

House Hawk



Home Security Application

Project Summary

- HouseHawk is a home security application
 - Detects motion and captures images
 - Displays pictures on a mobile application
- Mixture of hardware and software components
 - Hardware - Camera system
 - Software - Backend & Mobile Application

High Level Description

- Camera system
 - Senses motion
 - Captures images
- Server & database
 - Store information
- Mobile application
 - View information



Camera System

- Used to detect motion and capture images
- Raspberry Pi
 - Scripts coded in Python
 - Connects to home internet
 - Modules:
 - Camera
 - PIR Motion Detector

Camera System

- Three main scripts
 - Main.py
 - Backbone of camera system
 - Runs the program
 - Motion.py
 - Responsible for detecting motion
 - Camera.py
 - Responsible for handling image captures

Camera System

Raspberry Pi



Motion Sensor

Camera

Server & Database

- Server
 - Amazon AWS EC2 running Ubuntu instance
 - Used to host database and store images
- Database
 - MySQL - eight tables
 - Used to handle storage of information
 - Stores a file path for each image on server

Mobile Application

- Flutter
 - Developed using a plugin for Android Studio
 - Allows quick restarting of device during testing
 - Works on both Android and iOS devices
- Receives push notifications for new pictures

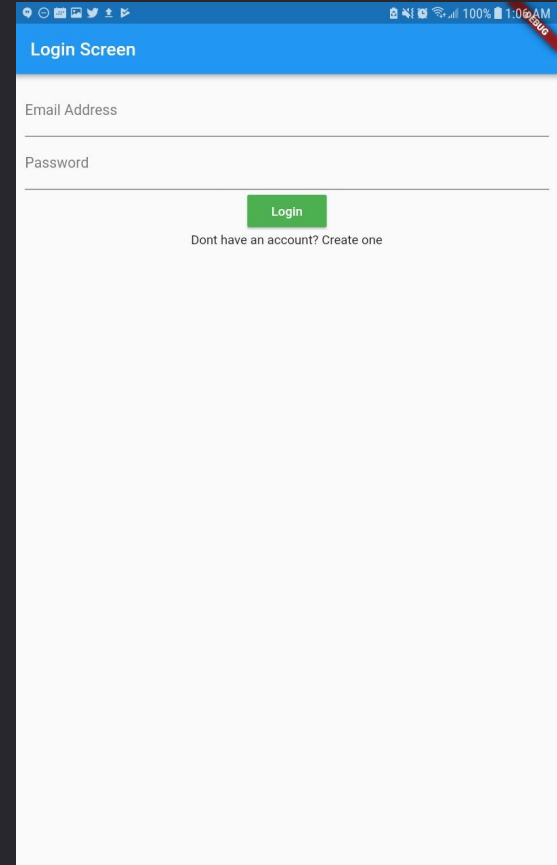
Mobile App Screens

Total of eight screens:

1. Login
2. Create
3. Home
4. Account
5. Cameras
6. Exposures
7. Pictures
8. Recent

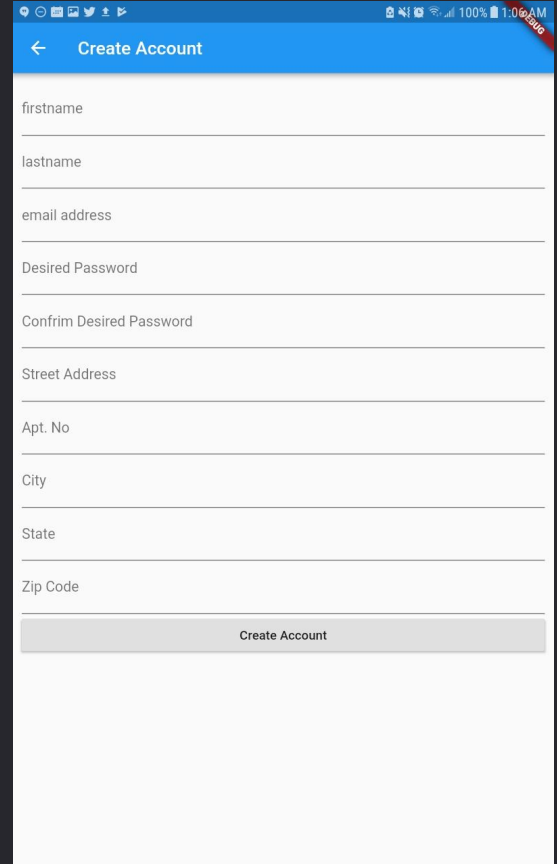
App Screens - Login

- First screen when app is opened
- Functionality:
 - Navigate to Create Account Screen
 - Sign into existing account



App Screens - Create

- Allows user to create a new account
- Required information:
 - Name
 - Password
 - Email
 - Home address



100% 1:00 AM

← Create Account

firstname

lastname

email address

Desired Password

Confrim Desired Password

Street Address

Apt. No

City

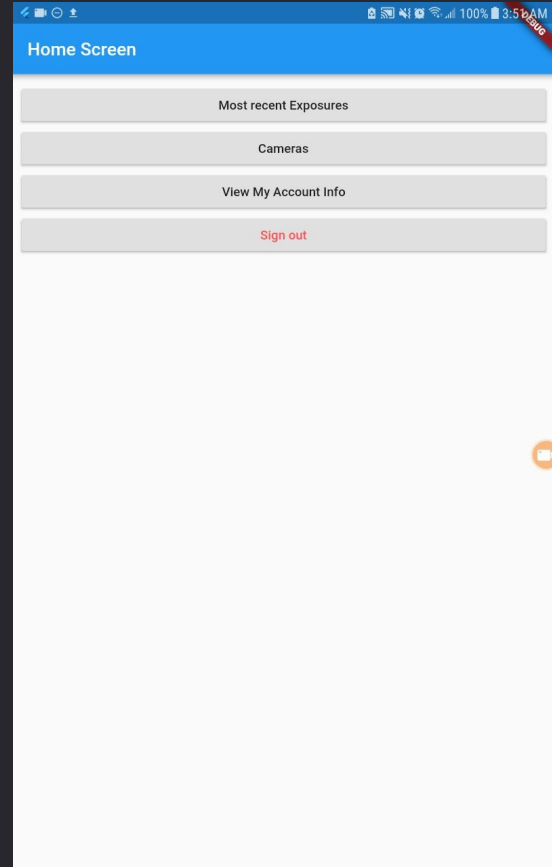
State

Zip Code

Create Account

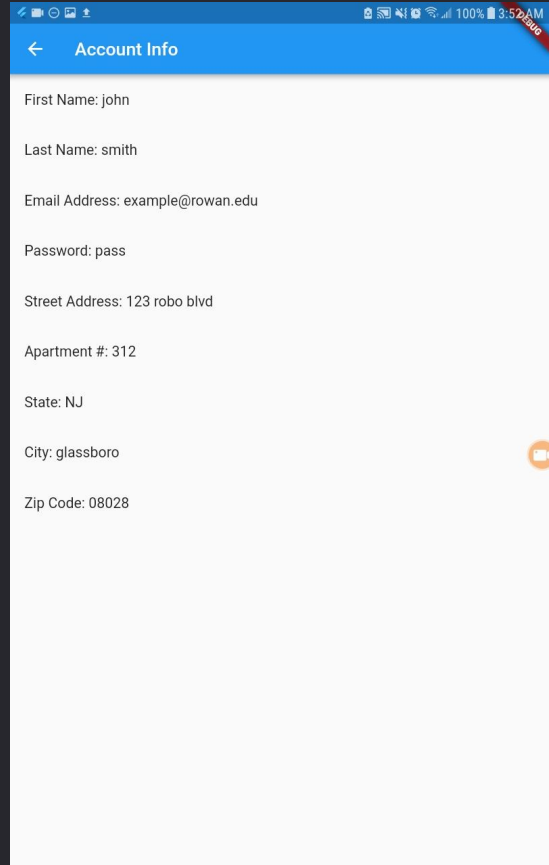
App Screens - Home

- First screen seen after logging in
- Acts as a hub for all user interaction
- Functionality:
 - Update or view account info
 - View cameras
 - View most recent exposure



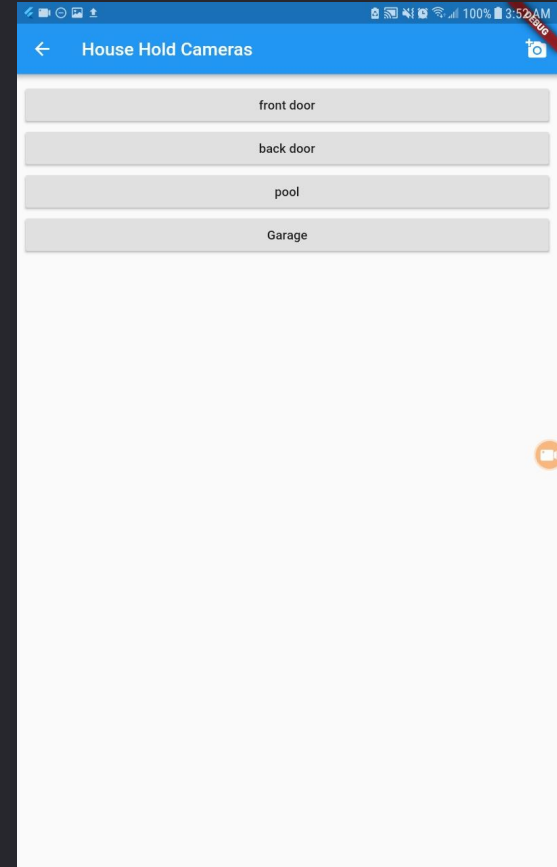
App Screens - Account

- Allows user to view their personal information initially entered in the application upon account registration.



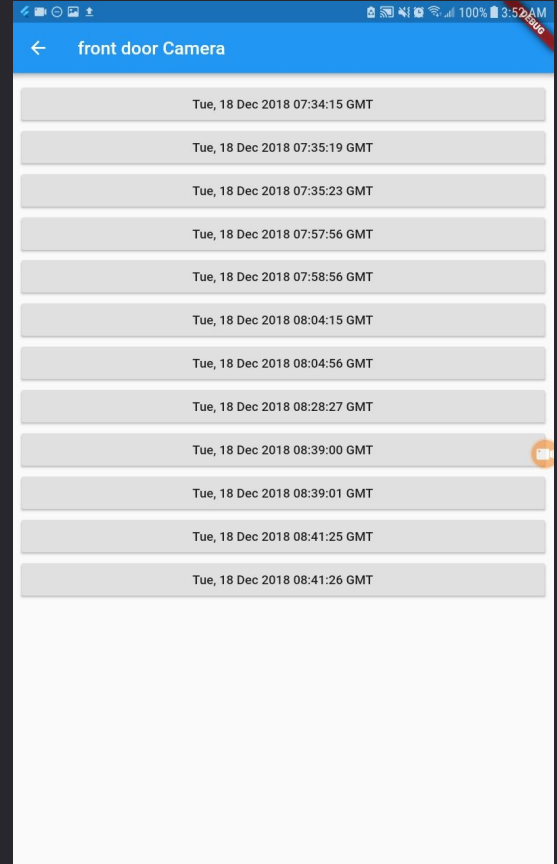
App Screens - Cameras

- Allows user to add a camera
- View all cameras per user
- Functionality:
 - Click on add to add a new camera
 - Click on camera to view exposures



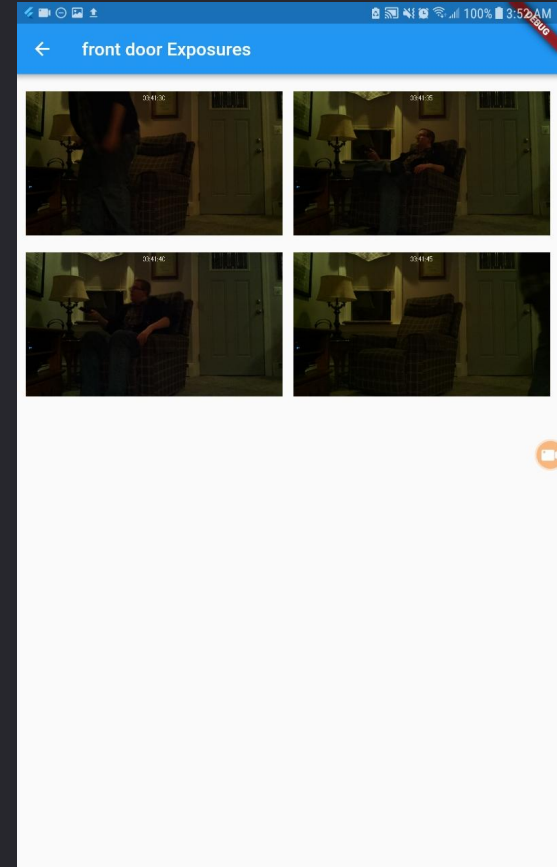
App Screens - Exposures

- View all exposures per camera
- Functionality:
 - Click on exposure to view pictures



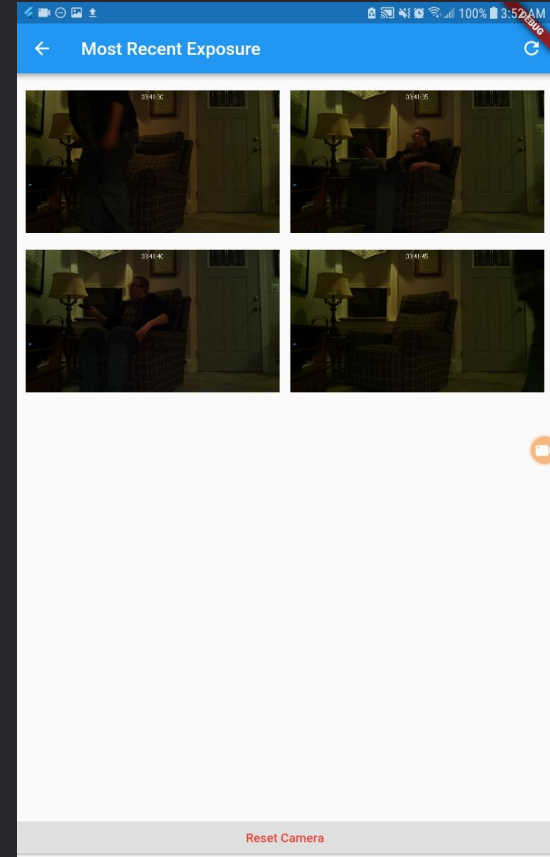
App Screens - Pictures

- View all pictures per exposure
- Functionality:
 - Click on picture to view it



App Screens - Recent

- Works exactly the same as pictures
 - Only populates with the most recent exposure
- Functionality:
 - Click on picture to view it



Demonstration

1. Create account and login
2. Sign into account and view info
3. View cameras and exposures
4. Add new camera to account
5. Receive push notification

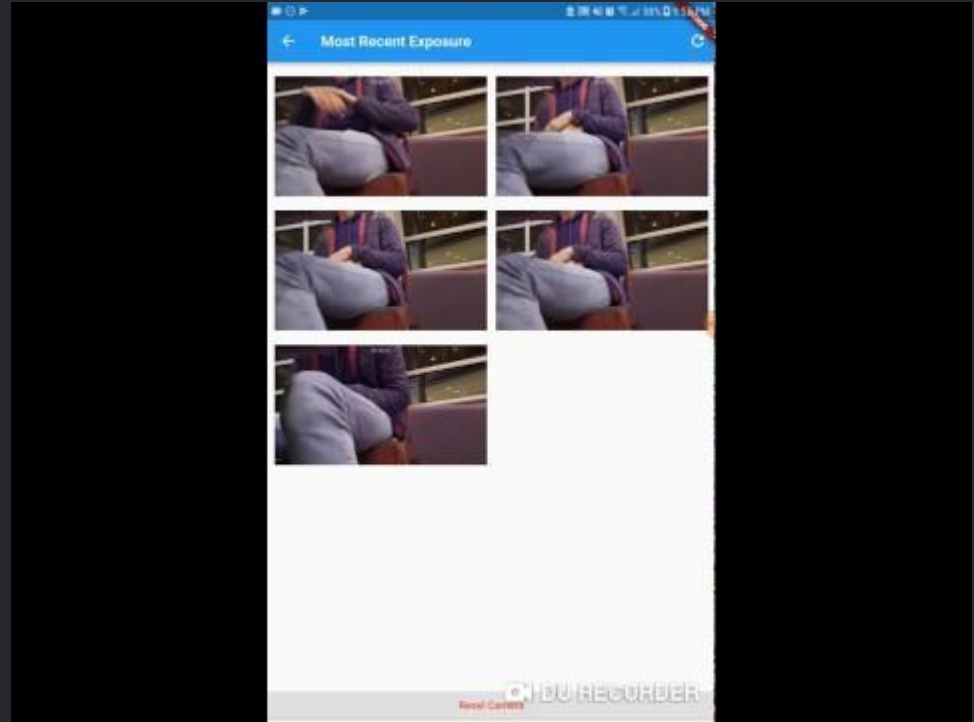
Creating an Account

- Create a new user account
- Login with that new user
- Show their account information
- Logout

The screenshot shows a mobile application interface for creating a new account. The title bar at the top is blue with a white back arrow and the text "Create Account". Below the title bar, there are several input fields with labels: "First Name" (containing "John"), "Last Name" (containing "smith"), "Email Address" (containing "example"), "Desired Password", "Confirm Desired Password", "Street Address", "Apt. No.", and "City". At the bottom of the form, there is a "Check" button. A keyboard is visible at the bottom of the screen, with the text "example" entered in the email field. The keyboard has a "Done" button on the right. A watermark "CIVIL RECORDER" is visible at the bottom right of the screen.

Demo Presentation - Sign into Existing Account

- Signing in
- Account Info
- Cameras
- Exposures
- Pictures
- Most Recent Pictures
- Logging Out

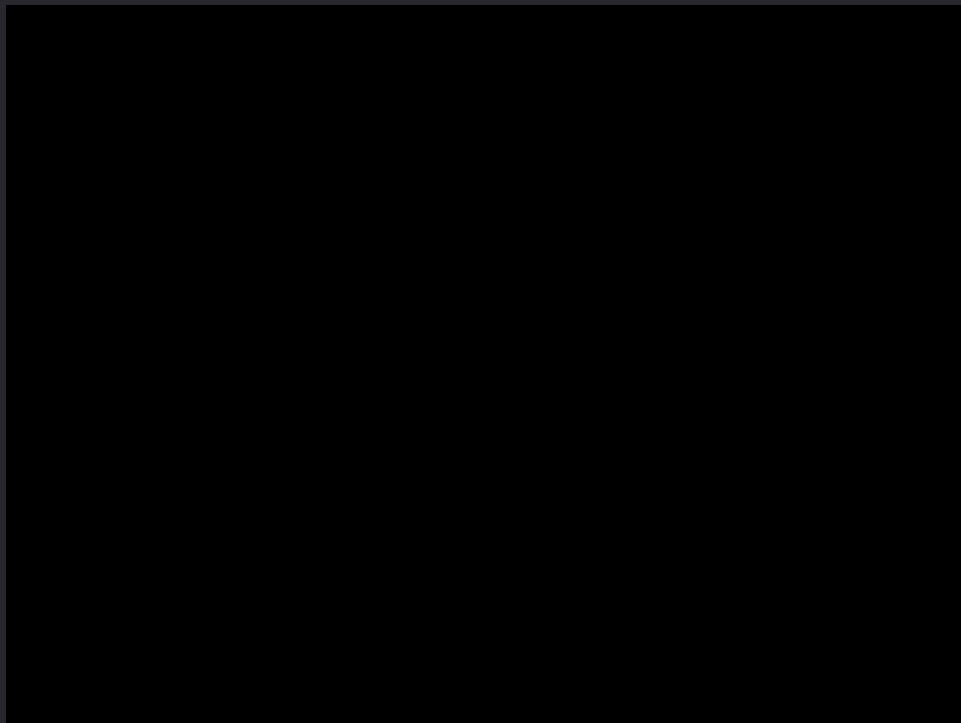


Demo Presentation - Add New Camera



Demo Presentation - Push Notifications

- Receive a notification that a new pictures have been created
- Click the notification
- View the most recent pictures
- Refresh the images
- Reset the Pi



Conclusions

- Home security application
- Components:
 - Camera system
 - Database & server
 - Mobile application
 - Eight screens



Questions?

