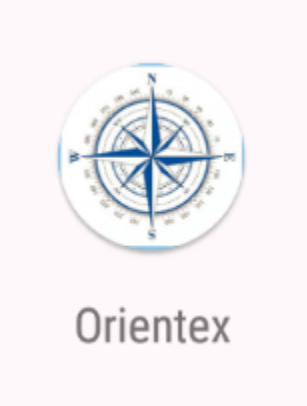
Orientex

Project Report



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Capstone Project [Fall 2022]

The University of West Florida

December 2, 2022

CIS4595 Capstone Project

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A. Executive Summary

Our team Cyber Cyclops is proud to present our application *Orientex* as a viable alternative to the University of West Florida New Student Orientation. *Orientex* is a mobile application for Android phones that allows students to visit various locations on campus and scan a QR code from within the application. This will then present the student with information about their current location and directions to their next destination. Upon successful scanning of each QR code this will complete a "quest" within the application. After a user has completed all of the assigned quests for all locations, they will be presented with a short quiz to help confirm they have retained knowledge throughout their journey.

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B & C. Final Timeline and Requirements Compared to Initial

Sprint 1 (9/19 - 10/7) - Extended into Sprint 2

Use Case 1 - Create Account

Use Case 2 - Login to app

Sprint 2 (10/10 - 10/28) - Missed timeline

Use Case 3 - QR Code Scanning & Task Completion

Sprint 3 (10/31 -11/25) - Met Goal

Use Case 4 - User Quiz

The 4 use cases listed were our 4 initial cases. For the first two use cases we accomplished this by way of using the Google One Tap API that can actually utilize the user's student email address to login. This allowed us to avoid having to actually create user accounts from scratch. This method also allows the user to just use this existing google email account that has been logged in on their device to access the app.

We accomplished use case 3 by using the Budiyev code scanner api and integrated it with our application. This particular API essentially converted the QR code into a string value, so we didn't need to retrieve this info from the database as initially anticipated.

With use case 4, we have successfully implemented a short quiz to test the user on the knowledge they received during the orientation process.

A quick review of our timelines would show that we started off during our first sprint to be right on target. As we moved into sprint 2 we were sidelined with several severe hurdles which the team had to overcome and did not meet our sprint 2 goals. Sprint 3 has been a real powerhouse, we were able to make up ground loss during sprint 2 as well as meet our goals for Sprint 3. So despite having some deviation from our initial

timeline, we have overall found success throughout the development cycle.

D. Project Results

- **Removed Use Cases**
    - Use Case 1 - User wants to create an Account
- **Functional Use Cases**
    - Use Case 2 - User want to login to the app
    - Use Case 3 - User can scan a QR Code
    - Use Case 4 - User Takes Quiz

E. Software Evaluation

Functionality

Testing this application mostly involved non-technical testing. This involved using various different Android phones and Android APIs, using the Google Firestore backend to delete users and re-add them using the front end, and making sure QR codes return the correct values.

The testing timeline was based on our sprint timeline. As new code was pushed or changes were made in Firebase, it was immediately tested to allow for rapid changes and fixes to bugs.

The only functionality that has not yet been added is the ability to register with a google account, if the Google account has not yet been used on the phone

Security

From the beginning of the software development process, security was integrated from the frontend to the backend.

Google Firebase Authentication is used to validate users into Orientex. This was chosen because UWF students already hold a Google Account. Google Firebase Authentication uses the protocols HTTPS and Transport Layer Security. Users can only be authenticated into Orientex if they are a student with a valid UWF email address.

Google Firestore Database is the NoSQL Database service used where user information is stored in individual documents. Each user document holds their email, ID, name, and quests completed. Firestore secures this data at rest by using 256 bit AES encryption and rotated master key encryption and travels using Transport Layer Security.

SonarCloud Vulnerability Scanning software is used and integrated into the GitHub workflow. It provides a vulnerability scan using static Kotlin code analysis to look for bugs, vulnerabilities, duplicated code, and confusing code.

Security features that are currently unavailable due to time constraints are 2FA authentication during the sign-in process.

F. Work to be Done

There are just a few items that remain in the work to be done section of our development cycle. It is to be noted that none of these items were actual Use Cases in our backlog of work to be done, yet future state items should we choose to continue development beyond its current state.

- We would like to incorporate two-factor authentication to add an additional level of security.
- We want to be able to send the quiz results to the backend database for ease of reviewing by UWF administrators.
- We would like to allow the user to sign in for the first time with their UWF email address if it doesn't currently exist on their phone.