

May 20-09

Inventory Locator

Assistant

Team Members: Alejandro Buentello, Caleb Gehris, Jacob Linch, Kurt Markham, Erin Power, Chris Rice

Advisor: Leland Harker
Client: Leland Harker



Project Plan



Problem Statement

SDMay20-09 is responsible for the design construction of a locator system for the ETG shop that will provide ETG shop employees a faster way to find requested parts.

Our project plans to address these issues:

- Reduce the time required to find parts
- Guide the user to specific locations efficiently
- Categorize and store the wide selection of parts
- Provide interaction through an application or website



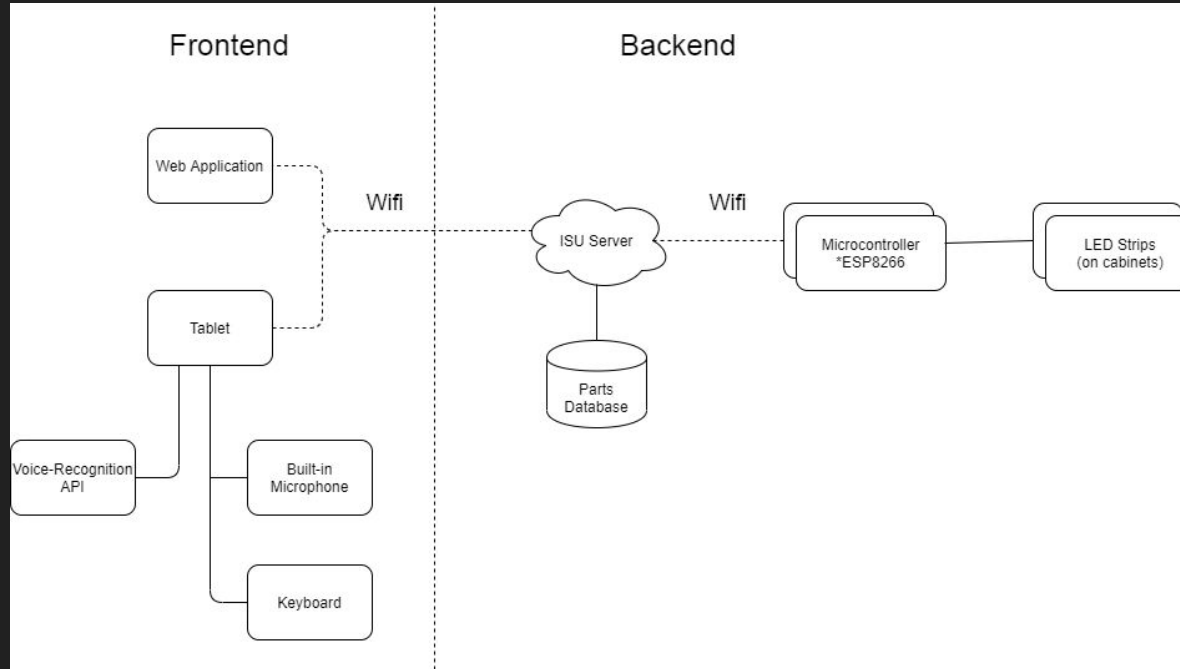
Conceptual Sketch

Microcontroller

LEDs



Overview



Functional Requirements

- Accept user input through voice and text input
- Perform “last search”, “all on”, “all off” commands
- Use visual queues to direct user to correct position (heartbeat/ pulse motion)
- Search for multiple parts and have them appear distinct on strip
- Adjustment of the parts database
 - Addition or removal of parts
 - Change in position
 - Inclusion of additional cabinets
- Interact through a tablet application or website



Technical Challenges/ Constraints

- Project shall not disrupt the operation of the ETG shop
- Lights, wires, or microcontrollers should not interfere with cabinets
- Needs internet access to operate
- All currently stored parts need to be stored in database
- Easy to learn and simple to operate
- Budget of 500 USD



Potential Risks & Mitigation

Physical components

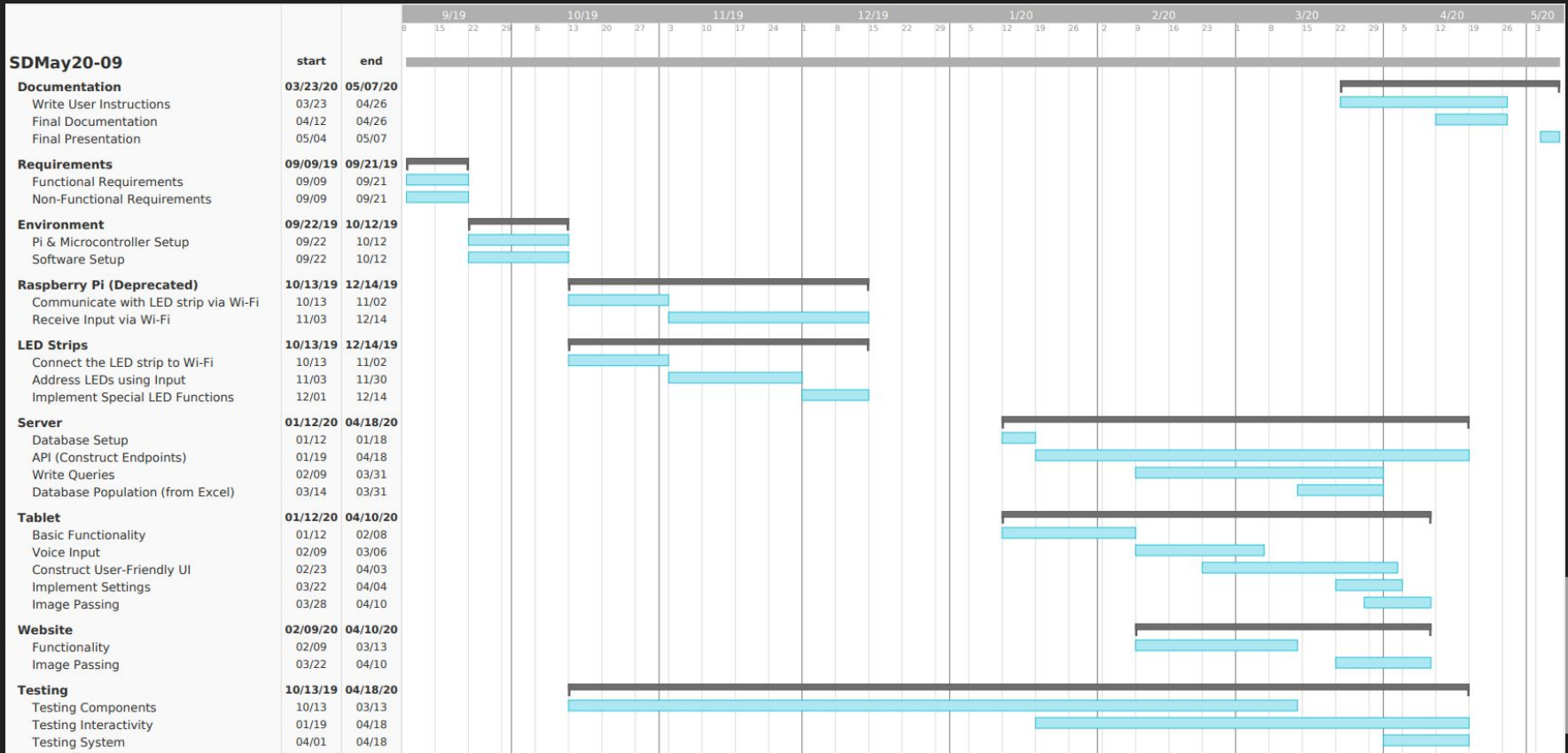
- User error
 - Mitigated by sufficient documentation

Software

- Server issues
 - Mitigation beyond our control
- App breaking bugs
 - Mitigated by thorough testing



Project Milestones & Schedule



System Design

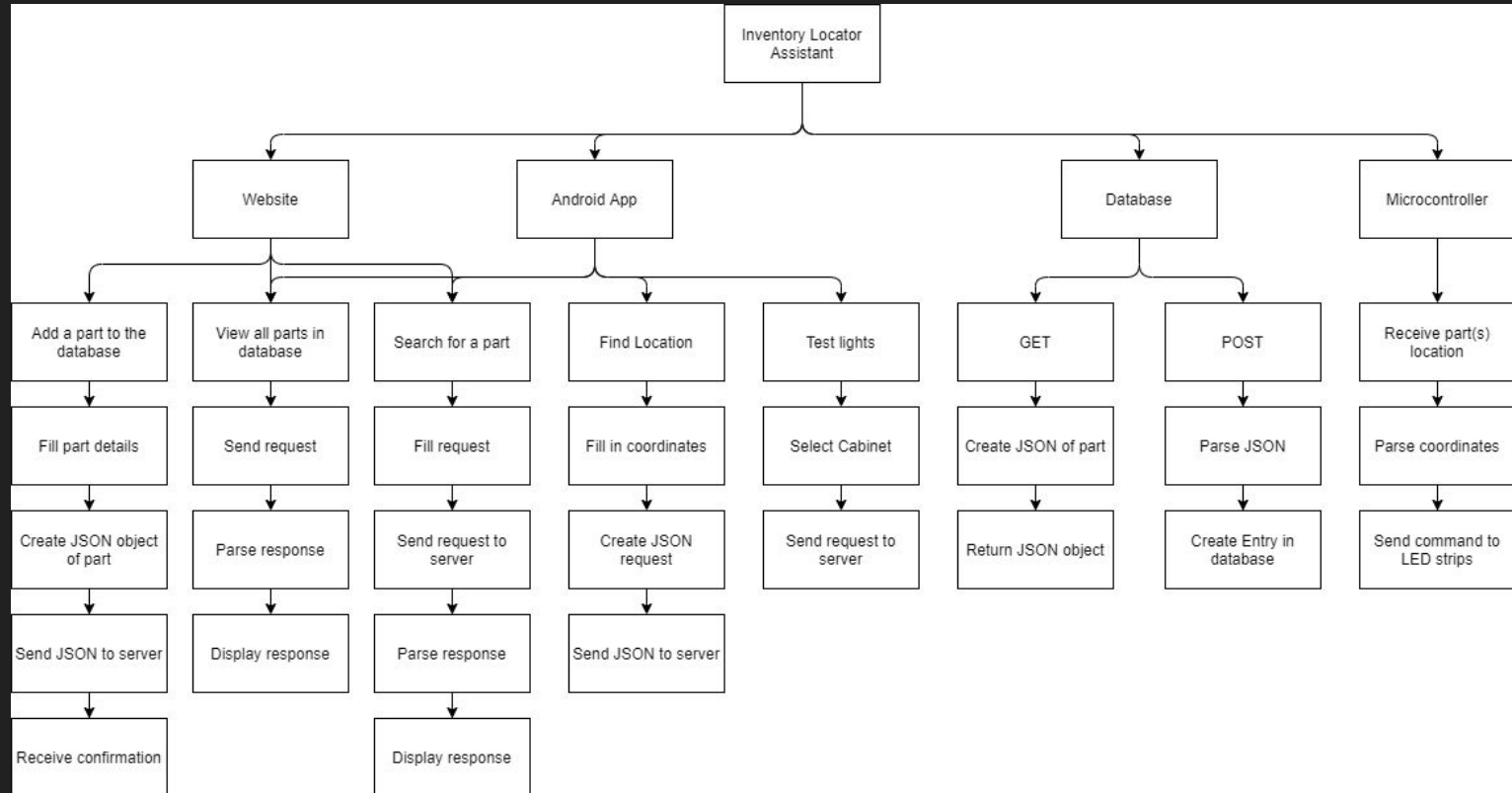


Technology Used

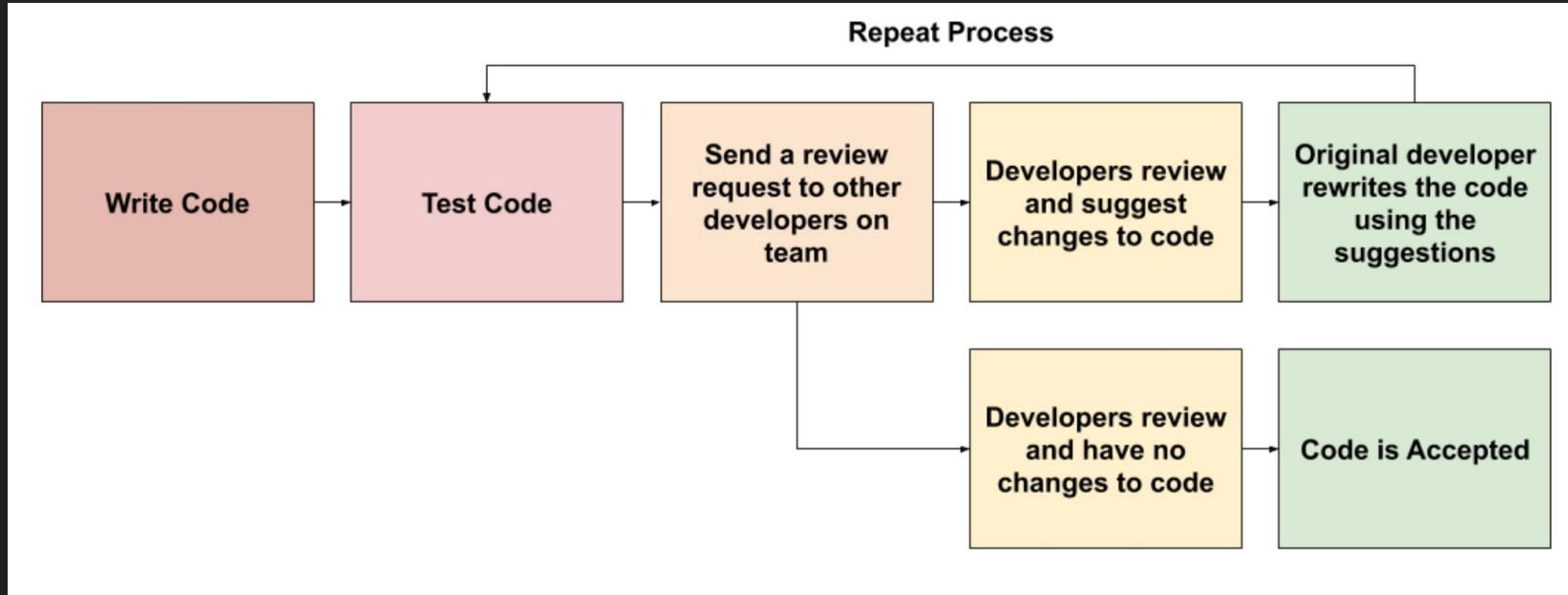
- Hardware
 - ESP8266 Microcontroller
 - Tablet
 - ISU Server
- Software
 - Arduino (C/C++)
 - Android Studio (Java)
 - MySQL
 - Python - Flask
 - React
- Platforms
 - Android App
 - MySQL database
 - Arduino



Functional Decomposition and Design



Generic Test Plan



Testing

- Manual Regression Testing
 - Test Matrix
- Postman



	Change	
WEBSITE		
Add Functionality		KEY
Update Functionality		Pass
Search by Name		Pass with Warning
Show All Parts		Fail
Website Builds		N/A
Well Commented Code		
APP		
Search Functionality		
Light Up Part		
Show All Parts		
Location Finder		
Settings		
App Builds		

Engineering Standards and Design Practices



Engineering Standards

- HTTP
- IP Protocol
- UDP Protocol
- 802.11 Wifi Protocols

Design Practices

- Kanban Software Development
- Peer Review
- Standardize Naming Convention for Variables
- Well Documented Coding
- Good Error Handling



Conclusion



Future Prospects

- Providing more information to the user
- Add indicators for each bin in the cabinet drawers
- Add quick search options for most used parts



Task Responsibility & Contributions

- Alex
 - ESP8266 code
 - Hardware Testing
- Caleb
 - Communicating with Mr. Harker
 - Android app
- Jacob
 - Software
 - Android app and Website
 - Integration



Task Responsibility & Contributions

- Kurt
 - Meeting Manager
 - Integration
- Erin
 - Documentation
 - Debugging
- Chris
 - Database and backend
 - Filter creation



THANK YOU

