@NCHS Planning Document

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@NCHS

SERVING JAGUARS SINCE 2022!

WA FBLA
Mobile Application Development

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01 PLANNING

Identifying Societal Need
- **Lack of organization prevents students to keep up with the rigor of high school.**
- Specifically, students at North Creek High School would benefit from:
  - Easened access to campus map, lunch menu, and other resources.
  - Simplified capability to contact teachers for academic help.
  - Scheduling feature enabling students to input their high school schedule.
  - Calendar, enabling students to keep track of major events and deadlines.

The primary goal of @NCHS is to **provide a streamlined platform for students** at North Creek High School that **encompasses current and future utilization of technology** on campus.

02 ANALYSIS

Software Overview
- **Name**: @NCHS
- **Language**: Swift
- **Integrated Development Environment**: Xcode, Visual Studio Code, JupyterLab
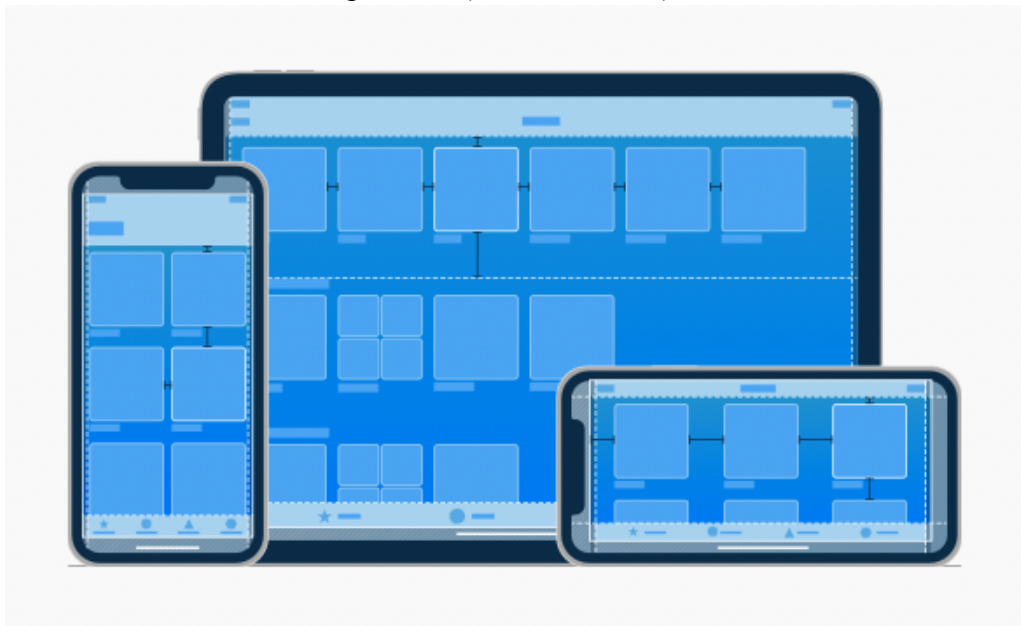- **To be deployed on**: IOS

Features - Addressing the Societal Need
- A **scheduling** feature allowing students to input their schedule.
- Information about **extracurricular** activities.
  - Includes a list and short **description** of various extracurricular activities.
- The **campus map** and school **lunch menu**.
- The ability to **email** teachers and staff.
- A **calendar** that is updated with school information.
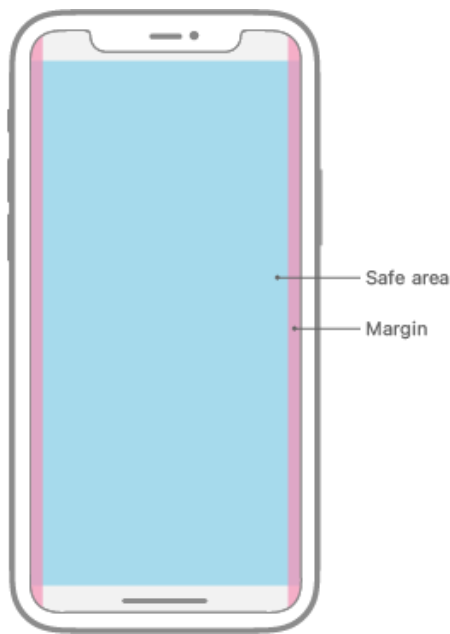 - Includes **notifications** for deadlines and important events.

03 DESIGNING

Design Objectives

- Create a **modern**, **professional**, **simple**, and **user-friendly** interface.
- Follow the **Apple Human Interface Guidelines** for IOS platforms.
- Design Principles:
  - Aesthetic Integrity (Good Looks)
  - Consistency
  - Metaphors (Simplicity)
  - Direct Manipulation (User Feedback)

Layout

- All visual elements must be **contained within the margin**.
- A safe area is the area within a the page that isn't covered by any visual element.
- Ensure **appropriate insetting** based on the device and context.
- The safe area also **prevents content from underlapping** the navigation bar, status bar, tab bar, and toolbar.

Color

- Avoided using the same color for interactive and noninteractive elements, making it easy for users to know where to tap.
- Used color for communication of important elements.
- Did not use hard-code system color values in your app.
  - Instead, used UIColor (UIKit) elements for applying colors.
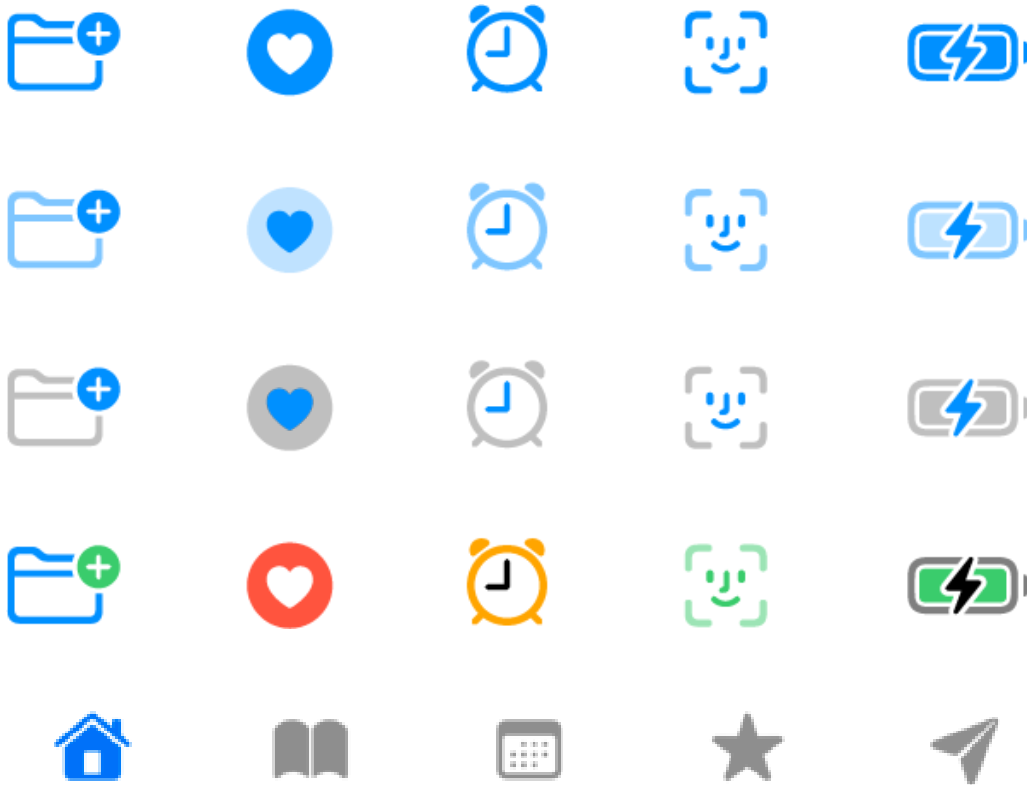- Used dynamic system colors.

Light	Dark	Name	SwiftUI API
R 255 G 59 B 48	R 255 G 69 B 58	Red	systemRed
R 255 G 149 B 0	R 255 G 159 B 10	Orange	systemOrange
R 255 G 204 B 0	R 255 G 214 B 10	Yellow	systemYellow
R 52 G 199 B 89	R 48 G 209 B 88	Green	systemGreen
R 0 G 199 B 190	R 102 G 212 B 207	Mint	systemMint
R 48 G 176 B 199	R 64 G 200 B 224	Teal	systemTeal
R 50 G 173 B 230	R 100 G 210 B 255	Cyan	systemCyan
R 0 G 122 B 255	R 10 G 132 B 255	Blue	systemBlue
R 88 G 86 B 214	R 94 G 92 B 230	Indigo	systemIndigo
R 175 G 82 B 222	R 191 G 90 B 242	Purple	systemPurple
R 255 G 45 B 85	R 255 G 55 B 95	Pink	systemPink

Bars

- Used clear **navigation aids** throughout the application.
  - **Navigation Bar**
  - **Status Bar**
  - **Tab Bar**
- Allowed for clear user interaction.

Icons

- Used San Francisco **(SF) Symbols** for the majority of icons in the application.
- SF Symbols are Apple-designed icons that seamlessly integrate with an IOS platform.
- **Streamlined** and **constantated** with the rest of the IOS user interface.
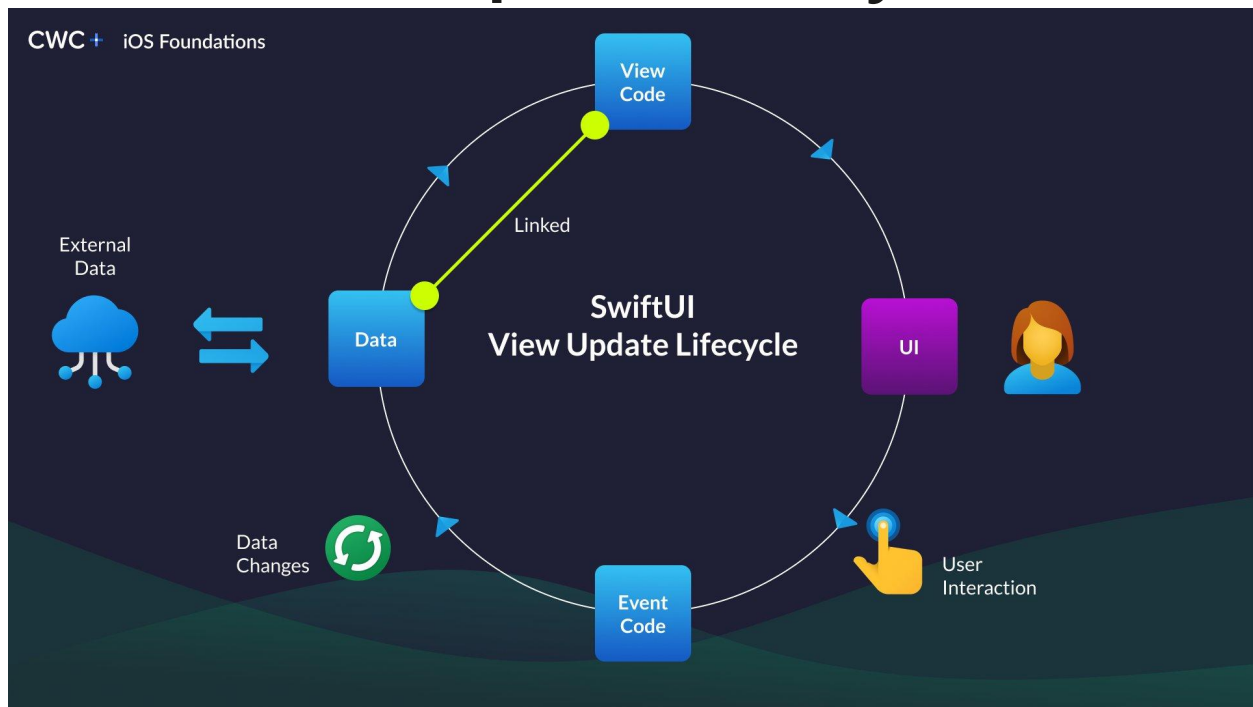
04 BUILDING

Development Procedures

- Used the **Github** platform for team collaboration.
- Used **industry-standard** software development processes.
  - **Code simplicity**
  - **DRY** (Don't repeat yourself) code
  - **Code coherence**
    - Consistent user interface style
    - Consistent development style
  - Regular planning meetings
- Heavy use of **object-oriented programming**.

SwiftUI View Update Lifecycle

User Experience

Used navigation links in a ScrollView with LinearGradient boxes containing various information.

Home Page

➔ Objective: To welcome the user to the application.
➔ Functions:
  ● Greet student and provide North Creek High School image.
  ● Link titled "Announcements":
    ○ Simulates the intercom used on campus for morning announcements.
    ○ Allows staff to pass urgent and time-sensitive information to students.

Updates Page

➔ **Objective**: To provide students with relevant school notifications and updates.
➔ **Functions**:

  ● **Happening Now**
    ○ Ordered list of notifications sent to students by approved users.
    ○ Request Update: Allows approved users to send updates to other students.

  ● **Calendar**
    ○ Embeds a Daily Calendar, Year-long Calendar, and Athletics Calendar.
    ○ Links where calendar content was process from are, respectively:
      ■ https://northcreek.nsd.org/our-school/calendar
      ■ https://bit.ly/3EypYni
      ■ http://www.kingcoathletics.com/index.php?pid=0.7.2616.0.300

  ● **Social Media**
    ○ Contains redirect links to North Creek's Facebook and Instagram pages.
      Links:
      ■ Facebook: https://bit.ly/3vyv0Mg
      ■ Instagram: https://www.instagram.com/northcreekasb/?hl=en

Schedule Page

➔ **Objective:** To provide students with relevant school notifications and updates.
➔ **Functions**:

  ● **Clickable blocks displaying the text "Semester 1" and "Semester 2".**
    ○ Each block redirects to page with following contents.
    ○ Input area designated for each of periods one through seven.

- Drag-down lists for course name, teacher, and room number.
  - Progress entered is saved for each semester.

- **Class Start Alarm**
  - Clickable button below Semester blocks.
  - Clicking of button triggers request for notification authorization.
  - Upon user authorization, notifications for school start time will be given.

Opportunities Page

➔ **Objective:** To provide students with relevant school notifications and updates.
➔ **Functions:**

- Section titled "**Highlights**" that contains following components.
  - Block providing link to detail of selected competition to spotlight.
  - Blocks linking to articles detailing the benefits of extracurricular activities.
- Section titled "**Explore**" that contains following components.
  - Blocks titled "Competitions", "Volunteer", and "Clubs".
  - Each block redirects to long list of opportunities in each category.
- Features to set **goals**, and create a **tracker** and **calendar** of extracurriculars.

Resources Page

➔ **Objective:** To provide students with relevant school notifications and updates.
➔ **Functions:**

- Each block redirects to separate page of application with described components.
- Block titled "Digital Tools" redirecting to list of used educational utilities.
- Blocks for Staff Directory, Campus Map, ID, and Lunch Menu.

05 TESTING & INTEGRATION

Frequent testing was performed during the development process.
- **Unit Testing**
  - Ensuring each page of the application behaves as expected.
  - Done before merging with project.
- **Functional Testing**
  - Type of software testing that validates the software system.
  - Validated against the functional requirements and specifications.
  - Tested each function of the software, by providing appropriate input.
  - Verified the output against the functional expectations.
    - Done for all UI elements and user inactions.
- **Integration Testing**
  - All the individual pages and modules were combined and tested.
  - The project was tested as a cohesive application.

Test Files

A list of the unit testing files created to ensure the functionality of the application.
- EmailingFunctionalityTests.swift
- HomePageTests.swift
- LocalNotificationsTests.swift
- OpportunitiesPageTests.swift
- ResourcePageTests.swift
- SchedulePageTests.swift
- UpdatePageTests.swift

06 MAINTENANCE

- Application offers a **bug reporting system** should a user later discover a bug.
  - Supported using the previously-implemented **emailing functionality**.
  - An email will be sent to the support team with the user-identified bug.
- **Future changes to the application will be made** in accordance to:
  - Addition of an educational tool or utility
  - Administrative request or student and user demand
  - **Feedback from FBLA Mobile Application Development judges!**