EE / CprE / SE 491 – sdmay26-12
ABC with Modern Components
Report 4

10/15/2025 – 10/21/2025
Client: Alexander Stoytchev
Faculty Advisor: Alexander Stoytchev

Team Members:

Gavin Bunker — *Technical Manual Lead*
Ryan McFadden — *Client Liaison, Recorder*
Samuel Schroeder — *Team Leader*
Vance Arnold — *Team Facilitator, Purchasing*
Bryan York — *PCB Lead*
Kyle Koch — *VHDL Lead*

Summary

Our primary goal for this reporting period was to implement any necessary changes to our add/subtract PCB module, based on both our layout redesign and client review, so that the design could be sent in for printing in the next week. Team members also worked to research areas and practice skills that will be needed for our upcoming module design process, and documented the add/subtract module. Finally, we developed some branding material that can be used on our PCBs, presentations, and other documents.

Past Week Accomplishments

- Samuel
  - Redesigned my PCB to align with our new layout specifications so that assembling all of our final modules with breadboards will be efficient.
  - Helped create potential team logos to include on our PCBs, documents, and presentations.
  - Researched chips to use for a 5-to-1 multiplexer.
  - Attended a lecture given by Dr. John Gustafson, who led the team that built the ABC replica in the 90s, about the ABC. Discussed our project with him and Nitin Gadia about their project to create a physical replica and how our project could help them.
- Bryan
  - Implemented comments made by the client and other PCB experts I talked to.
  - Resigned the team logo to look better on all documents and pieces, including PCBs, presentations, and design documents.
  - Researched what PCB features add extra cost to manufacturing.
  - Researched components to use for a 5-bit selector chip.
  - Attended a KiCad workshop to learn more about how the software works effectively.
- Vance
  - Practiced KiCad schematic and PCB design and implementation work for future modules.
  - Attended PCB workshop to gain tips and learn more about KiCad software and best practices.
  - Researched the ABC replica and how it relates to our current project.

- Ryan
  - Experimented with updating our website for a cleaner layout for all window sizes, learned more about html design
- Gavin
  - Created a new technical manual file, including a structured skeleton layout for future detailed sections and content. Created research files and in-depth description of design for the add-sub module.
  - Conducted research on the original Atanasoff-Berry Computer (ABC) design to better understand its architecture, logic flow, and implementation principles, specifically in reference to the add-sub module and the binary conversion drum.
  - Began brainstorming the design for the binary converter, outlining potential circuit approaches and integration points within the larger system.
- Kyle
  - Worked with VHDL to better understand how we can use it better and think about how we will implement future designs and components of the ABC.

Pending Issues

- No pending issues

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Gavin Bunker	Created technical manual file with skeleton layout and notes for add-sub module, researched ABC design, and brainstormed binary converter design	9	35
Ryan McFadden	Experimented with improving our website and learned more about html design	3	27
Samuel Schroeder	PCB redesign, design a team logo, and meeting with the previous replica team	7	39
Vance Arnold	Practiced KiCad schematic and PCB design, attended PCB workshop, researched ABC replica.	4	30
Bryan York	Small edits to FAS PCB module, and researched different components/practices for PCB design.	12	43
Kyle Koch	Website and research into the VHDL and its usefulness and formatting.	3	29

Plans for the Coming Week

- Send Gerber files for the adder/subtractor module to ETG for final review and production.
- Buy the electrical components, like chip sockets, that we will need to assemble the add/subtract PCB once it is printed.
- Split into two groups and begin designing the binary conversion drum and memory drum circuits.