

Start Date – End Date:

September 25 - October 8

Group number:

sddec18-17

Project title:

IoT Remote Monitoring for Commercial Appliances

Clients:

Taylor Greiner
Connor Jennings

Advisor:

Goce Trajcevski

Weekly Summary

The goal of our third reporting period was to continue front-end backend integration. As mentioned in our previous report, new APIs and AWS lambda functions were written to retrieve future and historical reservation data as well as for storing credit card information. The front-end team completed implementation of the new APIs to display both future and historical reservations within the mobile application and to store a user's credit card after being validated from Stripe. It was also mentioned in the last status report that the android team implemented APIs for retrieving all laundromat, ATM, and bank information within Ames, IA. The iOS team has now completed the same functionality to maintain pace with the android application. The backend-team modified several APIs to fix a login bug and credit card issue. New APIs and AWS lambda functions were written to support the retrieval of specific appliances, given a laundromat location and appliance id. Unit tests have been written for testing both the appliance service and for the customer service. In addition, within Spring Boot security, autowired dependency injection was converted to constructor injection to prevent sql injection attacks. Furthermore, the team re-deployed a new EC2 instance on to AWS at the request of our clients to help lower server costs. Our hardware team faced delays due to an ordering mistake related to our 3x4 matrix keypad. While our team waited for the arrival of our new keypad, the team continued to reorganize control scripts for the LCD, keypad and AWS power source. Multiple tests were run on the LCD, keypad, and power relay to test core functionality and voltage levels

Past week accomplishments

Team Member 1 - Name

John Fleiner

Team Member 1 - Role

Android Development Lead

Team Member 1 Contribution

Android Data Storage

- Implemented Android Singleton User Model for synchronization when reading/writing user data. The model creates a single user instance for the lifetime of the application. The use of “synchronization” prevents read/write operations from happening concurrently

Android Data Models

- Implemented MVC model for Reservation

Android API Calls

- Implemented API, handling, and callbacks for retrieving future reservations along with their laundromat identification
- Implemented API, handling, and callbacks for retrieving historical reservations along with their laundromat identification
- Updated API, handling, and callbacks for login to accommodate new return values due to backend API changes. The API now returns a user ID which is stored in the singleton user model. The singleton user model is then used as an API input to retrieve reservation data for that user id.
- Implemented API for submitting card information upon successful card validation via Stripe

Android User Interface

- Added visual display of credit card w/ saved card parameters
- Implemented HistoryActivity - screen to view historical reservations
- Completed functionality for SelectedReservationActivity

Team Member 1 - Hours Worked

14 Hours

Team Member 2 - Name

Ben Young

Team Member 2 - Role

iOS Development Lead

Team Member 2 Contribution

- Implementation of the places endpoints
 - Google Maps map view is now being populated with markers that represent banks, ATMs, and laundromats in the area that are stored on the server
 - These queries are working from the remote server (AWS) to make them work on local is just a change of url
- Create models that represent the data being pulled from database
 - This includes the bank, atm and laundromat models
- Login was changed to work with the update to the login endpoint to handle the new payload that is returned if an error occurs when they try and login
- UI has been added to reserve a machine(s) at a laundromat that was tapped on the map

Team Member 2 - Hours Worked

12 hours

Team Member 3 - Name

Thomas Stackhouse

Team Member 3 - Role

AWS & Spring Boot Backend Lead

Team Member 3 Contribution

- Converted autowired dependency injection to constructor injection
- Updated from Spring 4 to Spring 5 as part of work with Spring Security
- Fixed issues with unit testing so that we could start writing unit tests on all backend component methods
- Re-deployed new EC2 instance on to AWS
 - It was requested by the client to switch base EC2 instance images for cost reasons, and the AWS instance now has more up-to-date URLs

Team Member 3 - Hours Worked

12 hours

Team Member 4- Name

Hongyi Bian

Team Member 4 - Role

Hardware Engineering Lead

Team Member 4 Contribution

- Received new keypad, working on integration.
- Reorganized LCD, keypad, and AWS power source control scripts, try to get a clean and complete python script running as one.
- Working on final integration with the portable washing machine
- Starting simple test cases for each individual component
 - LCD – test basic functionalities; contrasts for user satisfaction; lower voltage affections.
 - Keypad – test basic functionalities; press time interval to avoid consecutive miss-pressing; cancel input feature as well as return feature.
 - Power relay – test basic functionalities; association with portable washing machine (test 3-2 adapter);

Team Member 4 - Hours Worked

10

Team Member 5 - Name

Yuanbo Zheng

Team Member 5 - Role

Hardware Engineer

Team Member 5 Contribution

- Integrate the new keypad and the washing machine
- Work with our hardware lead to test our hardware component :
 - Test the functional ability of **LCD**, it can show user interface correctly.
 - Test the functional ability of **Keypad**, the button works well and it can show up the button we press correctly on LCD.
- Keep working on the hardware Security issue:
 - The portable washing machine can only be unlocked during the reserve timeslot.
- Fix an input error which causes script crash

Team Member 5 - Hours Worked

10 hours

Team Member 6 - Name

Casey Gehling

Team Member 6 - Role

Spring Boot Backend Developer

Team Member 6 Contribution

- Implemented a couple http requests for the front end
 - One returns customer information given an ID
 - Another returns appliance information given an ID
 - Waiting on hardware components to arrive so we can implement that portion
- Continued JUnit tests
 - Finished testing the appliance service
 - Close to finishing customer service unit testing
- Worked with Thomas to fix the connection to the remote database
- Updated the local profile schema and some data for the front end

Team Member 6 - Hours Worked

12

Individual contributions

Team Member	Contribution (Quick list of contributions. This should be short).	Hours this reporting period	HOURS cumulative (this semester)
John Fleiner	<ul style="list-style-type: none">● Implemented singleton design pattern to store relevant user information● Implemented MVC model for reservation● Android API Calls for retrieving future and historical reservations, and for storing valid credit card data● Implemented History Screen	14	50

	and updated Credit Card Screen		
Ben Young	<ul style="list-style-type: none"> Created API calls to bank, atm and laundromat location endpoints Put markers on the map with a given icon depending on location type Created models to be compliant with the MVC model Updated some api responses because of changes on the server 	12	32
Thomas Stackhouse	<ul style="list-style-type: none"> Updated backend to be more compliant with best practice Fixed issue where unit tests were not running Re-deployed backend on AWS with less expensive image 	12	30
Hongyi Bian	<ul style="list-style-type: none"> Received new keypad, working on integration. Reorganized and complete python script running as one. Working on final integration with 	10	30

	<p>the portable washing machine</p> <ul style="list-style-type: none"> Starting simple test cases for each individual component 		
Yuanbo Zheng	<ul style="list-style-type: none"> Integrate the new keypad and the washing machine Work with our hardware lead to test our hardware component Keep working on the hardware Security issue Fix an input error which causes script crash 	10	32
Casey Gehling	<ul style="list-style-type: none"> Implemented a couple http requests for the front end Continued JUnit testing Worked on remote database connection Updated local data 	12	41

Pending issues

Our team is continuing to face issuing regarding our 3x4 phone-style matrix keypad. During our bi-weekly status report 2 client meeting, our team explained the hardware issues faced with the current 3x4 keypad and that due to soldering damages, a new keypad was needing to be purchased. Due to unexpected delays on our client’s end, the keypads were ordered later than anticipated and didn’t arrive until Friday, October 5th. We plan (and need) to have the keypad issue resolved within the next two weeks.

Plans for the upcoming weeks

Team Member 1 - Name

John Fleiner

Team Member 1 - Role

Android Development Lead

Team Member 1 Plans

Implement Android Screens

- Implement “client” or “Admin” UI screens including: “Analytics Overview”, “Energy Consumption”, “Active Machines”, and “Override Machines”
- Implement Android Graph library for displaying analytics data

Implement Android APIs

- Implement “Retrieve Card API”
- Implement “Checkout API” (reservation API)

Google Maps

- Implement Geocoding Search (search for address)

UI Design

- At the request of the client, add a new design feature to allow users to “favorite” a laundromat

Stripe SDK

- Implement stripe checkout tokenization

Team Member 2 - Name

Ben Young

Team Member 2 - Role

iOS Development Lead

Team Member 2 Plans

- Implement UI for the rest of the screens
 - Current Reservations
 - Past reservations
 - Settings page
 - The process of screens to complete a reservation
 - Add a favorites list for laundromats (at request of clients)
- Implement the api calls to fill the previous screens with user specific data
- Implement the collecting of the credit card information using stripe

Team Member 3 - Name

Thomas Stackhouse

Team Member 3 - Role

AWS & Spring Boot Backend Lead

Team Member 3 Plans

- After fixing pre-cursor problems that were blocking Spring Security, need to finish implementing that
- Start looking into AWS deployments via terraform to try and make them easier, because the deployment took way too long last time

Team Member 4 - Name

Casey Gehling

Team Member 4 - Role

AWS & Spring Boot Backend Lead

Team Member 4 Plans

- Implement backend with the hardware component
- Continue JUnit testing for the front end components

Team Member 5 - Name

Yuanbo Zheng

Team Member 5 - Role

Hardware Engineer

Team Member 5 Plans

- Help hardware lead with testing cases
- Continue hardware component Security issue

Team Member 6 - Name

Hongyi Bian

Team Member 6 - Role

Hardware Engineering Lead

Team Member 6 Plans

- Keep working on testing cases
- Associate with backend to get working prototype
- Starting transition breadboard towards solder board

Summary of Bi-Weekly Advisor Meeting

The goal of our third Bi-Weekly advisor meeting with Goce Trajcevski was to discuss our team's design document, final report, and end product. It is important that our team identifies all changes that have been made to our prototype design and make sure that both the design document and final report reflect those decisions and analyze why they were made. It was asked of us to begin working on the testing and security portion of our project while we wrap-up our prototype. Test measures that need to be taken include unit testing for both android, iOS, and Spring Boot. The most important advice obtained from the meeting related to our end product. We were asked to obtain feedback from our client to confirm that we are building the right product, and that they are happy with the current results. It is important that we make note of their responses to prevent scope creep in the upcoming weeks.

Summary of Client Meeting

Our team had a much needed in-person prototype showcase with our clients, Taylor Greiner and Connor Jennings. During the meeting, our team provided both an Android and iOS demo of the current application prototype. Our client's were pleased with the production quality, look, and feel of the application which is great news for our team. Since integration between the hardware, application, and backend has not been fully integrated, they would like to see a more complete demo during the first week of November which aligns with our timeline for prototype completion. A follow-up email has been sent with both hardware demo and the UI wireframe file.