Objective

The objective of this project is to give students an opportunity to demonstrate the level of proficiency they have achieved in mobile application development, and also to provide first-hand experience in bringing an app from concept to realization.

Overview

Each student must identify an app concept and implement it using React Native. You may work independently on your own project, or you can pair up with another student and complete the project together.

Coming up with an app idea

One of the more challenging (and hopefully fun!) aspects of this project is that you are to come up with your own application idea. While there are general requirements your application must meet (see details below) you are free to innovate and design a mobile experience that you are personally interested in and passionate about. Here are a few suggestions to help facilitate the creative process:

- Browse the Android Google Play Store and/or the iTunes AppStore[1] and search for apps related to areas you are interested in. You can use your iOS device or borrow a friend's or family member to try apps out. In lieu of an actual device, you'll also find plenty of video reviews that show apps in action.
- Consider looking for mobile app use cases at your place of employment. Do make sure if you take this route you are still able to submit your source code to your instructor for assessment purposes!
- Visit blogs, etc. where new mobile apps are often reviewed and discussed.
- Follow people on twitter who tweet about mobile and have interests similar to your own.
- Ask acquaintances what they think a "killer app" idea might be.

Minimal app requirements

Innovation Requirement:

Your app must be original and creative. It is ok to come up with a better mousetrap, but don't just replicate an app that already exists. Substantially improving upon an existing app idea or giving it a novel spin of your own is permissible. Your grade will in part be determined by your creativity as well as the quality of your implementation.

Base Requirements:

Base requirements are essential requirements that the typical non-trivial app will implement. Your application must implement *all* of the following base requirements:

- The application must have a fully functional and well-designed foreground user interface.

- The application must persist data between user sessions via local storage on the device, or via web services.
- Application must consist of more than one screen. Data must be passed to and/or from at least one other screen.
- Your application must have at least one scene with a scrollable list of items.
- The application must be stable and not crash when used.

Mobile Backend Integration Requirements:
Your application must integrate with a MBaaS (e.g. Firebase, MongoDB) to persist data in the cloud.

Network Integration Requirements:
Mobile apps inevitably use the device's networking capabilities to integrate with the world beyond the device itself. Your application must support a minimum of *one* of the following *network integration requirements*.
Support one of following features:

- Frame existing web content in a seamless way within your app. (note: the content must be rendered for small screens!).
- Integrate with a popular social media platform using the Social Framework.
- Integrate with an existing web API (e.g. beyond Firebase).

Advanced Platform Integration Requirement

A number of interesting more advanced features are enumerated below. Your application must support a minimum of *one* of the following *advanced integration requirements*:

- Directly integrate an interactive map.
- Support a status bar notification via a background service that launches your app when acted upon by the user.
- Support a non-trivial[2] location aware feature.
- Support a non-trivial multi-device use case, e.g. multiple devices with your app installed collaborate in real-time.
- Integrate the onboard camera.
- Integrate with any commonly available sensors, such as the accelerometer, magnetometer, proximity sensor or ambient light sensor.
- Integrate with the Bluetooth radio.
- Explore integration of React Native with native code you've authored in Xcode or Android Studio.
- Integrate your app content with iOS Spotlight search or equivalent.
- Explore integrating native ML/AR features (e.g. ARKit, ARCore, etc) into your React Native app.
- *Other mobile platform features not mentioned above that you've discovered and are interested in!*

The instructor must approve in advance any other platform features you want to integrate to meet this requirement. Please note that we will not have the time to cover all of these platform features in class! You will need to become proficient at browsing the platform documentation and self-learning the platform features your app needs to meet this requirement.

Deployment Requirement

Integrate your app with a mobile analytics services (You'll get this for free with Firebase) and produce an audience report demonstrating data from 5 unique users. This is easily achievable if you deploy your app publically in the respective app store. However, there is an extra cost associated with this ($99 for iOS – must be paid annually if you want to keep the app in the iTunes AppStore, and a $25 one-time fee for Google Play Store). If you end up with a high-quality app that has a potential to attract end users, launching in the respective app store is highly recommended. The developer fee is a very small price to pay for the high-profile companies that will be seeking you out for interviews when they visit the link on your resume!
If your app is more of an experimental nature and you'd prefer not to submit it to the app store, Expo makes it really easy to do a limited publication of your app independent of the App. A published Expo app gets a generated URL that you can share with friends / family to try out (via the Expo app). See Expo documentation for more info.

Final Virtual Presentation and Project Submission Requirements

Create a Google Slides presentation and create a video recording (screen capture with you narrating your slides). The length of the video you submit must be **5 minutes or less**! Your video presentation should include the following:

1. Overview of your app
    1. Description of the use cases or app features that can be implemented with the aspect of the mobile platform you studied.
    2. Specifically mention how your app fulfills each of the above requirements.
2. Describe any *relevant* third party components (e.g. any React Native library dependencies you used that added functionality or high level interfaces upon the core platform feature you studied).
3. Summarize any user privacy related concerns your focus area may involve if used in a production app, and discuss how you might mitigate the concern or offer a value proposition to compensate the user for any loss of privacy.
4. Provide a brief demo of your app in action (probably easiest to screen capture it running on your desktop, but you can also screen capture from a physical device if necessary).

Once your video is recorded, post it on YouTube (you may keep it unlisted if you don't want it to be visible to the general public). Once posted to YouTube, *embed the*

YouTube video in a post to the Blackboard Discussion entitled "Final Project Submissions", along with hyperlinks to your Google Slides presentation, GitHub repository, and Expo link to your app.

Virtual Q&A and Applause

Unfortunately, we won't be able to applaud after your presentation, or ask questions as we would if we were all on campus together. However, we can do the digital approximation! By the end of Tuesday, June 22, watch your classmates' demo videos. After you've watched the demo video, go ahead and rate it using this scale:

Guide to your project ratings:

- 5-star: Absolutely brilliant. Exceptional project.
- 3-star: Good work. You've done exactly what you were supposed to. Nothing more, nothing less.
- 1-star: Seriously? You better hope Engelsma is feeling like Santa Claus when he grades this.

In addition to rating the projects, post any questions/comments you might have. Make sure you answer any questions that show up on your post. Have fun with this and learn something from your classmates' good work!