

Erik Phillips

iOS App Development

California Polytechnic State University

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App Name: operate (RA Scheduler – Utility App)

App Description: A scheduling app for coordinating weekly on-call nights for RAs.

Project Overview:

This project will serve Cal Poly's University Housing Residential Advisor (RA) staff by automating the process of deciding the weekly on-call schedules throughout the year. Supporting over 150 different RAs across 13 different staffs and their 18 supervisors, this scheduling app will choose the best weeknight/weekend rotation for the RAs by taking their preferences and priorities to create the most objective schedule, favoring the greatest number of RAs. By taking into account priorities, the scheduling app will assign on-call nights to the RAs, ensuring that all shifts are covered and if unable to complete scheduling, actions will be requested by the administrator.

This project will provide an organized, easy-to-use mobile iPhone interface for RAs to enter their preferences and availability and return an optimal schedule through the use of a genetic algorithm. An administrator will have the ability to initiate a group/staff, add/remove users, and make manual adjustments to the schedule as needed. The resulting schedule will produce user-unique Apple calendar file (.ics format) for the RAs to add their scheduled on-call nights to their preferred calendar application. Additionally, RAs will be notified through Apple's notification center when their on-call shifts are happening, as well as get alerts for when they need to enter their schedule information.

Future development of the app, if I have the time, will include changing the settings so that the app can be used by other entities for different types of shift scheduling. Examples include staffing a reception desk, scheduling server staff for a restaurant, or scheduling office hours or appointments.

Anticipated iOS APIs:

- Contacts and Calendar APIs
- Notification Center API
- UIKit (For User Interface)

Anticipated External APIs and Code:

- Firebase APIs (Google mobile database)
- User and Admin Authentication/Sign In
- (Genetic) Scheduling Algorithm [Specific Algorithm TBD]
 - I will be writing this algorithm myself while trying to utilize other pre-existing algorithms as well. I need this algorithm to be specific to my app, incorporating the different settings that I specify, therefore I will be design a custom algorithm. https://en.wikipedia.org/wiki/Genetic_algorithm

Personal Past Experience:

I do not have any pre-existing iOS development experience and do not have any experience with constructing and using databases. I also do not have experience with building this kind of algorithm. Creating and managing a database will be a learning challenge for me on top of learning the iOS SDK and the Swift programming language. Despite my lack of experience, I am excited to learn through this project and feel that it will greatly increase my knowledge of the software development process and my experience working with database APIs.