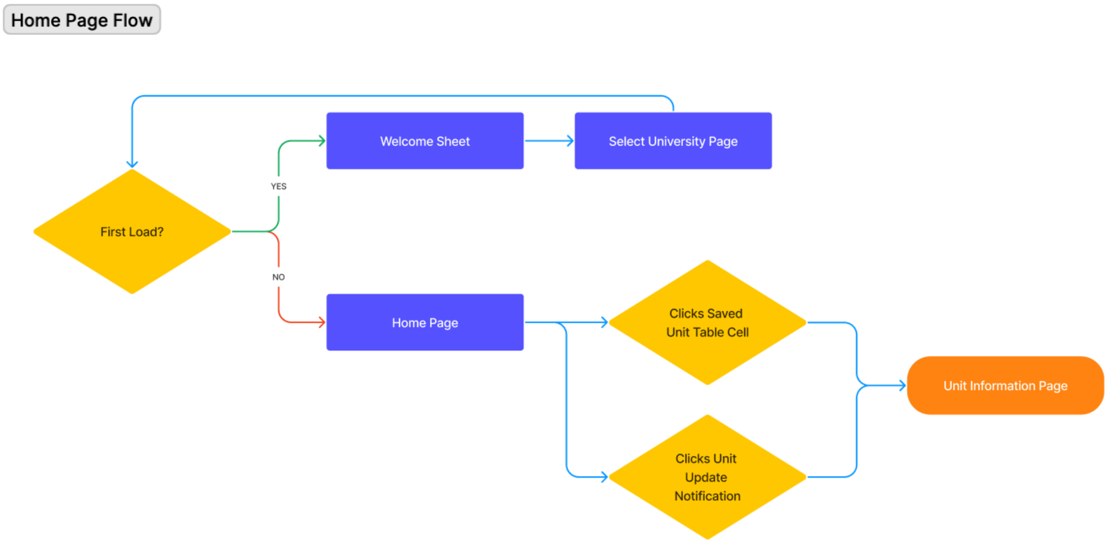


Figure 3: Search Page Flow

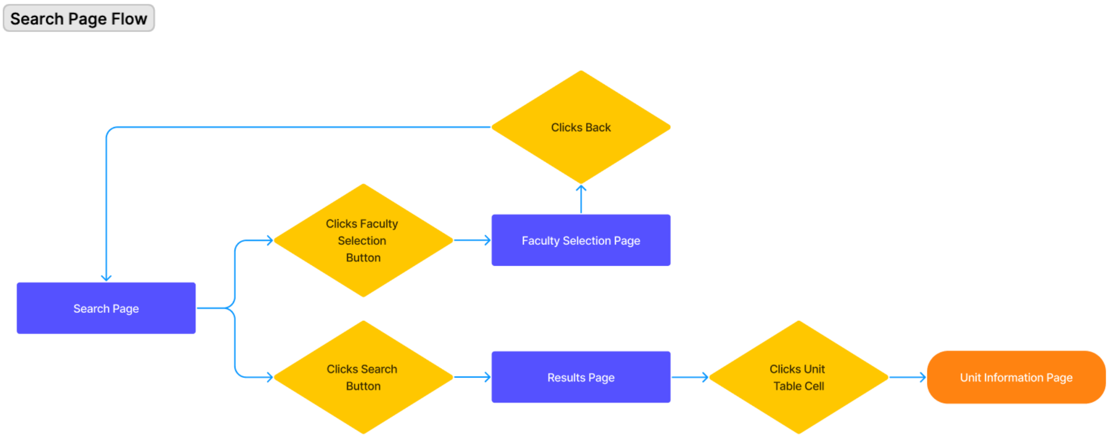


Figure 4: Unit Information Page Flow

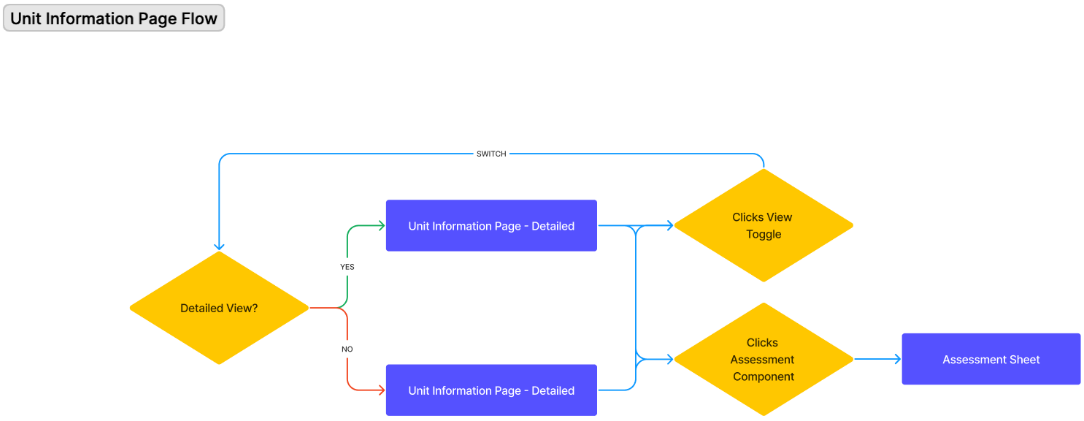

Unit Information Page Flow
SWITCH
Unit Information Page - Detailed
Clicks View Toggle
YES
Detailed View?
NO
Clicks Assessment Component
Assessment Sheet
Unit Information Page - Detailed

Figure 5: Alerts Page Flow

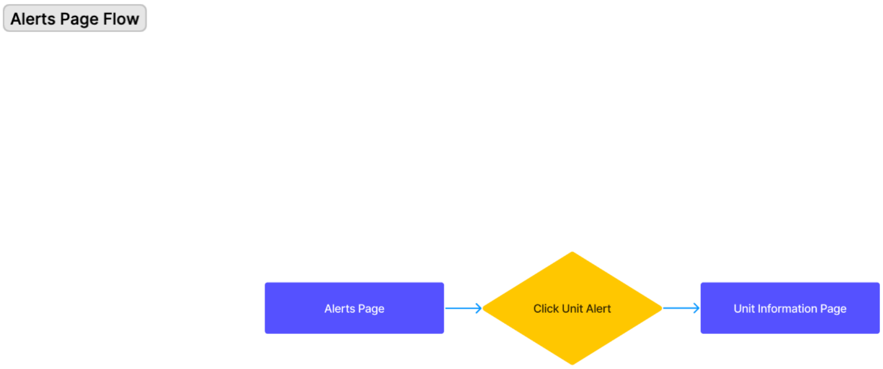
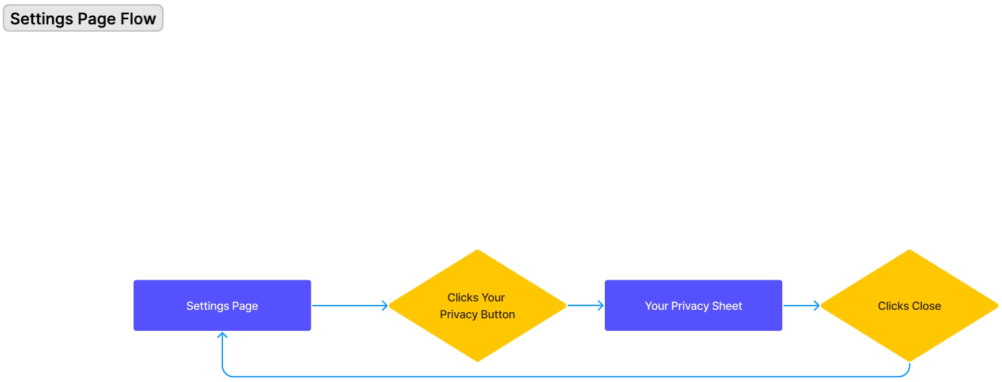


Figure 6: Settings Page Flow



4.2 App-wide Design Choices

4.2.1 Designing for iOS

Cidio attempts to limit the number of onscreen controls as much as possible by having dedicated pages for select functionality. While doing so, it also keeps secondary details and actions easily accessible. For example, the tab controller at the bottom of the screen is available to the user at all times and ensures quick access to other areas of the app. Cidio will make use of constraints to ensure consistency across both portrait and landscape display orientations, and devices of varying size.

4.2.2 Dark Mode

Cidio uses the system-wide setting on iOS to determine whether it should display in light or dark mode. As recommended by the HIG, it avoids offering an app-specific appearance setting. Throughout the design process, it was important to consider how the app appeared in both modes.

4.2.3 Colour

Cidio aims to be a mostly-functional application. Efficient user interactions have been prioritised over unnecessary flare. Apple recommends "Us[ing] color sparingly in nongame apps", so touches of colour are only added in places where user attention should be called. In the tab bar and charts, high contrast colours are also used for accessibility reasons.

4.2.4 Typography

Similarly to colour, typography throughout Cidio is kept simple and consistent. Only the font faces proved by Apple as part of SF Fonts are used. Though, font weight, size, and mono-tonal colour differences are utilised to emphasise importance and create visual hierarchy.

4.2.5 Icons and SF Symbols

For the most part, Cidio makes use of the SF Symbols library to maintain visual consistency and create a recognisable, highly simplified design. Filled icons are used in areas that are considered "primary", and hollow icons are used in areas that are considered less important, but still necessary to convey information quickly to the user. One example of this is in the tab bar, where filled icons provide a sense of importance, whereas the hollow icons on the unit information page are to convey information graphically. In some situations, SF Symbols was limited in the options that it had, such as icons to inform the user what type of class something was. In that case, SVG icons from other locations such as SVGRepo were carefully selected.

4.2.6 Offering help

Since Cidio is reasonably unique in the functionality that it offers, as previously identified in the competitor analysis, it is important that the user is offered help in navigating and using the app. At the top right of every main page, there is a "Help" button that when clicked will open a sheet to explain the basic functionality and purpose of the page. This conforms to Apple's guideline of "Use relevant and consistent language and images in your help content" as the user can expect to find a guide for every main page.

4.2.7 Sheets

There are multiple instances across Cidio where sheets are required, such as on the first startup where users are prompted to "Get Started" by selecting a university. In these situations, there is a clear benefit to presenting content in a modal sheet, as it focuses the user's attention on a specific piece of content and limits distractions.

4.2.8 Feedback

By using Xcode's built in components, Cidio gives feedback in multiple ways, whether it be colour, text, sound, or haptics. As mentioned, sheets are used to deliver critical and actionable information, and any actions that could cause data loss such as cancelling a contribution submission are highlighted to the user through the use of an alert.

4.3 User Stories

Detailed below are a few typical user stories. These range from the very first time a user opens the app to regular usage.

4.3.1 Opening Cidio for the first time

- The user opens the app for the first time and the Welcome Sheet is shown
- When the user clicks "Get Started", they will be directed to a screen to choose their university
- Once the user has selected their university and clicked confirm, they will be directed back to the Home Page to start exploring Cidio

4.3.2 Performing a search for a unit based on a set of criteria

- User clicks on the Search tab
- Using the available parameters, such as unit name, unit staff, available location, etc, the user defines exactly what they are looking for
- Once the user clicks the submit button, they are shown a list of results. If they click on a result, they are directed to that result's Unit Information Page
- Once on the Unit Information Page, the user can click an assessment to see more details about it, or go back to the search parameters page

4.3.3 Viewing a saved unit

- User opens the app and might see their saved unit on the Home Page if it has been saved recently
- If it's not immediately visible, the user can either scroll the view of saved units on the home page, or click the All button to see all of their saved units in a bigger screen
- Clicking on the saved unit will segue to its Unit Information Page
- Clicking back will go back to either the Home Page or the saved units list depending on where the user started

4.3.4 Checking a notification on a unit update and actioning or deleting it

- The user receives a notification for a unit update
- If they click on the notification, they will be brought to the Home Page where recent updates are shown
- If the user clicks the update on the Home Page, they are directed to the Unit Information Page for that unit
- Swiping the notification on the Home Page will hide it, but it is not deleted until they remove it from the Alerts Page by swiping and clicking the delete button

4.3.5 Submitting a contribution

- User navigates to a Unit Information Page using any of the previously outlined methods (search, home page saved units, or saved units full list)
- Clicking the contribute button redirects to the Contribute Page
- Filling out the details and submitting a request displays a prompt on whether the request was sent successfully or not

4.3.6 Modifying account details

- User navigates to the Settings Page
- The user modifies the fields until they are happy with the changes
- Clicking the save button will save the changes, indicated to the user using a visual element.

4.4 Page Level Design Choices and Mockups

4.4.1 Home Page

The Home Page uses a combination of scroll and table views to give users quick access to some of the key features of Cidio, namely saved units and their respective alerts.

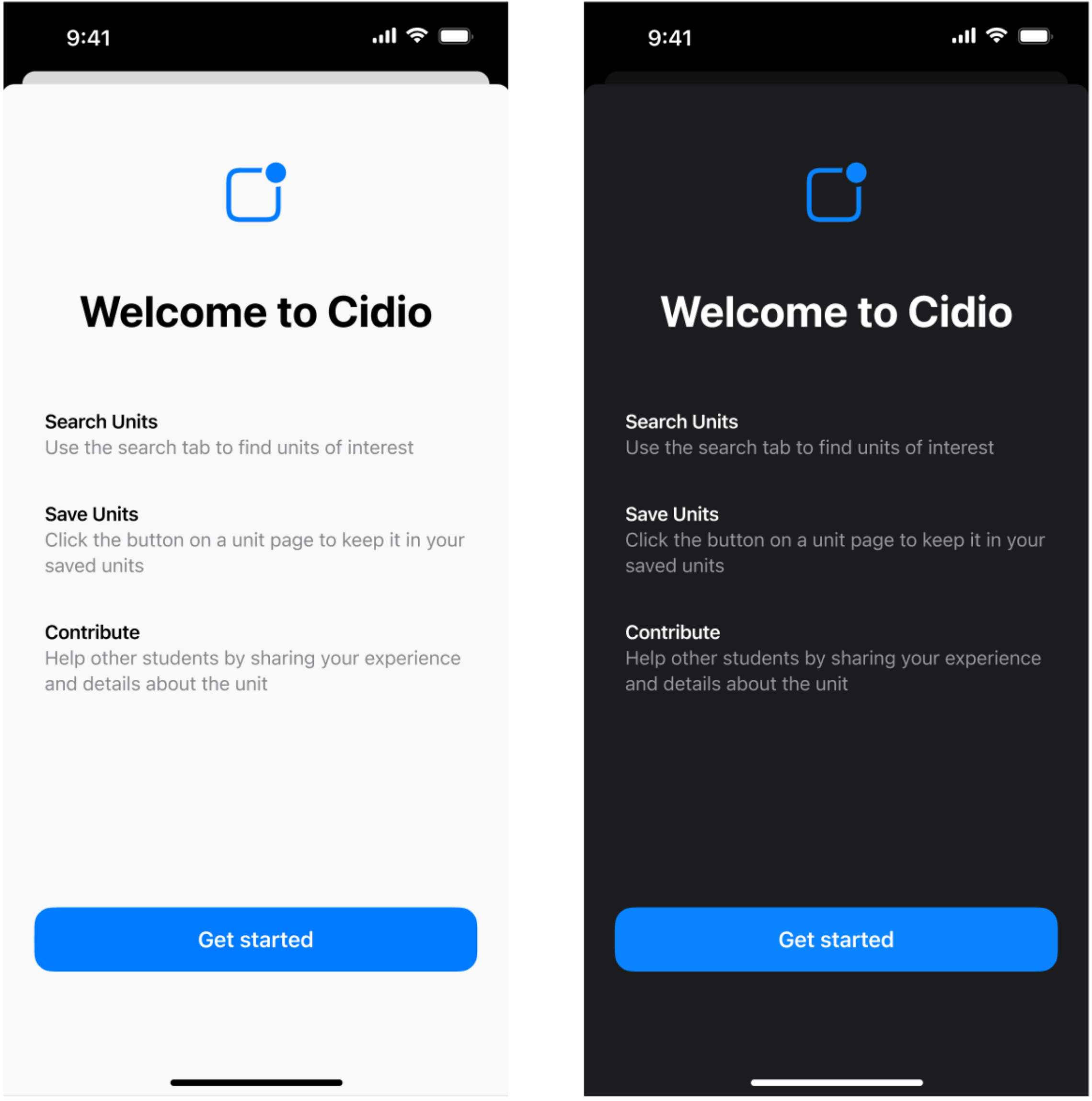
It was important to consider ”empty state” of the Home Page, and how this would explain and assist users in determining the next steps to start adding units.

These views will show scroll bars when the number of saved units extends beyond the available space and the user begins to gesture. Using partial content at the edge of the view will indicate the this possibility to the user.

To conform with Apple’s Scroll View guidelines, the page does not have nested scroll views, and will support default scrolling gestures and keyboard shortcuts. As per Apple’s Layout guidelines, the Home Page provides a consistent layout through the use of constraints that is adaptive to different screen sizes and provides a consistent content representation.

As mentioned in the Home Page Flow, a user will be prompted to set their university on first launch of Cidio. Initially I thought to use an alert to prompt the user to set their university, but since alerts are meant to be used sparingly and shouldn’t ”merely provide information”, I instead relied upon sheets to accomplish this, as seen below.

Figure 7: Home Page - First Launch - Light and Dark



Welcome to Cidio

Search Units
Use the search tab to find units of interest

Save Units
Click the button on a unit page to keep it in your saved units

Contribute
Help other students by sharing your experience and details about the unit

9:41

Welcome to Cidio

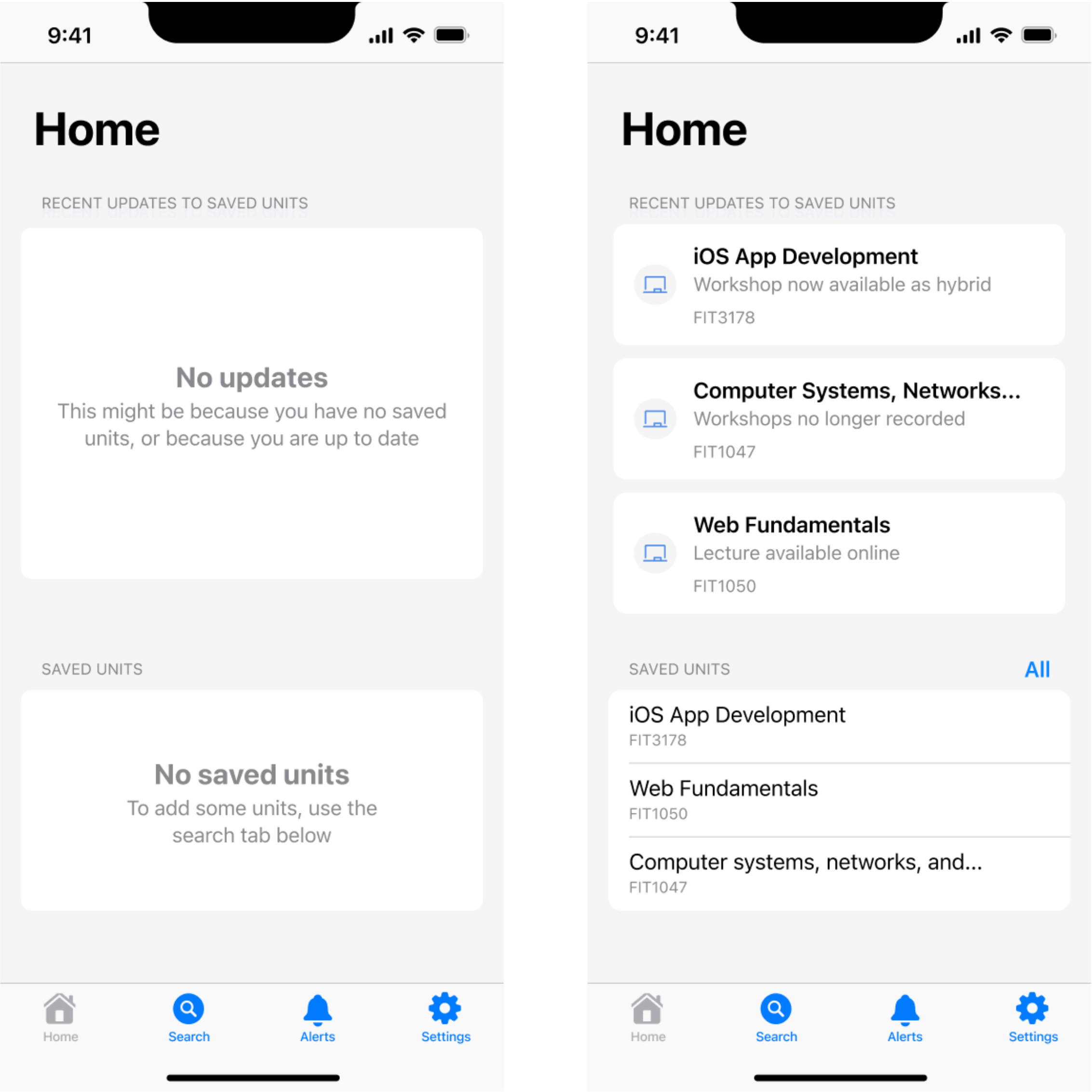
Search Units
Use the search tab to find units of interest

Save Units
Click the button on a unit page to keep it in your saved units

Contribute
Help other students by sharing your experience and details about the unit

Get started

Figure 8: Home Page - Empty and Filled - Light



9:41

Home

RECENT UPDATES TO SAVED UNITS

No updates

This might be because you have no saved units, or because you are up to date

SAVED UNITS

No saved units

To add some units, use the search tab below

9:41

Home

RECENT UPDATES TO SAVED UNITS

iOS App Development
Workshop now available as hybrid
FIT3178

Computer Systems, Networks...
Workshops no longer recorded
FIT1047

Web Fundamentals
Lecture available online
FIT1050

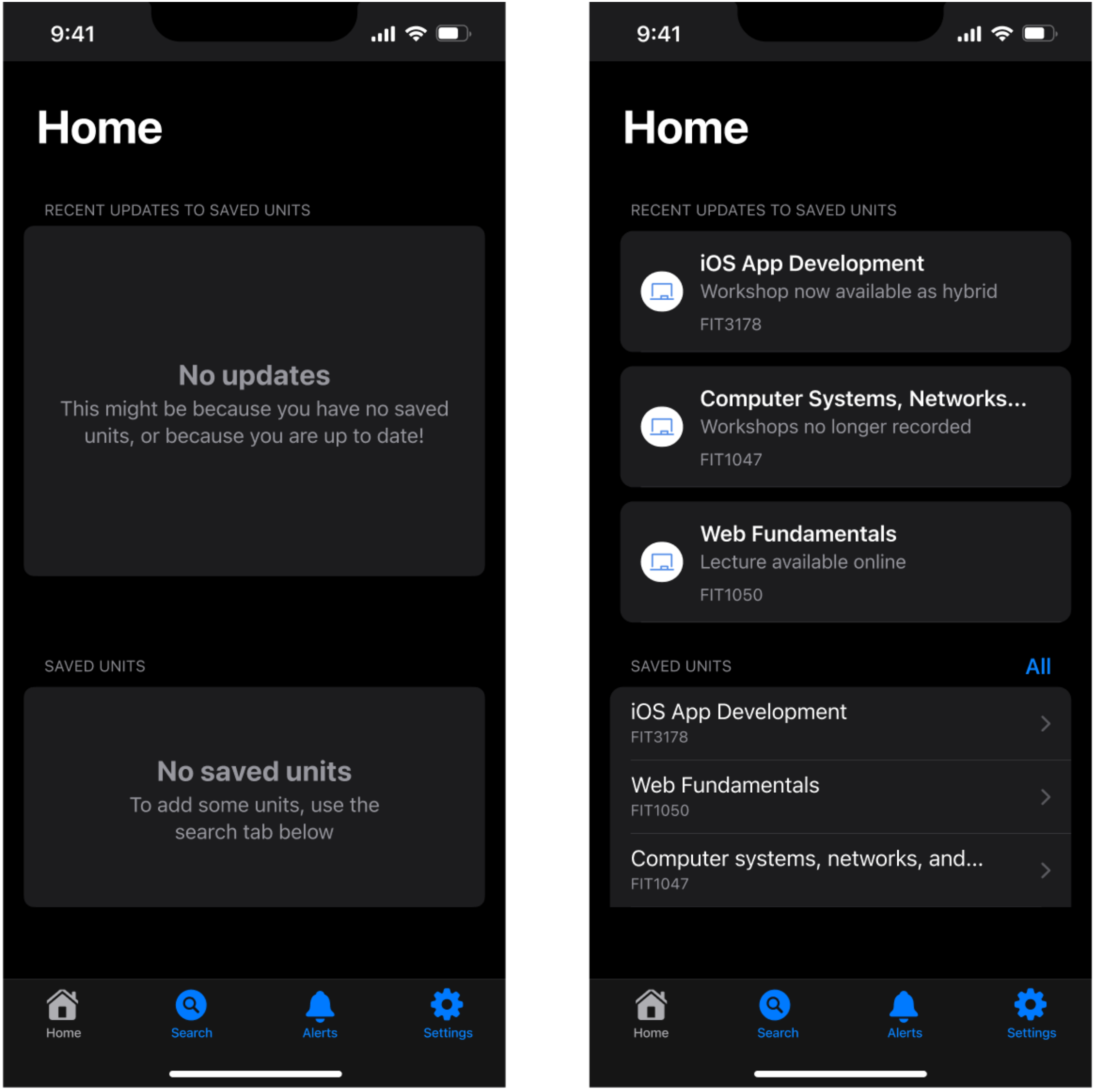
SAVED UNITS All

iOS App Development
FIT3178

Web Fundamentals
FIT1050

Computer systems, networks, and...
FIT1047

Figure 9: Home Page - Empty and Filled - Dark



9:41

Home

RECENT UPDATES TO SAVED UNITS

No updates

This might be because you have no saved units, or because you are up to date!

SAVED UNITS

No saved units

To add some units, use the search tab below

Home Search Alerts Settings

9:41

Home

RECENT UPDATES TO SAVED UNITS

iOS App Development
Workshop now available as hybrid
FIT3178

Computer Systems, Networks...
Workshops no longer recorded
FIT1047

Web Fundamentals
Lecture available online
FIT1050

SAVED UNITS All

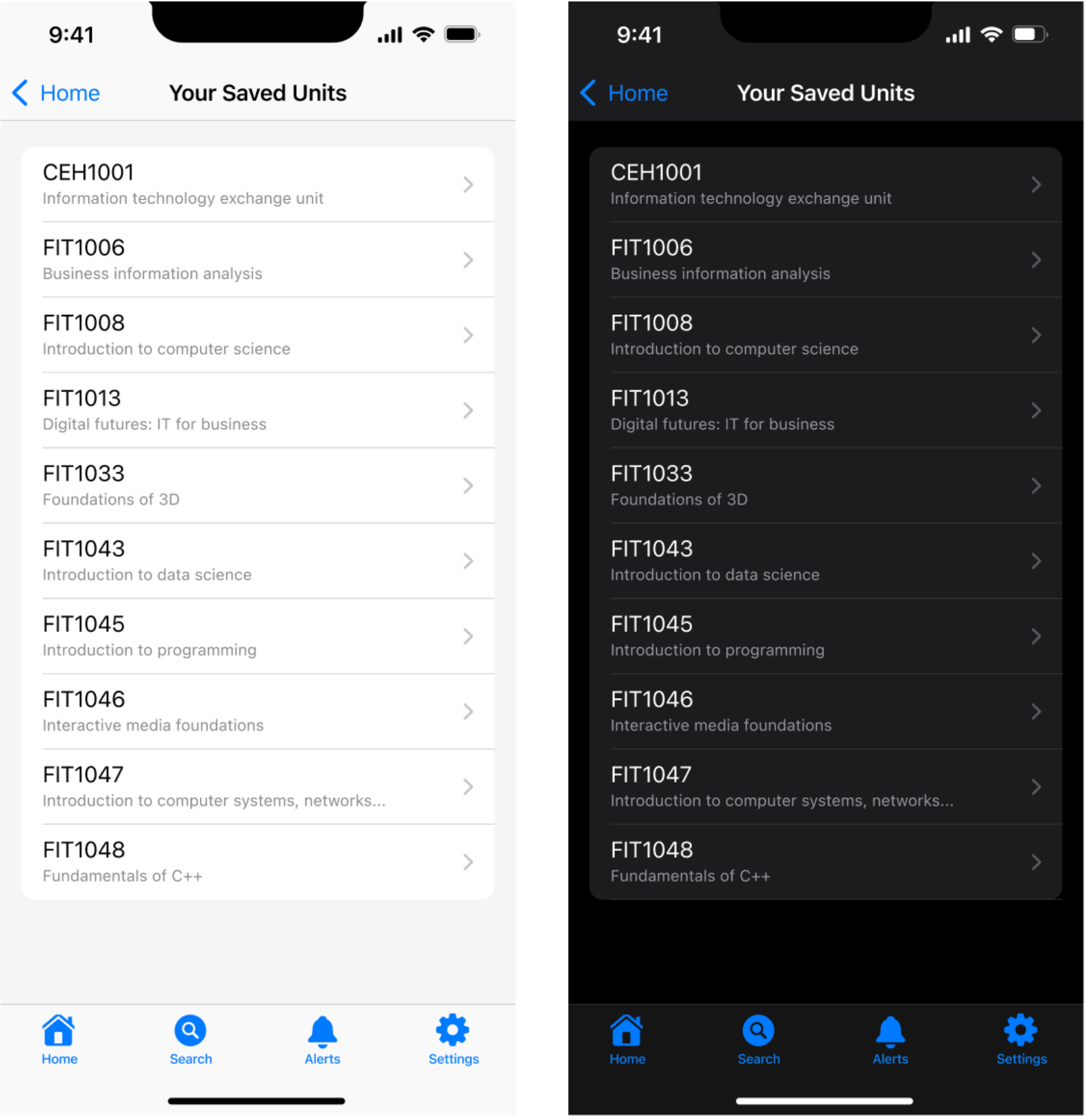
iOS App Development
FIT3178

Web Fundamentals
FIT1050

Computer systems, networks, and...
FIT1047

Home Search Alerts Settings

Figure 10: Saved Units Page



CEH1001
Information technology exchange unit

FIT1006
Business information analysis

FIT1008
Introduction to computer science

FIT1013
Digital futures: IT for business

FIT1033
Foundations of 3D

FIT1043
Introduction to data science

FIT1045
Introduction to programming

FIT1046
Interactive media foundations

FIT1047
Introduction to computer systems, networks...

FIT1048
Fundamentals of C++

CEH1001
Information technology exchange unit

FIT1006
Business information analysis

FIT1008
Introduction to computer science

FIT1013
Digital futures: IT for business

FIT1033
Foundations of 3D

FIT1043
Introduction to data science

FIT1045
Introduction to programming

FIT1046
Interactive media foundations

FIT1047
Introduction to computer systems, networks...

FIT1048
Fundamentals of C++

4.4.2 Search Page

The Search Page in Cidio combines the largest number of UI input elements. As a result, the entering data guidelines were drawn from heavily in the development of the Search Page. Each element was picked carefully to give users the best indication of what their purpose was, and is clear about the information it needs, such as in the case of the "Unit Code / Title" where a placeholder is provided.

An issue with Apple's native check icon in a table view cell was identified during this design, in that it is hidden until the cell is tapped. This means no indication is provided to the user that multiple cells can be ticked. In this case, Cidio uses its own checkbox icons and strays from Apple's human interface guidelines in favour of a clearer user experience.

Despite not featuring until future additional functionality, Apple's searching guideline suggests that Spotlight should allow for "advanced file-search capabilities" within the app. In future, Cidio may incorporate this functionality to allow users to find units quicker from the home page of their iOS device.

Figure 11: Search Page - Parameters - Light and Dark

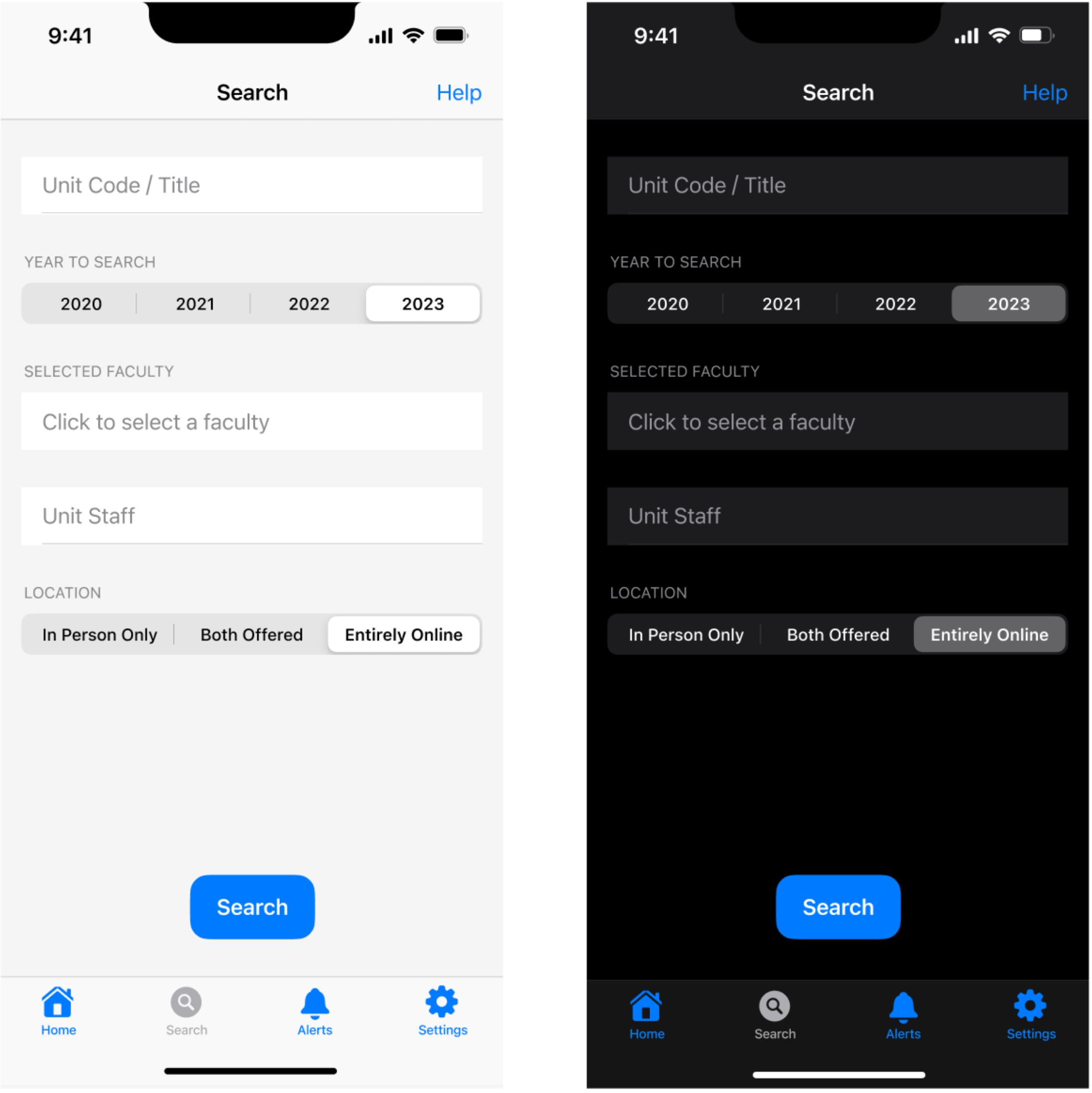
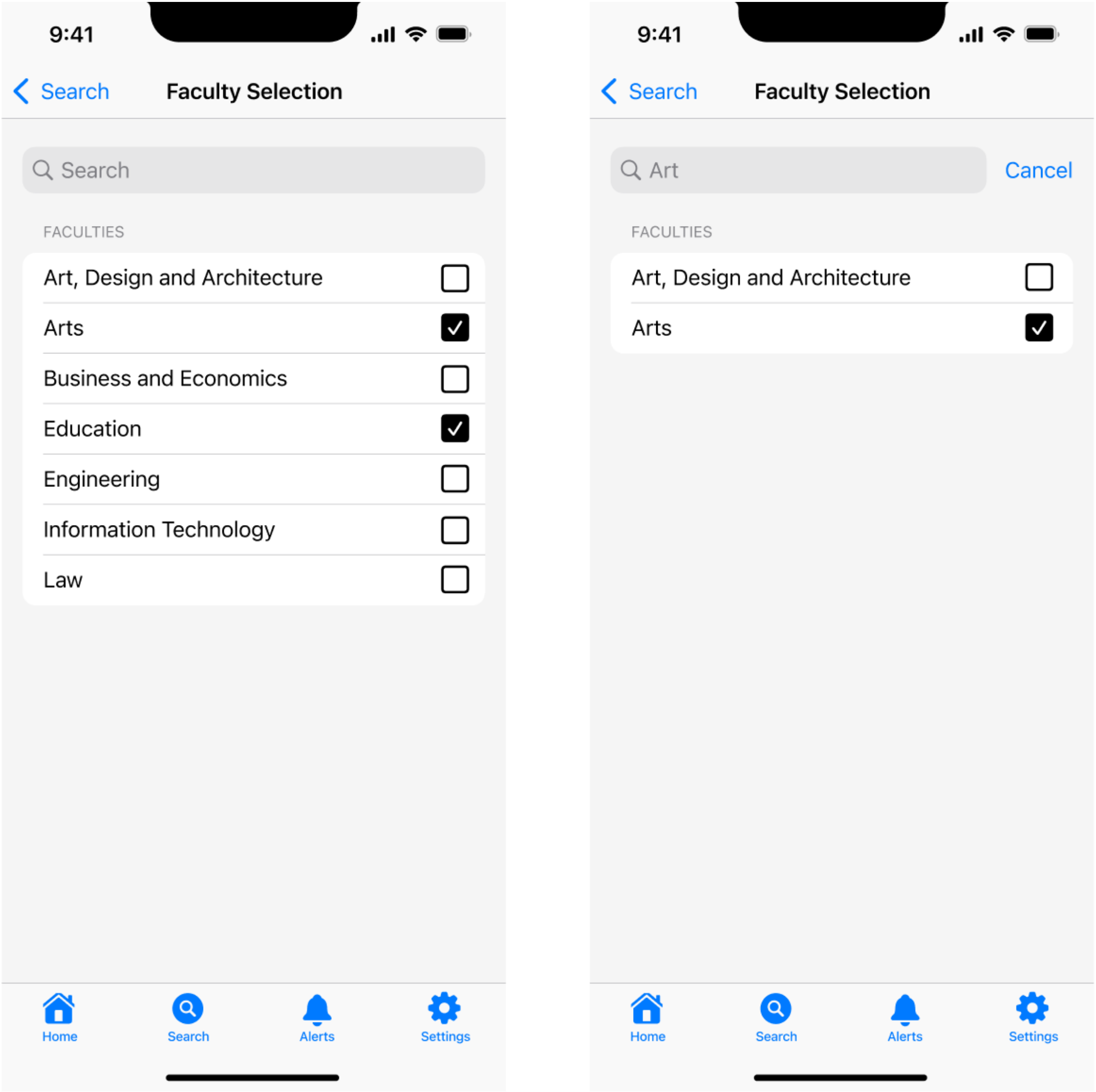


Figure 12: Search Page - Faculty Selection - Light



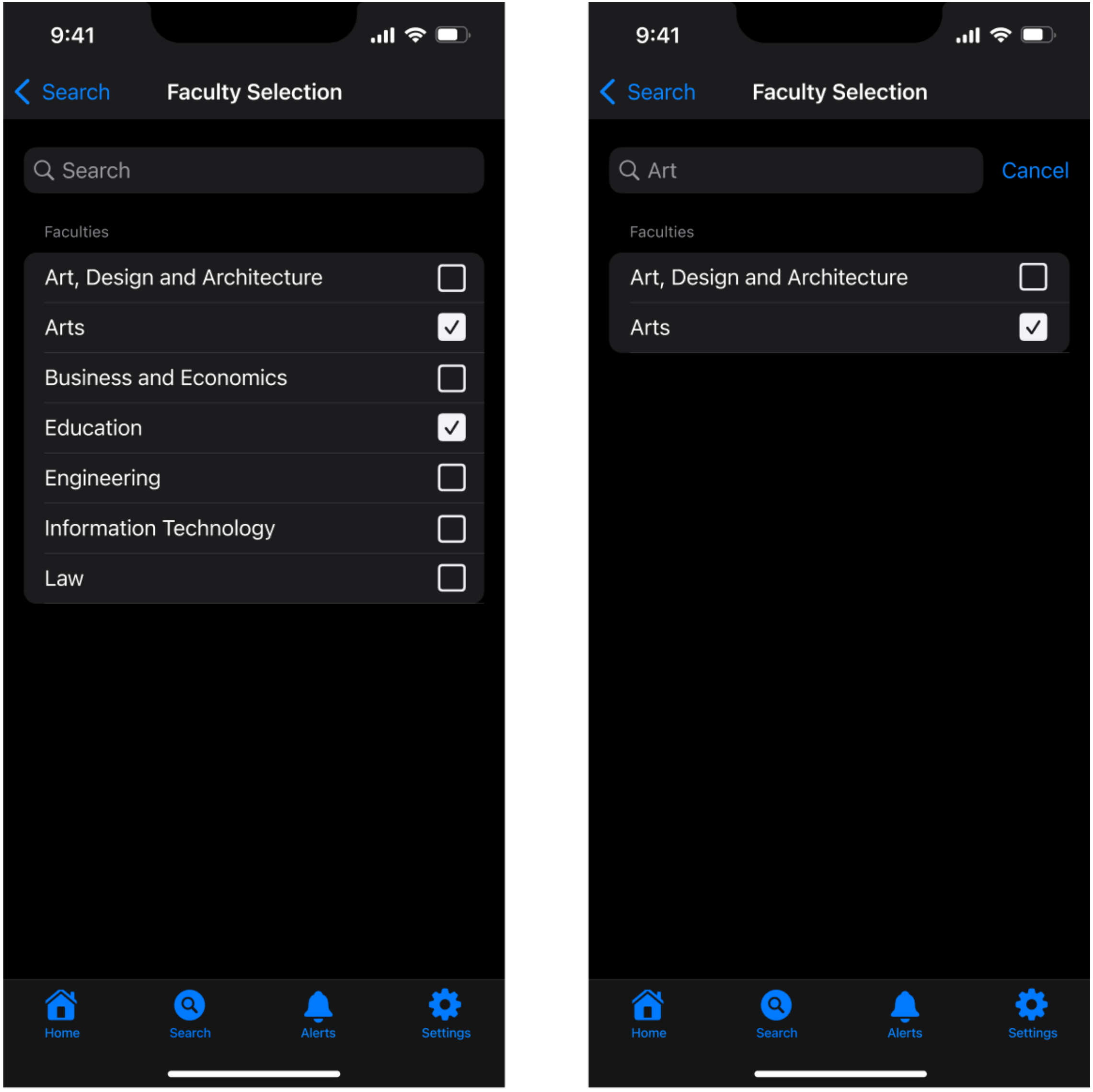
FACULTIES

- Art, Design and Architecture ☐
- Arts ☑
- Business and Economics ☐
- Education ☑
- Engineering ☐
- Information Technology ☐
- Law ☐

FACULTIES

- Art, Design and Architecture ☐
- Arts ☑

Figure 13: Search Page - Faculty Selection - Dark



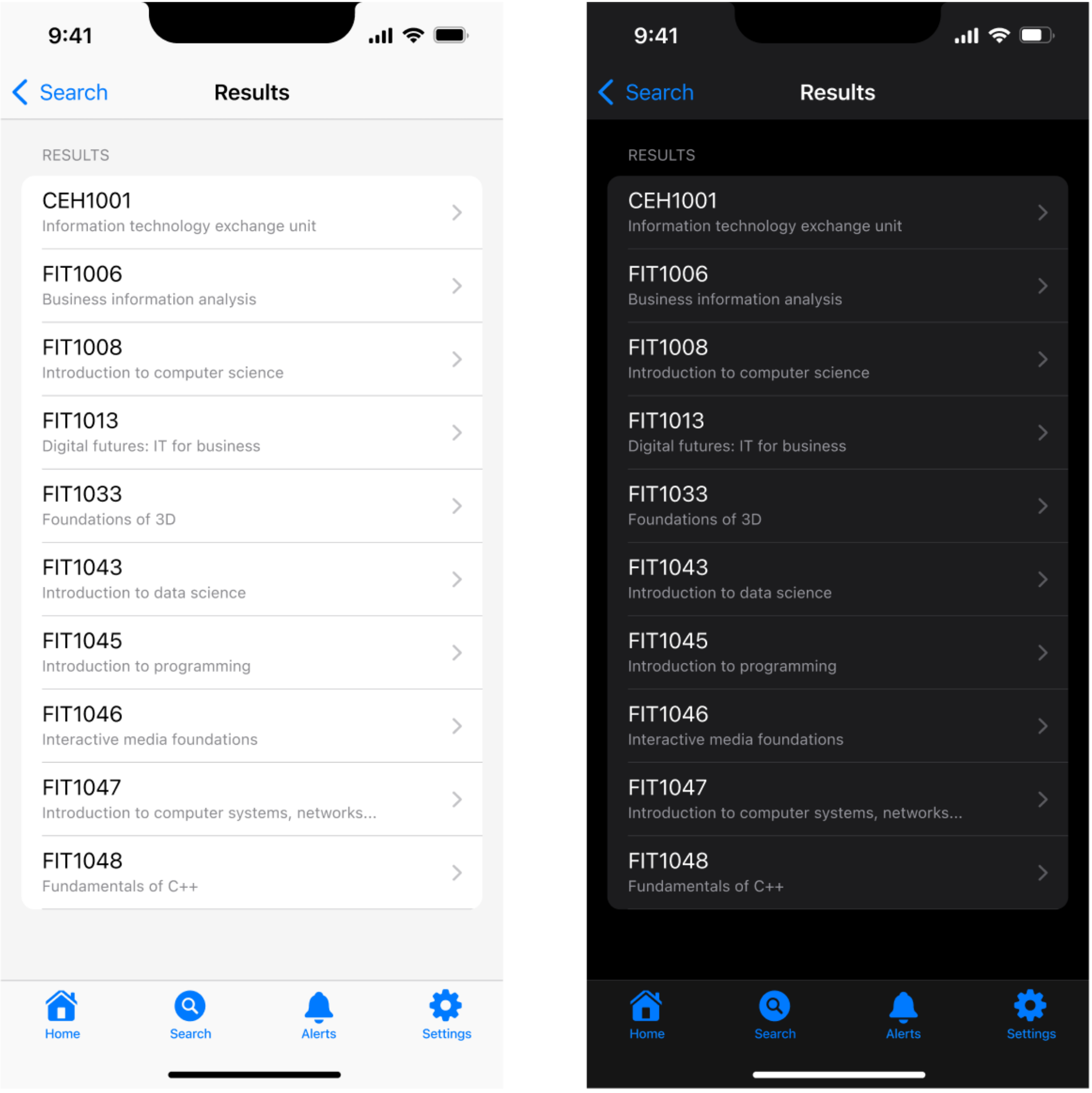
Faculties

- Art, Design and Architecture □
- Arts ☑
- Business and Economics □
- Education ☑
- Engineering □
- Information Technology □
- Law □

Faculties

- Art, Design and Architecture □
- Arts ☑

Figure 14: Search Page - Results - Light and Dark



RESULTS

CEH1001
Information technology exchange unit

FIT1006
Business information analysis

FIT1008
Introduction to computer science

FIT1013
Digital futures: IT for business

FIT1033
Foundations of 3D

FIT1043
Introduction to data science

FIT1045
Introduction to programming

FIT1046
Interactive media foundations

FIT1047
Introduction to computer systems, networks...

FIT1048
Fundamentals of C++

RESULTS

CEH1001
Information technology exchange unit

FIT1006
Business information analysis

FIT1008
Introduction to computer science

FIT1013
Digital futures: IT for business

FIT1033
Foundations of 3D

FIT1043
Introduction to data science

FIT1045
Introduction to programming

FIT1046
Interactive media foundations

FIT1047
Introduction to computer systems, networks...

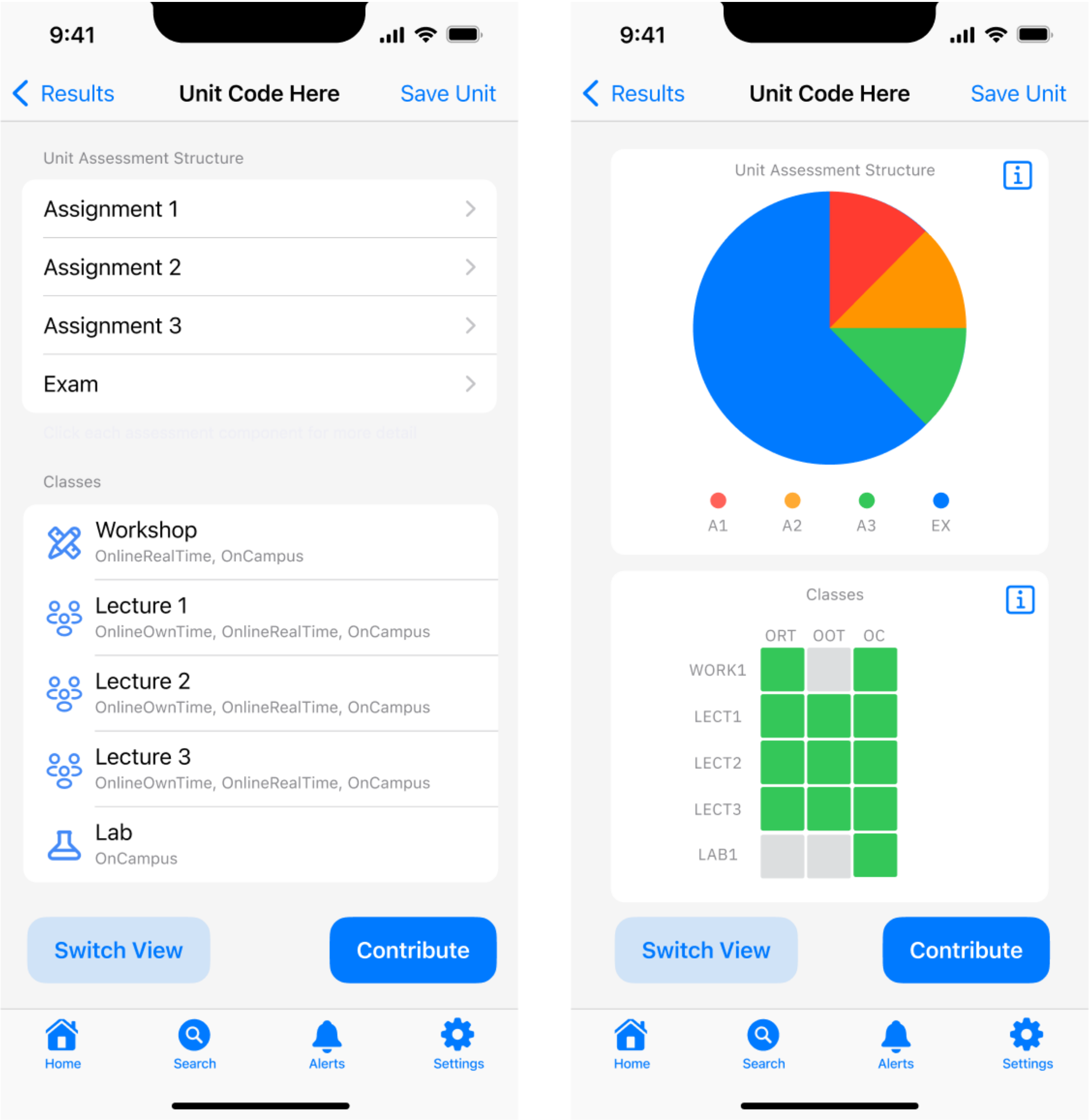
FIT1048
Fundamentals of C++

4.4.3 Unit Information Page

The Unit Information Page is currently the only place in the app where SwiftUI charts will appear. As recommended by Apple's chart guidelines, each chart has a visual hierarchy through the use of native colour sets to communicate importance. For example, in the case of the assessment details pie chart, each segment of the chart appears as a distinctly different colour to help those with vision impairments better differentiate the sections. On an iPhone screen, it can be difficult to interact with a chart, so each chart attempts to maximise its area to make examining the chart comfortable.

The Unit Information Page also uses primary and secondary buttons to convey hierarchy to the user. Where the "Switch View" button is simply to change **how** the user is viewing information, the "Contribute" button will move users **away** from what they are currently viewing.

Figure 15: Unit Information Page - Light



Unit Assessment Structure

- Assignment 1
- Assignment 2
- Assignment 3
- Exam

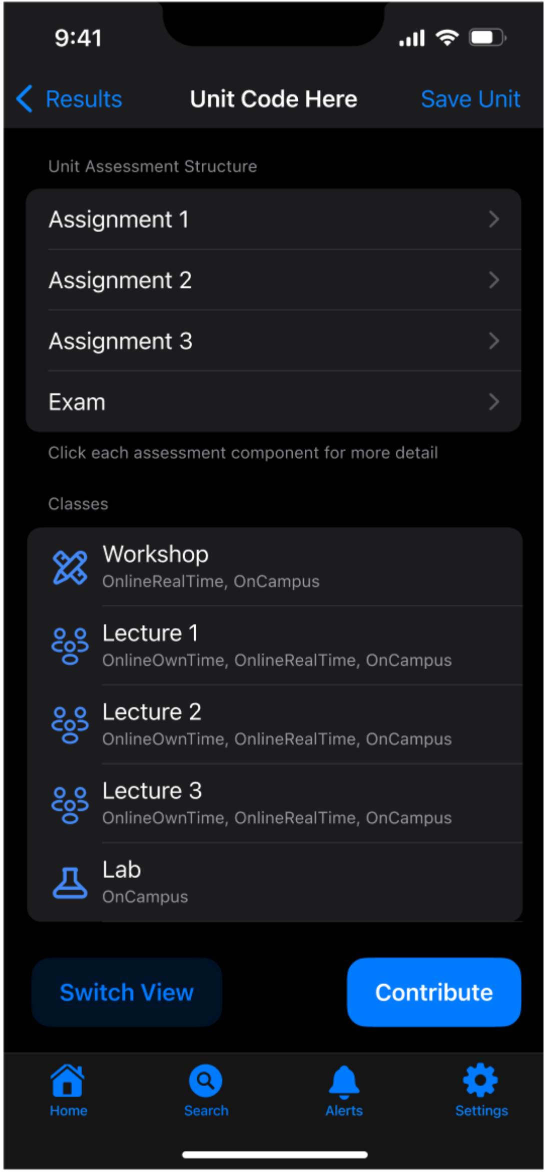
Click each assessment component for more detail

Classes

- Workshop
  OnlineRealTime, OnCampus
- Lecture 1
  OnlineOwnTime, OnlineRealTime, OnCampus
- Lecture 2
  OnlineOwnTime, OnlineRealTime, OnCampus
- Lecture 3
  OnlineOwnTime, OnlineRealTime, OnCampus
- Lab
  OnCampus

	ORT	OOT	OC
WORK1	🟩	⬜	🟩
LECT1	🟩	🟩	🟩
LECT2	🟩	🟩	🟩
LECT3	🟩	🟩	🟩
LAB1	⬜	⬜	🟩

Figure 16: Unit Information Page - Dark



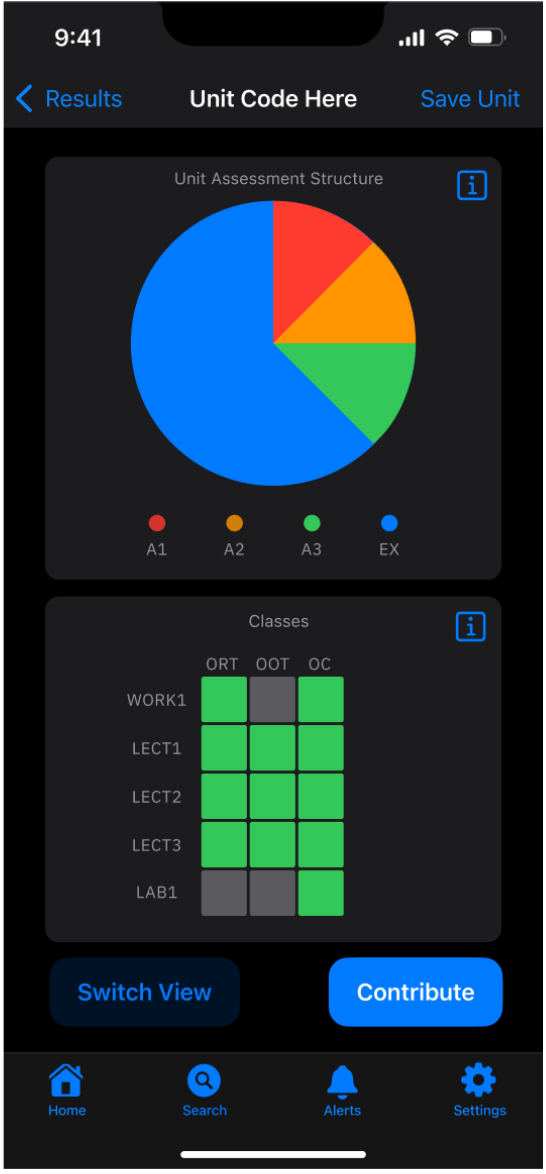
Unit Assessment Structure

- Assignment 1
- Assignment 2
- Assignment 3
- Exam

Click each assessment component for more detail

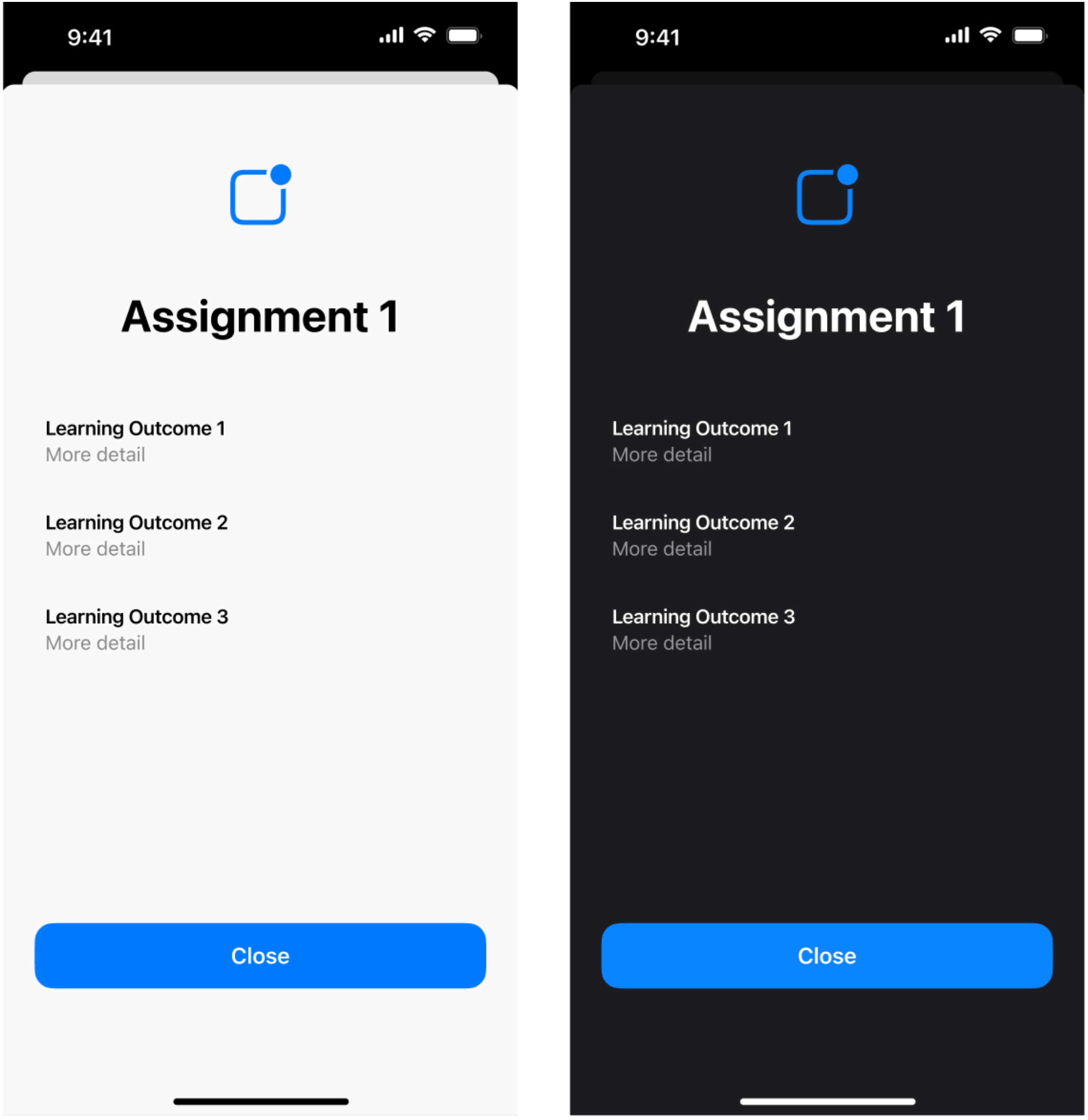
Classes

- Workshop
  OnlineRealTime, OnCampus
- Lecture 1
  OnlineOwnTime, OnlineRealTime, OnCampus
- Lecture 2
  OnlineOwnTime, OnlineRealTime, OnCampus
- Lecture 3
  OnlineOwnTime, OnlineRealTime, OnCampus
- Lab
  OnCampus



	ORT	OOT	OC
WORK1	🟩	▨	🟩
LECT1	🟩	🟩	🟩
LECT2	🟩	🟩	🟩
LECT3	🟩	🟩	🟩
LAB1	▨	▨	🟩

Figure 17: Unit Information Page - Assessment Details - Light and Dark



Assignment 1

Learning Outcome 1
More detail

Learning Outcome 2
More detail

Learning Outcome 3
More detail

9:41

Assignment 1

Learning Outcome 1
More detail

Learning Outcome 2
More detail

Learning Outcome 3
More detail

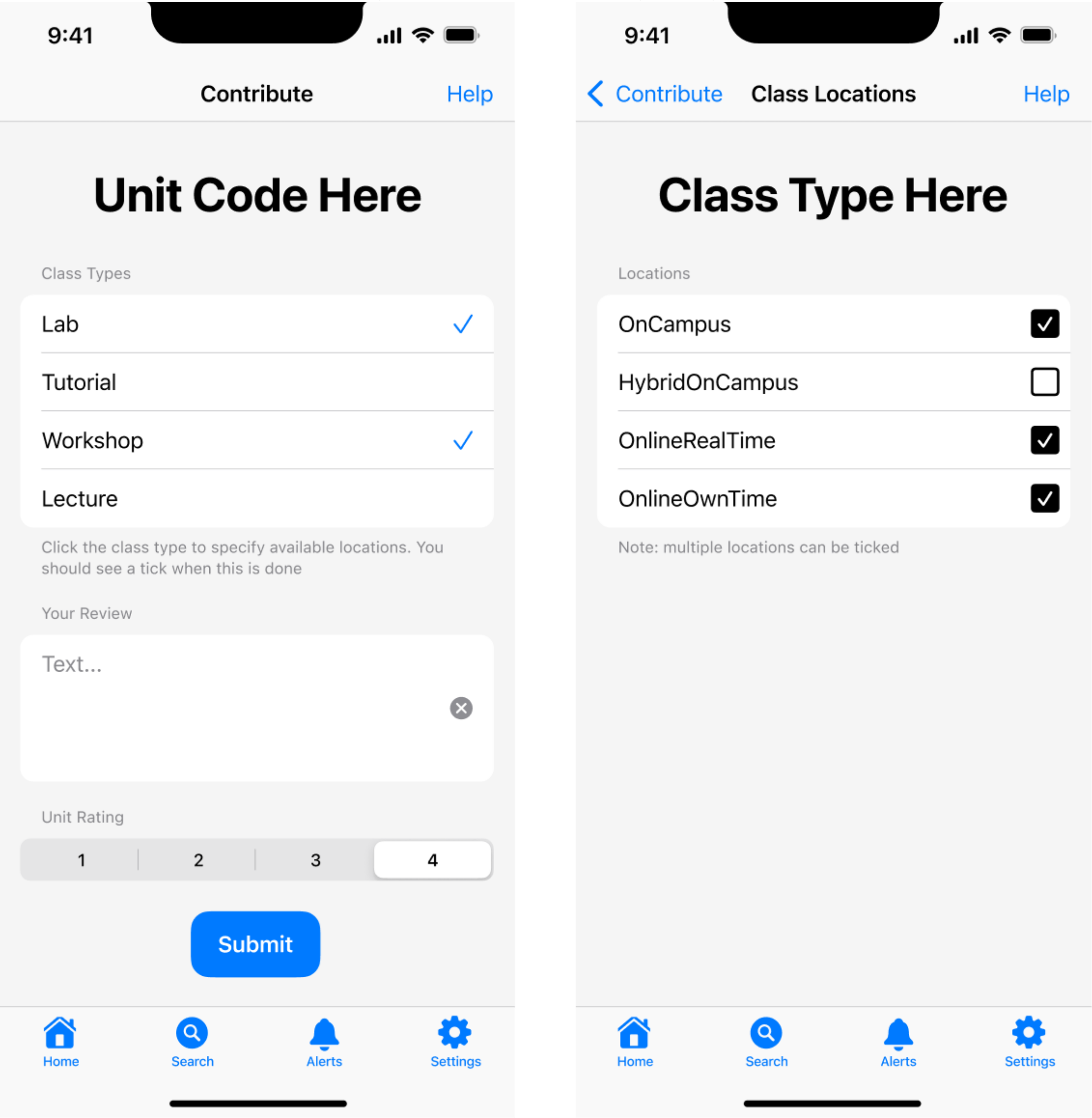
Close

4.4.4 Contribute Page

The contribute page follows similar best practices to the Search Page, as it shares many of the same UI elements and has a similar purpose; to capture user information and once finished, move the user to another screen.

Where the choices differed slightly for the Contribute Page was in how the check boxes were handled. Through the use of a note underneath the class types table view, the user **knows** to click the class type to provide more information about the unit. Until they have done so, a tick should not be shown, and as a result, the native ticks were used to prevent clutter. While not necessarily being consistent design, this aims to provide a better **functional** design

Figure 18: Contribute Page - Light



Unit Code Here

Class Types

- Lab ✓
- Tutorial
- Workshop ✓
- Lecture

Click the class type to specify available locations. You should see a tick when this is done

Your Review

Text...

Unit Rating

1 | 2 | 3 | [✓ 4]

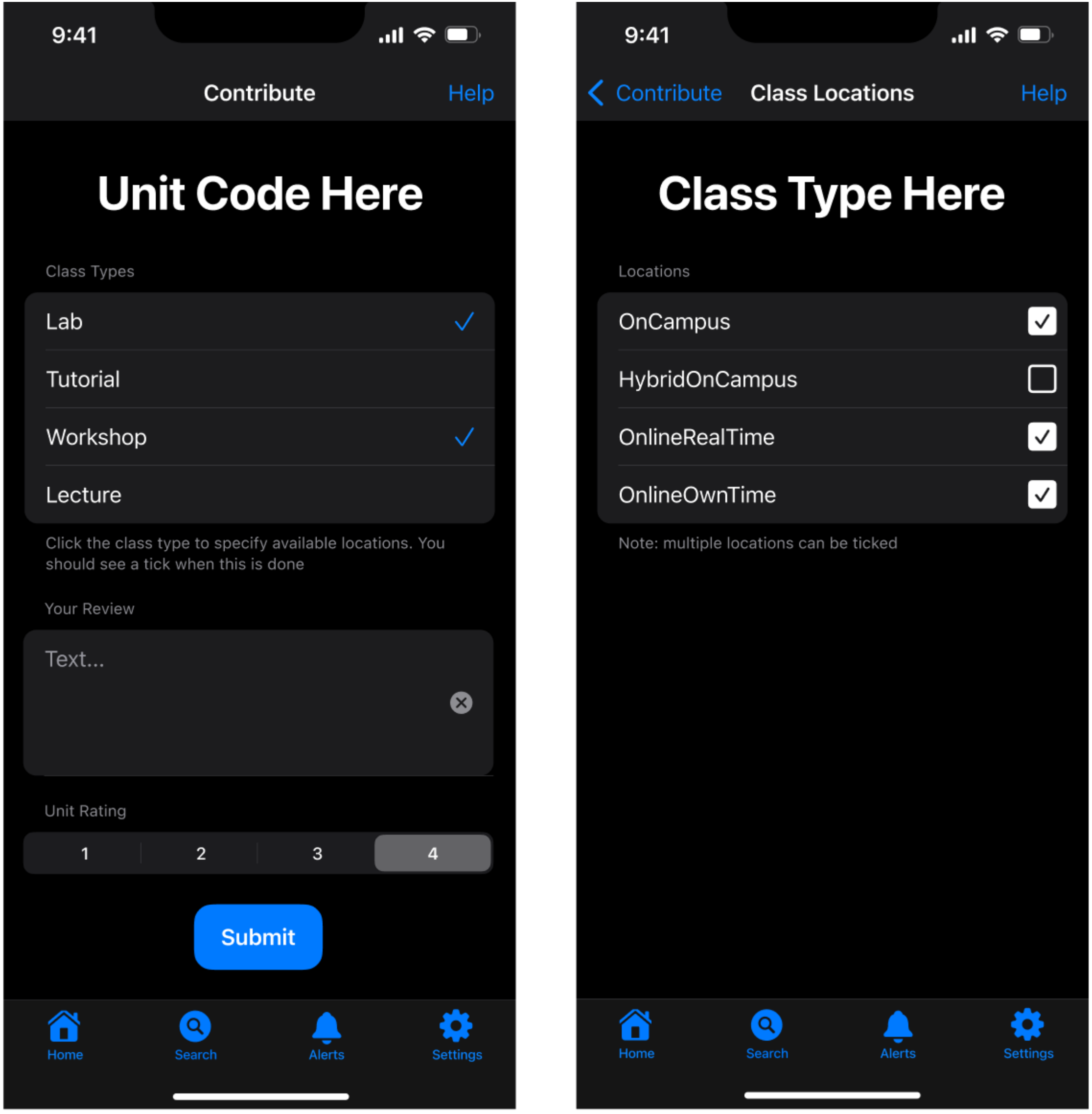
Class Type Here

Locations

- OnCampus ☑
- HybridOnCampus □
- OnlineRealTime ☑
- OnlineOwnTime ☑

Note: multiple locations can be ticked

Figure 19: Contribute Page - Dark



Unit Code Here

Class Types

- Lab ✓
- Tutorial
- Workshop ✓
- Lecture

Click the class type to specify available locations. You should see a tick when this is done

Your Review

Text...

Unit Rating

1	2	3	[✓ 4]

Class Type Here

Locations

- OnCampus ☑
- HybridOnCampus □
- OnlineRealTime ☑
- OnlineOwnTime ☑

Note: multiple locations can be ticked

4.4.5 Alerts Page

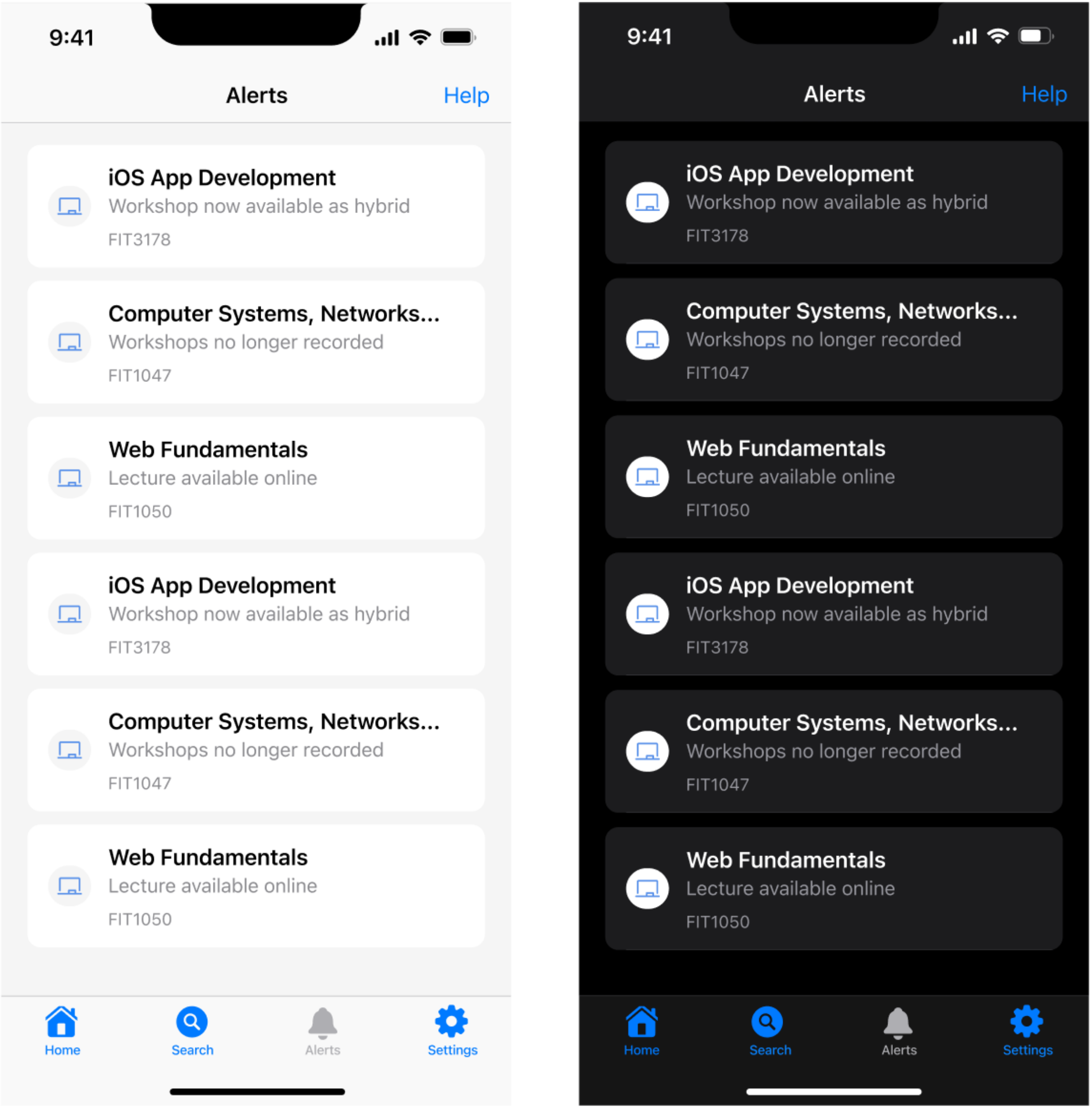
One of the key takeaways from the design process was to prioritise user experience over being constrained by the components that Apple provides.

In the case of the alerts, the default appearance of table view cells wasn't enough to give the users the information they required, in this case an icon, title, description, and unit code.

As a result, a custom component was designed to incorporate these elements. This will require slight modification to the default table view cell.

The urgency of notifications will be represented through a variety of icons (not included below). This is to conform to the notification guidelines around accurately representing urgency to the user. It is unlikely that Cidio will need ”Time Sensitive” interruptions in this version of the app.

Figure 20: Alerts Page



iOS App Development
Workshop now available as hybrid
FIT3178

Computer Systems, Networks...
Workshops no longer recorded
FIT1047

Web Fundamentals
Lecture available online
FIT1050

iOS App Development
Workshop now available as hybrid
FIT3178

Computer Systems, Networks...
Workshops no longer recorded
FIT1047

Web Fundamentals
Lecture available online
FIT1050

9:41
Alerts
Help
iOS App Development
Workshop now available as hybrid
FIT3178
Computer Systems, Networks...
Workshops no longer recorded
FIT1047
Web Fundamentals
Lecture available online
FIT1050
iOS App Development
Workshop now available as hybrid
FIT3178
Computer Systems, Networks...
Workshops no longer recorded
FIT1047
Web Fundamentals
Lecture available online
FIT1050
Home
Search
Alerts
Settings

4.4.6 Settings Page

The first version of Cidio will not incorporate any central account system. Instead, it will rely on user information being stored at a device level.

For this to be conveyed to the user and to build trust, in line with Apple's accessing private data guidelines, Cidio has a dedicated sheet to provide the key takeaways in regard to user privacy in an easily understandable format. If Cidio was ever to be published to the app store, it would also include App privacy details with further information.

In regard to managing account details, Apple recommends explaining the benefits of creating an account, and delaying sign in as long as possible. Cidio conforms to the former by explaining the benefits of an account through a separate screen (not yet included). Cidio does not require an account for operation, thereby conforming to the latter recommendation as well.

Note: the titles and descriptions for the Your Privacy sheet have not been determined at this stage.

Note: the avatar icon is a placeholder and the avatar system will not be implemented until a more robust account system is implemented in future versions.

Figure 21: Settings Page - Light

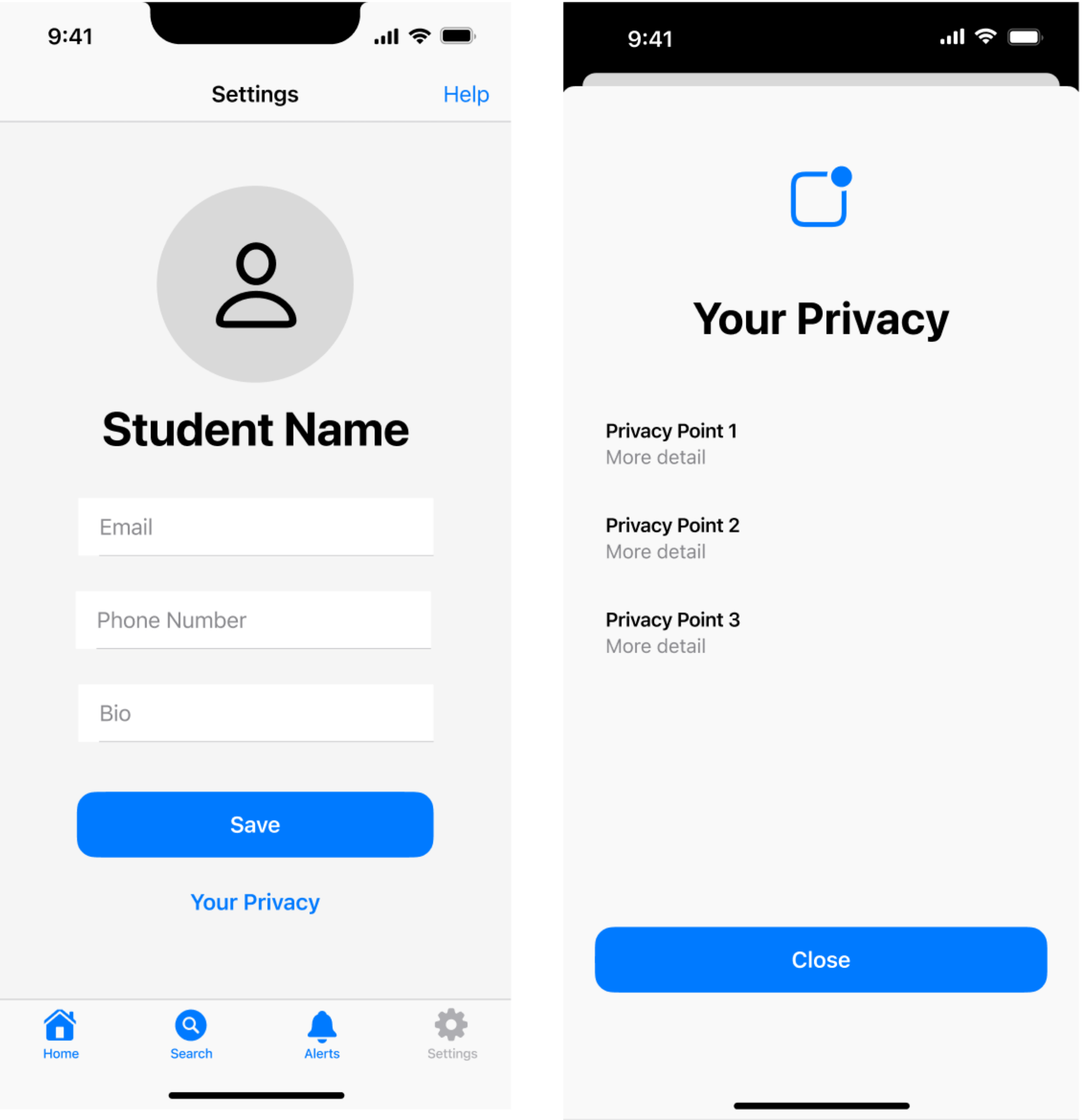
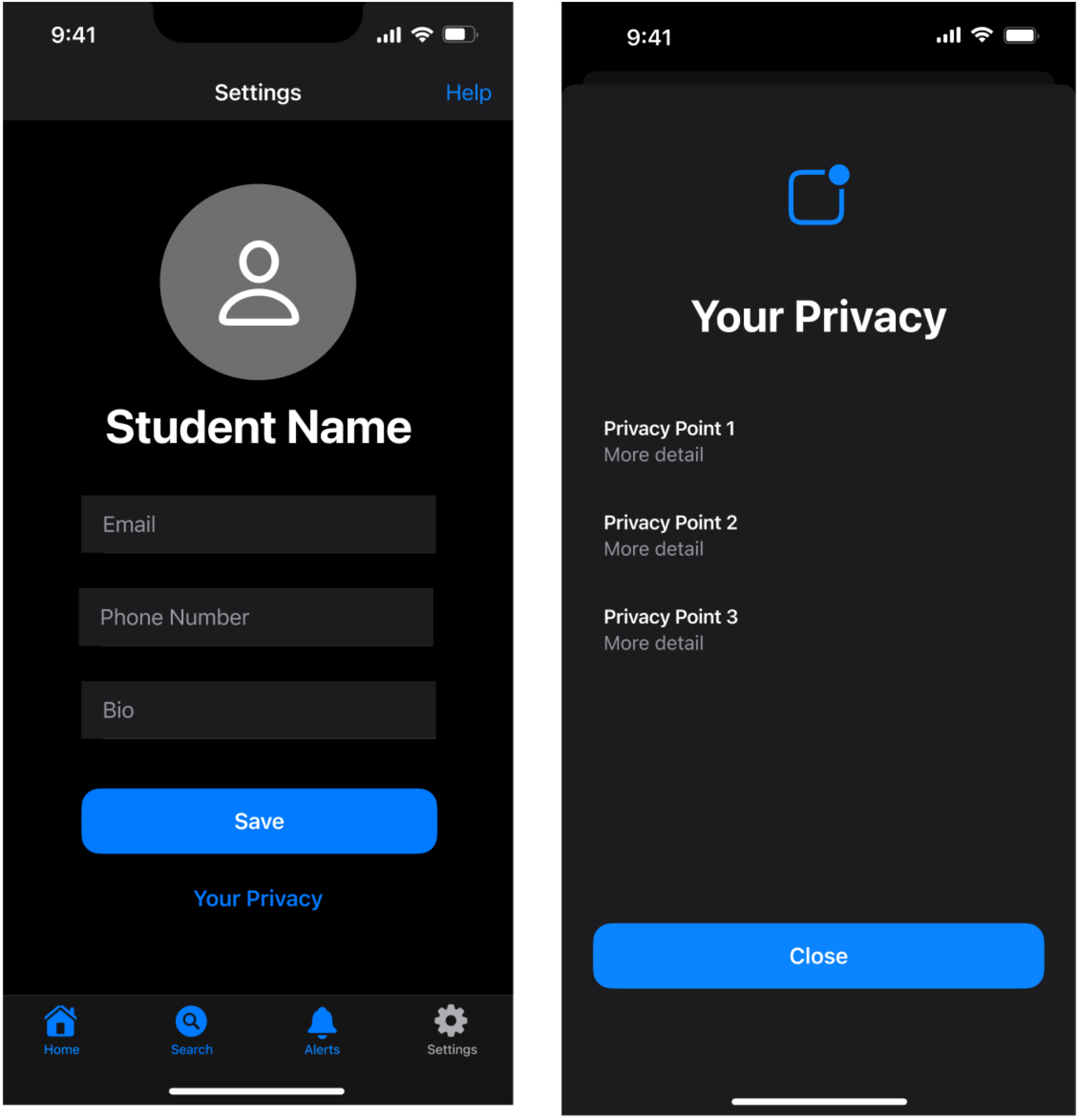


Figure 22: Settings Page - Dark



5 Scope and Limitations

The functionality required for the Minimum Viable Product, or MVP, is as follows:

- A database of units available at the student's university, with up-to-date information about their structure
- Visualisations of the assessment structure, and mix of synchronous or asynchronous.
- User contributions to ensure platform accuracy
- Unit search using a variety of unique parameters
- Ability to save units to refer back to
- User-friendly interface that makes it easy for students to navigate and use the app

Key limitations of the project are:

- A development model that sits somewhere between waterfall and agile, due to the very nature of this project being a university assignment. Cidio would benefit heavily from a purely agile development model, enabling changes to occur without the need for approval as the project progresses.
- Limited resources to build simple integration tools that would accelerate the process of on boarding new universities, and replicate their available units on Cidio.
- Due to the limited time available to complete this project, it is not possible to implement some functionality. This additional functionality is outlined in the section below.

In future, some planned additional functionality includes:

- Simple integration to onboard new universities. While users can add units to a university themselves, there is no incentive for users to sign up initially if they have to contribute before they receive value from Cidio.
- A moderated approval process for user-submitted contributions
- Additional icons to indicate class types
- Spotlight integration for unit search
- Development of a universal class type naming system that can be used globally
- Per unit discussion forums and notifications for discussion forums
- Avatar system for users
- Machine-learning algorithms to recommend classes to users based on their interests and previous selections
- Allow sharing of units to other users through deep linking
- An improved account system that would enable beneficial collaboration amongst Cidio users

6 Estimated Project Timeline

Milestone / Task Number	Task	Week
1	Develop the data model for the entire application	
2	Setup a Firebase Backend with example data following this model	
3	Integrate the Firebase SDK into the app	
4	Create methods for basic querying and response to the Firebase Backend	
Prototype 1		8
5	Create the Home Page and use the Firebase Backend to fill it with example data from the selected university	
6	Create the Search Page with accompanying parameters	
7	Demonstrate a query from the Search Page to the Firebase Backend	
8	Display the response on the Results Page	
Prototype 2		9
9	Create a template Unit Page that will initially be filled with example data	
10	Pass the identifier from the Results Page to the Unit Information Page and fill it with this identifier's data	
11	Create the Settings Page with accompanying components	
12	Add local storage to save user details and units	
13	Add the "Your Privacy" page and fill it with a response from the Firebase Backend	
Prototype 3		10
14	Add the Alerts Page and setup notifications for the app	
15	Redirect the user to the Unit Information Page when clicking an alert	
Prototype 4		11
18	Add more universities to the Firebase Backend and fill them with example data	
Prototype 5		12
19	Setup the Contribution Page and its respective components	
20	Test submitting results from the Contribution Page to the backend	
Final Submission		14

7 References

Apple (n.d.). Human Interface Guidelines - Human Interface Guidelines - Design - Apple Developer. [online] developer.apple.com. Available at: https://developer.apple.com/design/human-interface-guidelines/guidelines/overview

Apple (2019). Apple Developer Documentation. [online] Apple.com. Available at: https://developer.apple.com/documentation/

Merrick, L. (2016). App Competitive Analysis is Essential for Success. [online] Buzinga. Available at: https://www.buzinga.com.au/buzz/competitive-analysis-on-apps/

Banks, J. (2022). iOS 16 UI Kit for Figma — Figma Community. [online] Figma. Available at: https://www.figma.com/community/file/1121065701252736567

Setproduct. (2022). Figma Charts and Infographics UI kit — Figma Community. [online] Figma. Available at: https://www.figma.com/community/file/855517047816771255

Luch, U. (2023). SF Symbols 4.0 - SVG Icons — Figma Community. [online] Figma. Available at: https://www.figma.com/community/file/886999666531731323/SF-Symbols-4.0—SVG-Icons

Itty Bitty Apps (2023). iOS 16 UI Kit (By Itty Bitty Apps) — Figma Community. [online] Figma. Available at: https://www.figma.com/community/file/1172051389106515682/iOS-16-UI-Kit-(By-Itty-Bitty-Apps)

SVGRepo (n.d.). SVG Repo - Free SVG Vectors and Icons. [online] www.svgrepo.com. Available at: https://www.svgrepo.com/