EE / CprE / SE 491 – sdmay26-12
ABC with Modern Components
Report 5

10/22/2025 – 10/28/2025
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 develop a comprehensive design for our ABC recreation, incorporating all the information and research we have conducted so far. Creating this design will help us in the coming weeks as we begin to design and build other modules, now that we have completed the add/subtract module. Additionally, it will enable us to create a VHDL simulation of the ABC replica to validate our module and system designs. In addition to this comprehensive design, team members researched the various modules, skills, or technologies that they will need for their next project assignments.

Past Week Accomplishments

- Full System Design - whole team
  - Created a full system design for our ABC recreation, incorporating information from the previous team's design and client input.
  - Identified all necessary modules and how they interact and communicate with each other.
- Vance
  - Ordered parts, including 7-segment display, decade counter, various connectors, and EEPROM chips.
  - Researched code memory design for implementation into our project.
  - Researched a clock circuit design for implementation into our project.
  - Finalized KiCad PCB workshop design for PCB and KiCad SW practice.
- Ryan
  - Investigated how we can go about programming our EEPROM chips for the binary to decimal conversion drum and what a good way to test that we have successfully programmed them would be
- Bryan
  - Finalized PCB workshop design for production.
  - Ordered add/subtract PCB
- Kyle
  - Starting to look into how we can implement our entire design of the ABC into VHDL,

including how to get the model to work and how to verify our design of the ABC is actually going to work as we expect it to.
    - Read through all the material shared with us by our client
- Gavin
    - Continued work on the technical manual for the add/subtract module
- Samuel
    - Created diagrams for the system design we created
    - Researched the previous team's design of the timing drum, control circuit, and binary conversion table to help create the system design and prepare for our next module prototypes
    - Reviewed the material our client sent us about clock circuits and the counter chips that could be used for the base-10 output module

Pending Issues

- We are waiting for our EEPROM chips to arrive so that we can continue learning about programming them for the binary conversion module.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Gavin Bunker	Technical Manual writing, system design	3	38
Ryan McFadden	EEPROM investigation, system design brainstorming	5	32
Samuel Schroeder	System design, creating technical diagrams, researching module designs	6	45
Vance Arnold	Ordering parts, researching code memory and clock designs, and finished KiCad PCB practice workshop designs for ordering.	6	36
Bryan York	System design, PCB workshop design, PCB ordering	3	46
Kyle Koch	System design and VHDL research	3	32

Plans for the Coming Week

- Kyle and Vance - start work on creating the components that will be needed for our VHDL simulation of the ABC
- Ryan - practice programming EEPROMs and start designing the binary conversion module
- Gavin - follow the client's instructions for prototyping a clock circuit
- Sam and Bryan - start building a prototype to test the counter chips that will be used for the base-10 output module
- Order more parts for assembling and connecting our PCBs once they are finished