May 20-09

Inventory Locator Assistant

Team: Alejandro Buentello, Caleb Gehris, Jacob Linch, Kurt Markham, Erin Power, Chris Rice
Advisor/Client: Leland Harker
Website: http://sdmay20-09.sd.ece.iastate.edu

THE PROBLEM:

- ETG has many parts used in classes
- New employees don't know where parts are
- It takes too long to identify and find part

OUR SOLUTION:

- Create an LED matrix to attach to cabinets
- Have a database of parts that controls which LEDs light up to lead user to part in cabinet

FUNCTIONAL REQUIREMENTS:

- Accept user input through voice and text input
- Perform "last search", "all on", "all off" commands and test routines
- 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
- Interact through a tablet application or website

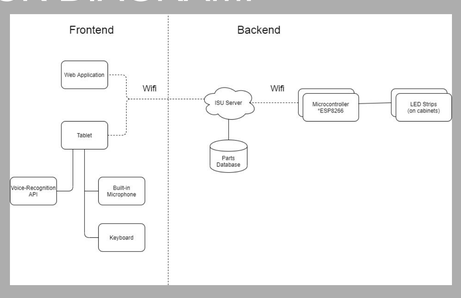
NON-FUNCTIONAL REQUIREMENTS:

- Allow for expansion to more cabinets
- Database can be used outside of product
- Search functions run in efficient time
- Use authentication when communicating between LEDs and application
- Easy to read and understand documentation
- Easy to modify if needed

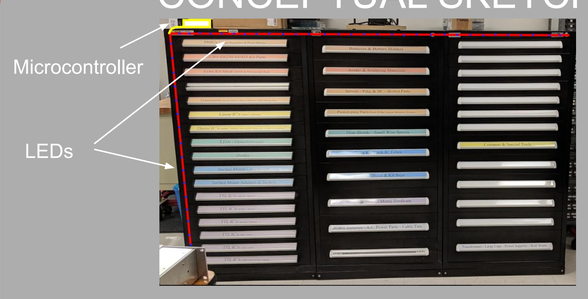
ENVIRONMENT AND USERS:

- Product will remain in ETG
- Opportunity to add expansions
- ETG workers will use this product

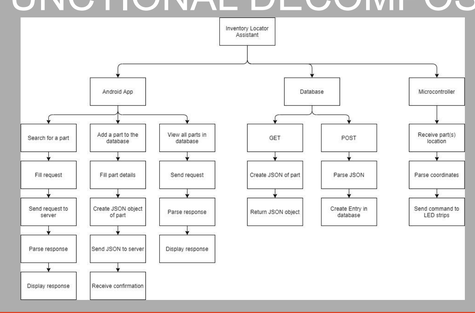
BLOCK DIAGRAM:



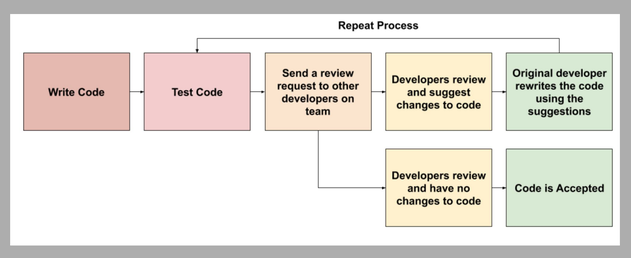
CONCEPTUAL SKETCH:

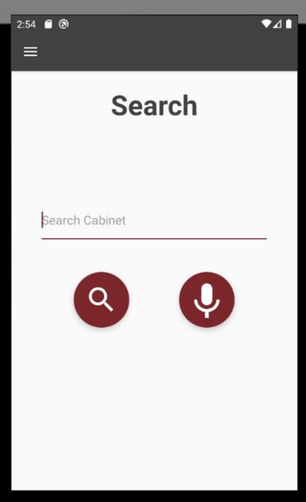


FUNCTIONAL DECOMPOSITION:



TESTING:





WHAT WE USED:

- Hardware
  - ESP8266 Microcontroller
  - Tablet
  - ISU Server
- Software
  - C++
  - Android Studio (Java)
  - MySQL
  - PYthon - flask
  - React
- Platforms
  - Android App
  - MySQL database
  - Arduino
- Engineering Standards
  - HTTP
  - IP Protocol
  - UDP Protocol
  - 802.11 Wifi Protocols
- Design Practices
  - Kanban Software Development
  - Well Documented Coding
  - Peer Review
  - Standardize Naming Convention for Variables
  - Good Error Handling

Thank you to Mr. Leland Harker and the ETG for the idea for this project, the use of space, and all the help throughout this project.