EE/CprE/SE 492 STATUS REPORT sdmay25-29

March 14, 2025 - April 3, 2025

Group number: 29
Project title: Implementation of the ABC using modern technology
Client &/Advisor: Professor Alexander Stoychev
Team Members/Role:

Connor Hand - Client Interaction and Team Organization
William Mayer - Meeting Time Tracking and Note-Taking
Peter Hurd / Noah Butler / Zach Scurlock - Testing and Individual Component Design
Peter Hurd - Budget Handling

Bi-Weekly Summary

Our team deep-dived into developing circuit diagrams. As a team, we discussed how our circuits could be improved. We went over how our system will read in base-10, base-2, or KA drum feedback coefficients. We described how a 6-bit counter and a 4-bit down counter will be used in connection to our ESP32 and 5 different EEPROMs. Part of our team grouped up and put together a comprehensive part list for ETG to order for us. We are currently revising and scaling down our current goal into an "ABCmini."

Past week accomplishments

- Connor Hand: Designed and built both the base-2 read and write apps. Finished implementing the base-10 input method on the ESP32.
- Zach Scurlock: Optimized UI for base-10 punch app and started breadboarding
- Peter Hurd: Finalized circuit design for the whole machine. Finalized and submitted parts orders based on circuit designs. Began breadboarding and KiCad schematic work.
- William Mayer: Added more functionality to the ABCControlPanel. Added two side panels, left having base two punched cards for selection. On the right-hand side are the masks and odometer.
- Noah Butler: Fully implemented the memory mapping of the EEPROMS, began breadboarding the binary to decimal module

Individual contributions

NAME	Individual Contributions *(Quick list of contributions. This should be short.)*	Hours this week	HOURS cumulative
Connor Hand	Made UI for both base-2 read and write Android apps. Implemented base-10 input method on ESP32 and breadboard.	14	98
Zach Scurlock	Optimized UI for base-10 punch app and started breadboarding	16	94
Peter Hurd	Finalized circuit designs and parts order. Began breadboarding and KiCad schematics	16	107
William Mayer	Java Code	12	101
Noah Butler	Fully implemented the memory mapping of the EEPROMS, began breadboarding the b2d module	12	94

Plans for the upcoming weeks

· Connor Hand: I will implement Bluetooth communication on our base-2 read and write Android apps and will begin prototyping input and output methods on breadboards.

· Zach Scurlock: Finish breadboarding adder circuits and begin breadboarding the rest of the system.

· Peter Hurd: Finish adder circuit breadboards and move onto the rest of the system. Build KiCad schematics alongside breadboard circuits to keep records of work.

· William Mayer: Updating the functionality of the odometer to work "Mechanically" and revising the way binary two's complement is working inside the code.

· Noah Butler: Finish breadboarding the binary to decimal module, and begin work on the next module that needs breadboarding

Summary of weekly advisor meetings

During our meetings this week, we discussed circuit design for various aspects of our machine. We brainstormed and designed methods for our input/output. We also talked about how we can implement the modified Gaussian Elimination Algorithm in our circuitry. We discussed how our control system will work through switches and dials. We also talked about how we can use 7 segment displays to output our final computations, and we found chips that can increment and decrement the numbers displayed. The big decision we made during these meetings was to decrease the number of coefficients that our machine will support from 5 down to 4.