



Office Door Kiosk

Team sdmay18-28:

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The Plan

Problems and Solutions



Problem Statement

- Office hours are important for student success
- Professors are busy
- Face to face meetings are difficult
 - Student not available during office hours
 - Professor may be out of office for a few minutes and miss students
- Relaying simple information requires too many emails
- Need a way to improve communication

Conceptual Sketch



Constraints and Considerations

- Information Security / Legal Concerns
- Must be low cost
- Theft / Tampering

Market Survey

- Many products implement some features
 - Email, Discord, Skype, other kiosk apps, etc
 - None implement all desired features
- Future flexibility with custom code
- Platform agnostic
- Designed for professor/student interactions
 - By Iowa State students

Functional Requirements

- Remotely updated kiosk owner information
- Leave notes for students
- Video chat between kiosk and mobile app
- Customizable calendar/ Office Hours display
- “Door bell” feature - alert professor that someone is at his door

Non-functional Requirements

- Kiosk must be resistant to thieves and malicious users
- Must be removable by authorized personnel
- Responsive UI
- Any number of professors should be able to have accounts
- Kiosk has restricted access hours
- Acquire a secure enclosure for the device

Office Door Kiosk App

52% 2:39 PM

← Customize your kiosk

Calendar Widget Enabled

Start Time **Stop Time**

00:00 23:59

Office Hours Widget Enabled

Start Time **Stop Time**

00:00 23:59

DoorBell Widget Enabled

Start Time **Stop Time**

09:00 18:00

Video Chat Widget Enabled

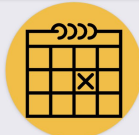
Notes Widget Enabled

Start Time **Stop Time**

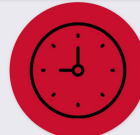
00:00 23:59

Sprint 51% 2:25 PM

Home



Calendar



Office Hours



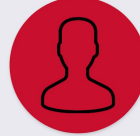
Doorbell



Video Chat



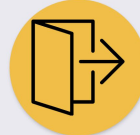
Notes



Profile



Settings



Logout

4:02 PM | Sun, April 15



Office 4:01 PM

Someone is at your door!

Android System

Charging via USB

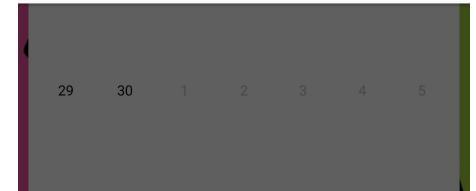
Tap for other USB options.

Android System

Charging

Charging: 71% (Approximately 1 h 43 min until fully c..

BLOCK NOTIFICATIONS CLEAR ALL



Phone Gmail Messages Chrome Apps

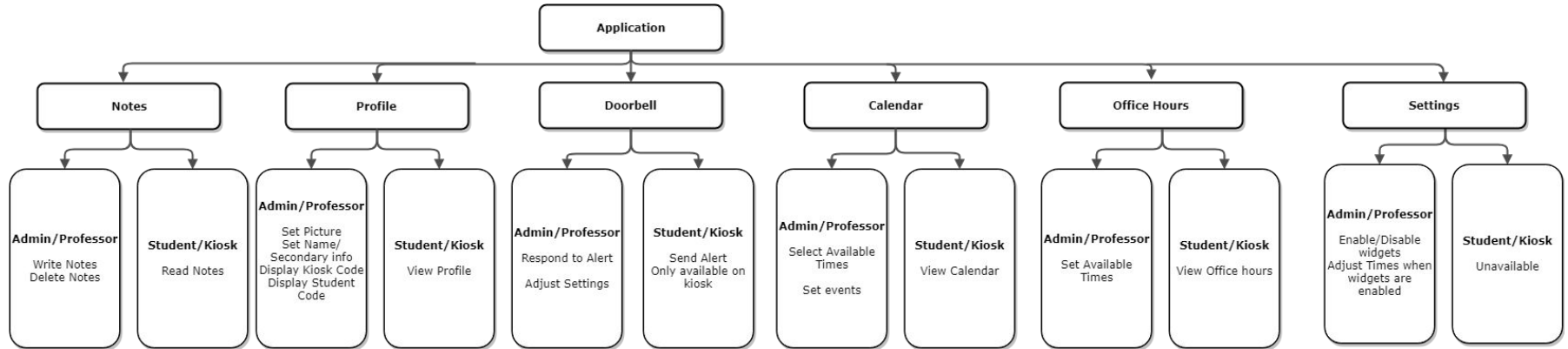
Sprint



Feature Highlights

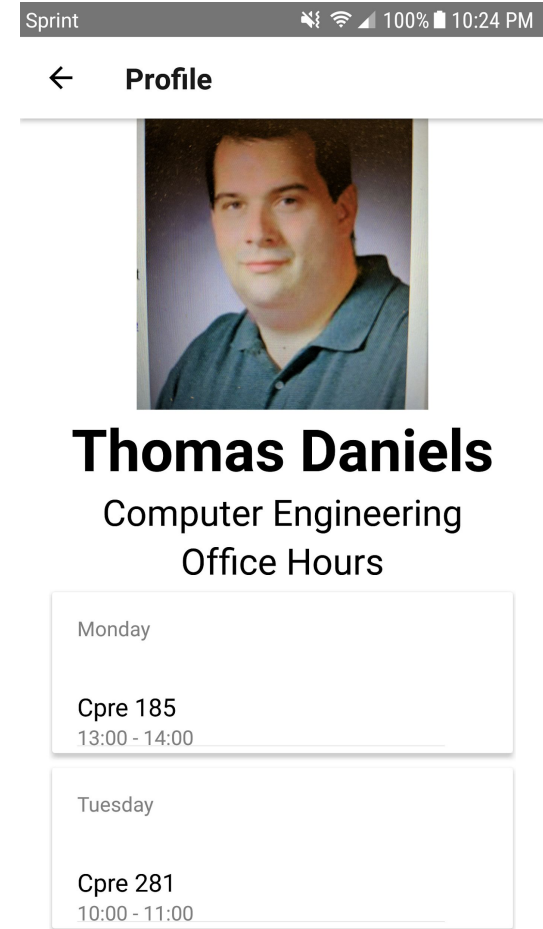
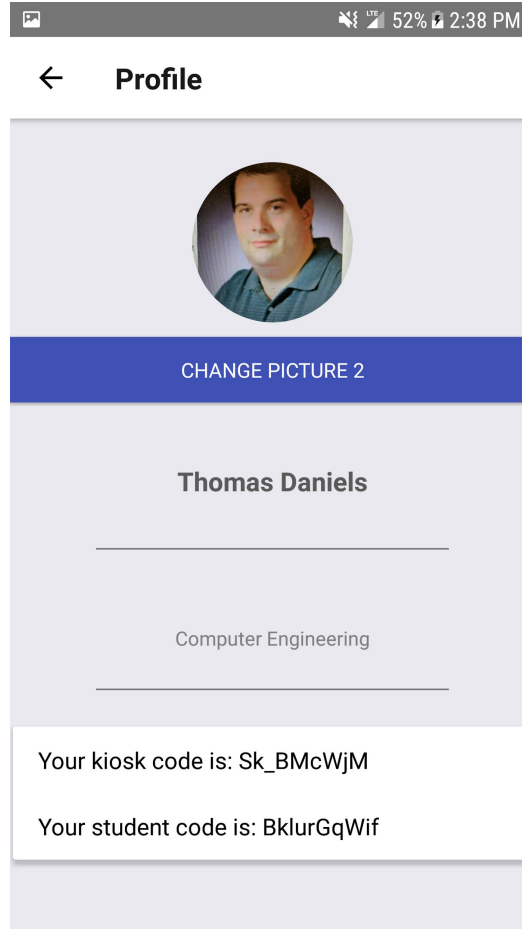


System Design - Functional Decomposition



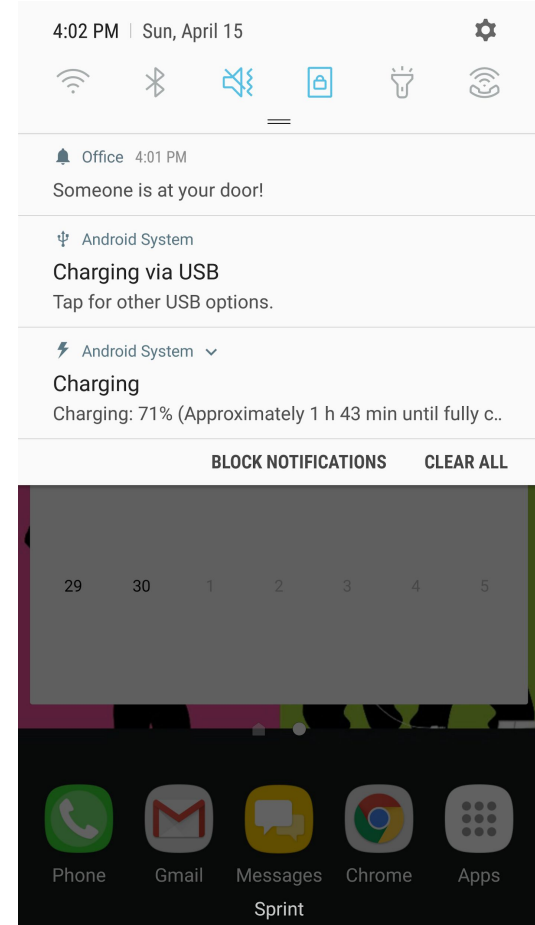
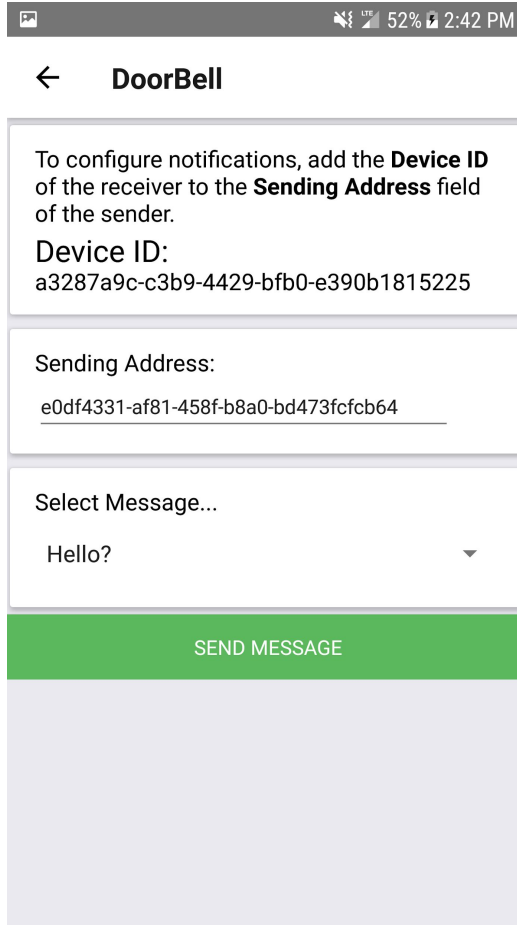
About Page

- Idle Page
- “Nameplate” page
- Configurable Picture
- Configurable Name
- Configurable Message
- Admin Side
 - App Codes
- Kiosk/Student Side
 - Office Hours



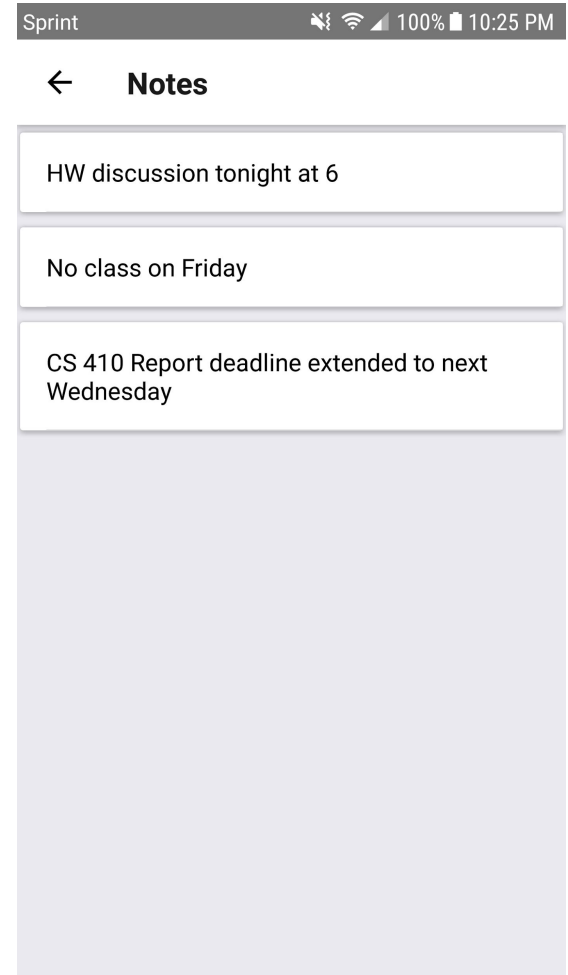
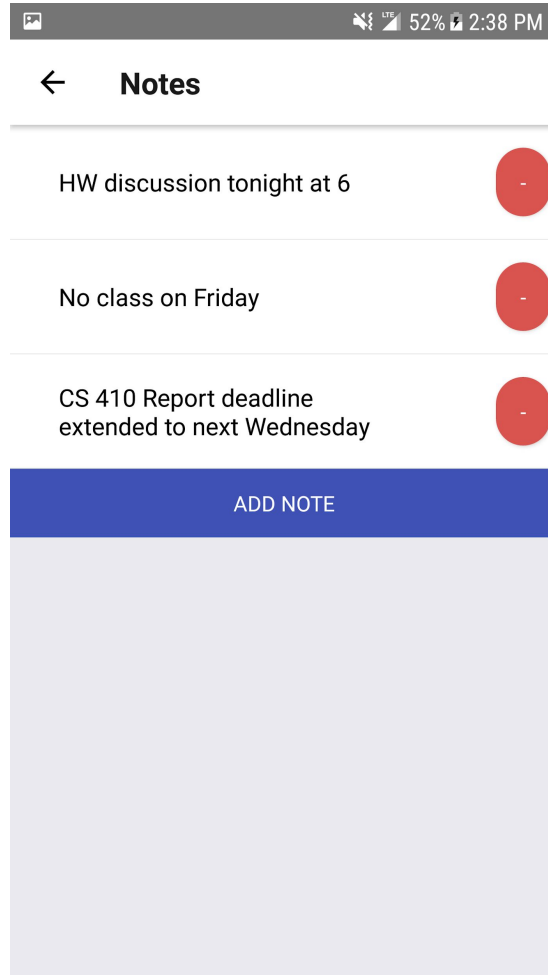
Doorbell

- One Signal Service
 - Free
 - React Native SDK
 - Peer to Peer
- iOS Dev License
 - \$100/year
- Android
 - Free
- Preset Messages
- Manually input address
 - Different Devices



Notes

- Admin Side
 - Add Note
 - Remove Note
- Kiosk/Student
 - View Notes
- Update in real time
- Persist indefinitely



Calendar/Office Hours

- Calendar
 - Display professor's schedule
 - Update the kiosk in real time
- Office Hours
 - Display semester's office hours
 - Updates calendar

Sprint 100% 10:22 PM

← Calendar

Wed Apr 25 2018

CS 410 Lecture 12:10 - 13:00	X
SE 492 Office Hours 14:00 - 15:00	X
Staff meeting 15:00 - 16:00	X

ADD EVENT VIEW CALENDAR

Detailed description: This is a screenshot of a mobile application's calendar view. The status bar at the top shows 'Sprint' as the carrier, signal strength, Wi-Fi, 100% battery, and the time 10:22 PM. The app header has a back arrow and the title 'Calendar'. The main content area shows the date 'Wed Apr 25 2018' and a list of three events. Each event consists of a title and a time range, followed by a red square button with a white 'X' for deletion. The events are 'CS 410 Lecture' (12:10 - 13:00), 'SE 492 Office Hours' (14:00 - 15:00), and 'Staff meeting' (15:00 - 16:00). At the bottom, there are two blue buttons: 'ADD EVENT' and 'VIEW CALENDAR'.

← Office Hours

Monday

Cpre 185
13:00 - 14:00

Tuesday

Cpre 281
10:00 - 11:00

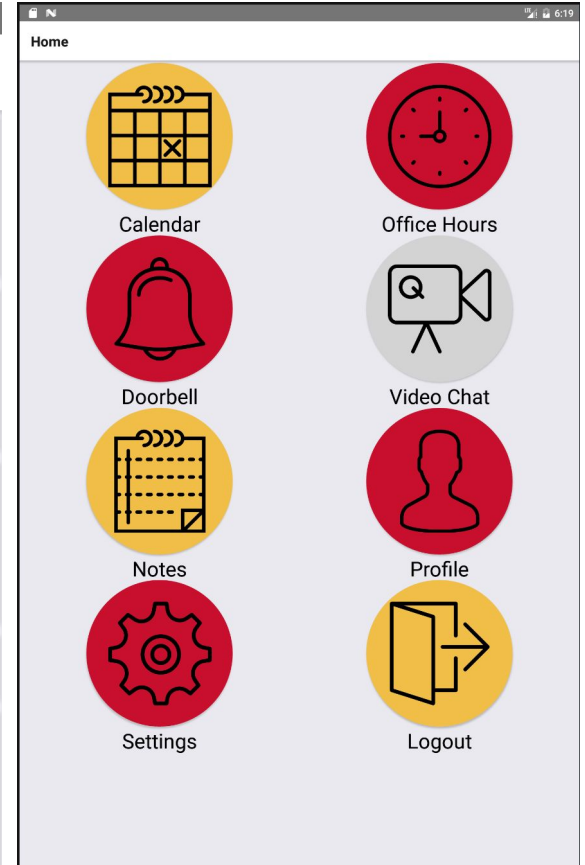
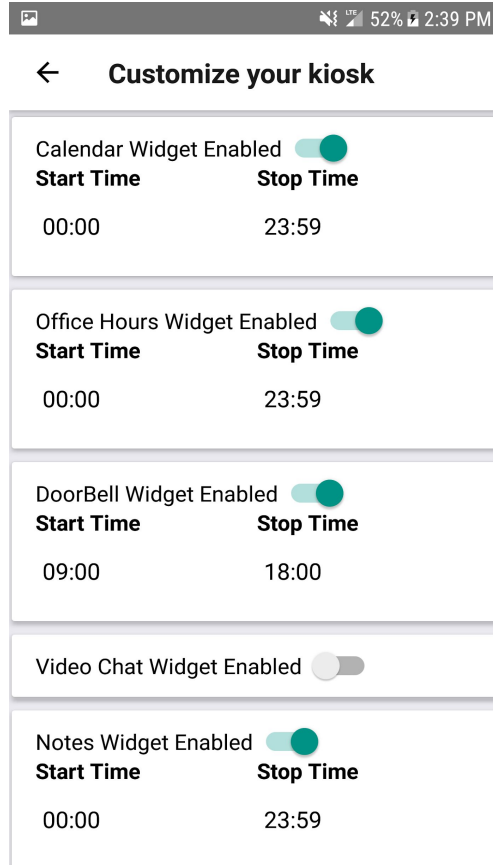
Thursday

SE 492
14:00 - 15:00

Detailed description: This is a screenshot of a mobile application's office hours view. The status bar at the top shows signal strength, Wi-Fi, 52% battery, and the time 2:32 PM. The app header has a back arrow and the title 'Office Hours'. The content is organized by day. Monday shows 'Cpre 185' from 13:00 to 14:00. Tuesday shows 'Cpre 281' from 10:00 to 11:00. Thursday shows 'SE 492' from 14:00 to 15:00. The days are listed in a simple, clean font, and the event details are presented in a clear, readable format.

Settings

- Enabled/Disabled
- Set Time for Usage
 - Military Time
- Do Not Disturb Mode



Lost Features - Shibboleth, Video Chat

Iowa State SSO - Too time consuming, and Shibboleth is becoming deprecated

Video Chat - Just never off the ground with it (Library Integration issues)



Implementation Details

Technologies and Methods

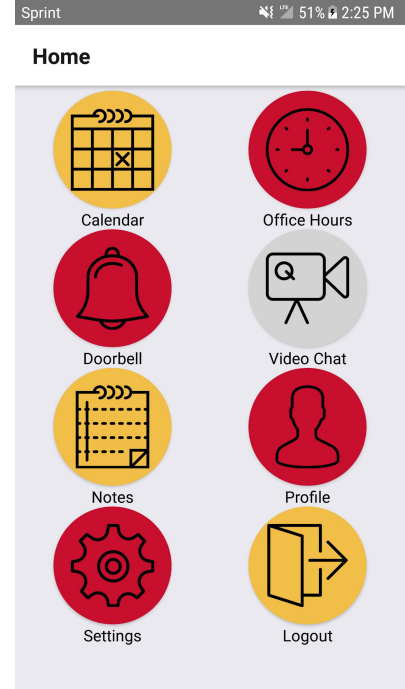
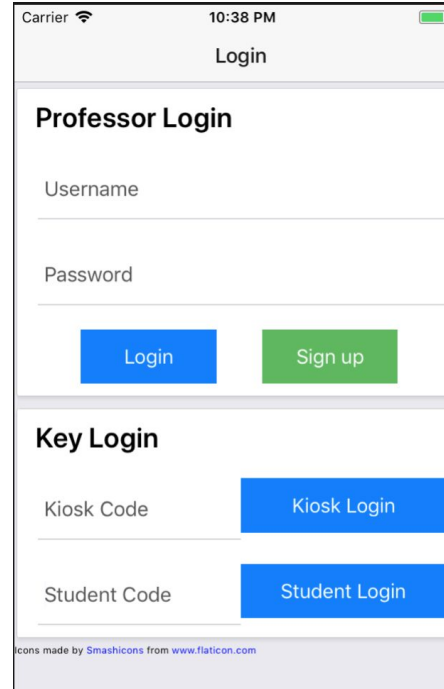


Technologies Used

- React Native and Redux
- Node.js
- MongoDB database

User Interface/Experience

- Platform agnostic
- Provided components
 - React Native, Native Base
- Custom components
 - UIComponents
- Responsive
- Decoupled widgets



Hardware and Cost

- Highly tamper-resistant
 - Cradle prevents tablet removal
 - Wall mount is extremely strong
- Approx. cost per device - \$118

Product	Price	CDW URL
Amazon Kindle Fire 7	\$64.99	https://www.cdw.com/product/Amazon-Kindle-Fire-7-tablet-8-GB-7/4839833
Tablet Cradle	\$36.99	https://www.cdw.com/product/Peerless-Universal-Tablet-Cradle-PTM200-wall-mount/2728537
Wall Mount	\$15.99	https://www.cdw.com/product/Tripp-Lite-Display-TV-LCD-Wall-Monitor-Mount-Tilt-13in-27in-EXCLUSIVE-PRICE/3348649

System Design - Test Plan

- Automated Functional Testing
 - Jest: Unit testing
- Field Testing
 - Emulators
 - Prototype



Closing Statements

Conclusions and Questions



Risks and Mitigation

- Risks
 - Lack of Experience with Technology
 - Time Constraints
- Mitigation
 - Individual training for React Native, Redux, and node.js
 - Allow time for errors

What we learned

- Research is important
- The starting architecture is critical
- The importance of well documented processes
- React Native - Redux is tricky
- Managing a semi-large code base
- Extended Team Communication
- How to run effective meetings

Questions?