Problem and Users

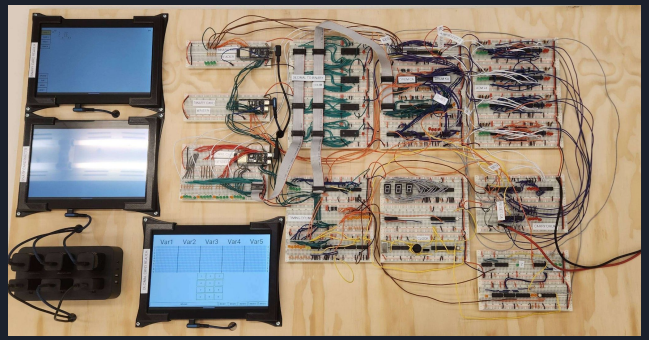


ABC with Modern Components

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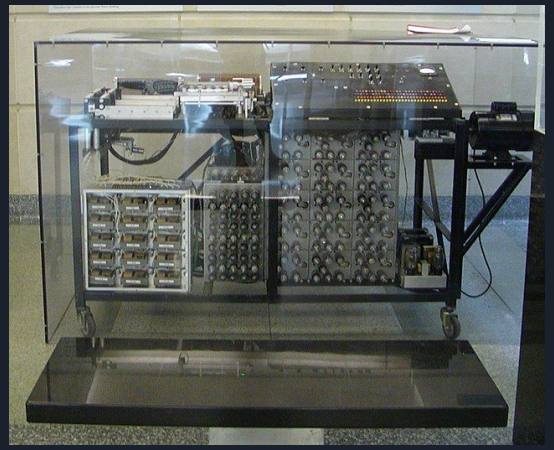
Project Overview

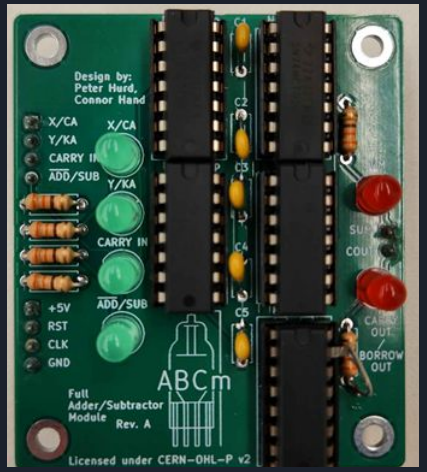
- Implement the ABC computer with modern technology (Phase 2)
  - The Atanasoff-Berry Computer (ABC) was the first electronic digital computer.
  - It was built at Iowa State in the late 1930s to solve systems of linear equations.
  - The original ABC was destroyed in 1948, but its legacy lives on.
  - Phase 1 recreated the ABC using breadboards and software for educational use.
  - In Phase 2, we are improving the design and functionality:
    - Upgrading the user interface for better interaction.
    - Designing and adding custom PCBs to organize the hardware.
    - Using an FPGA to simulate the ABC's logic more accurately.



Problem Statement

The ABC is an important piece of ECP E history at Iowa State University, which is no longer located on its campus. With today's technology, we are able to functionally recreate the ABC for much cheaper and provide an excellent visual for students learning about computer architecture and a tool to show off during campus visits, or open house events.





Users

Computing Teachers

- Teach students about computer history, digital logic, or computer architecture
- Use the ABC recreation to demonstrate theoretical class concepts in practice

Computing Students

- Learn about computer history, digital logic, or computer architecture
- Use the ABC recreation to better understand the concepts taught in class and see the practical application of what they are learning

Computing Enthusiasts

- Interested in computing history, digital logic, or computer architecture
- Use the design of the ABC recreation to learn about these topics
- Build a recreation for themselves

Design Needs Tailored for Each User

Computing Teachers

- Accurately recreate the digital logic of the ABC
- Be relatively intuitive to operate and demo to their classes (with relevant documentation)
- Be fairly portable

Computing Students

- Be aesthetic and interactive to engage students
- Have visual indicators for the operations the computer is making

Computing Enthusiasts

- Stay true to the historical logic of the ABC (when feasible)
- Document our research and development well for others to learn from

Conclusion

Overall, we have determined the problem we are solving with our project and who our users will be. We hope with this project to continue the hard work of the group before us and carry on and finish the ABC computer, so we have a more modern example for both teaching and learning.

