

EE/CprE/SE 492 STATUS REPORT sdmay25-29

January 31, 2025 - February 13, 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

These past two weeks, the group re-read the Burks book on the ABC with the intent of finding control lines. We then met together and listed all of them out. The group also read Clifford Berry's ABC manual. We also split up and continued working on separate avenues of our project. We were able to make immense progress on the design of the base conversion and memory drum circuits. We started working with the ESP32 module and learned how to use its Bluetooth communication. We also made progress on our Android app, which will implement the base-10 and base-2 punch cards. We also finished the modified Gaussian elimination algorithm implementation in Java.

Past weeks accomplishments

- Connor Hand: Read Burks book and Clifford Berry's manual to find control lines. Experimented with ESP32 module and learned how to use Bluetooth communication with an Android app. Also started developing an Android app for our base-2 punch implementation.
- Zach Scurlock: Worked towards completing the base-10 punch android implementation read Clifford Berry's ABC manual, and reread Burks book to find control signals.
- Peter Hurd: Built out some prototype circuits on breadboards for the base conversion and memory drum circuits. Drafted some hand-drawn circuits for control.
- William Mayer: Completed the Gaussian Program in decimal using Stoychev's key steps. Read archive files and finished the Tree Algorithm for the Gaussian to solve any number of equations.
- Noah Butler: Read Berry's manual and several other newly found documents, looked for new footage of the keyboard drum to find proof of sign extension, reread the Burks book to find control signals

Individual contributions

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Connor Hand	Identified control lines from Burks book and Berry's manual. Learned Bluetooth communication with ESP32 module. Started developing Android app for base-2 punch.	11	60
Zach Scurlock	Work on base-10 punch android implementation, read ABC Manual, reread Burks book.	9	56
Peter Hurd	Worked in the lab on breadboarding circuits	11	62
William Mayer	Programming and reading	8	60
Noah Butler	Reading, researching images and videos of the keyboard drum	9	57

Plans for the upcoming weeks

- Connor Hand: Complete implementation of Android base-2 punch cards. Use ESP32 module to send data to Android app and form base-2 punch cards.
- Zach Scurlock: Finalize base-10 punch android implementation
- Peter Hurd: Build out circuits in Quartus to get some preliminary simulation results, and if successful, start on some PCB designs.
- William Mayer: Creating a binary solver for the Gaussian by implementing a decimal to binary conversion, a zero detect, and 49 shift detect in the program.
- Noah Butler: Relearn quartus, potentially help Peter breadboard any approved circuits, retrieve the EEPROM programmer from the other team

Summary of weekly advisor meetings

This week at our advisor meetings, we came together and identified all the control signals that the ABC used. We identified unknowns based on these control signals for further research. We also started deep discussions on how we are going to implement the memory drum and base-conversion circuits.