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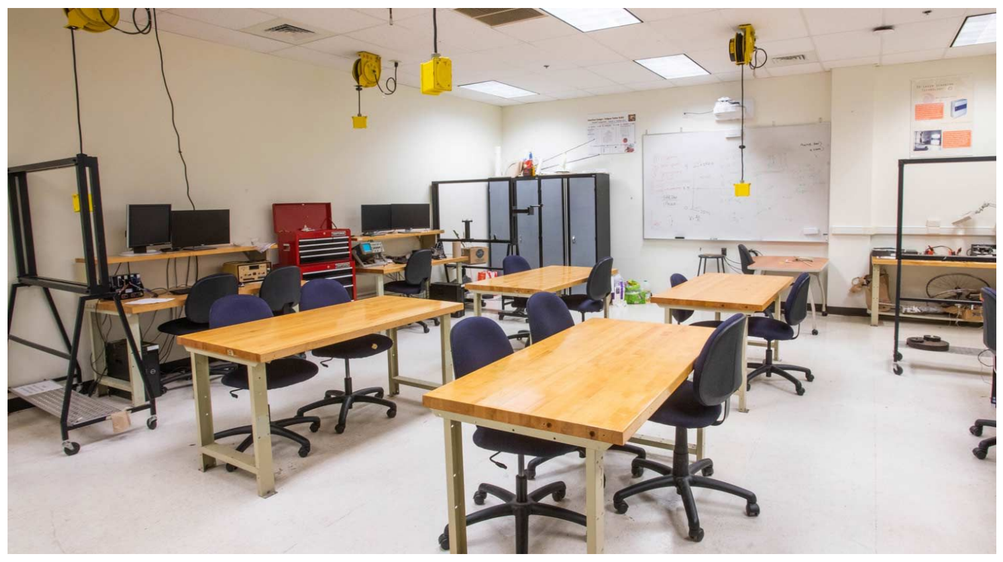
AR/VR Circuit Logic Design

P21315

Problem Statement

For many students and engineering departments the only way to learn about, test, or prototype circuits is in a lab with physical lab equipment. Not only is this limited in its flexibility, but it's also expensive to maintain and replace lab equipment.

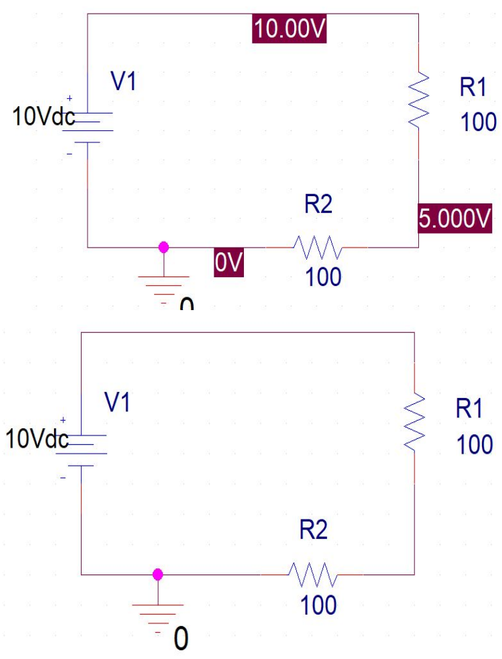


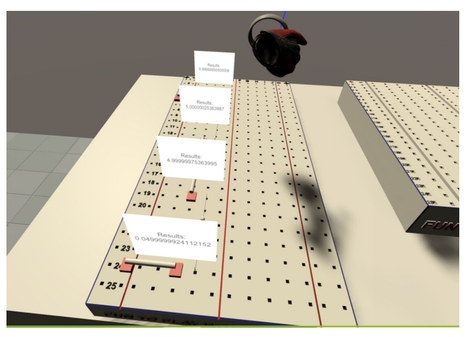
Project Requirements

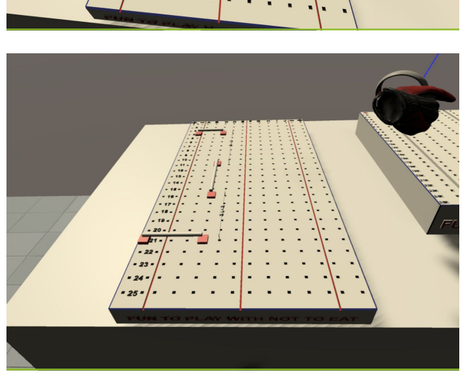
- The creation of an environment where circuit could be designed and simulated.
- The creation of an vibrant lab scene with intractable props.
- The program should feature a multitude of working components and analytical equipment.
- The creation of a tutorial mode for new players.
- Informative feedback and In depth instructions
- Player will receive visual and audio feedback from interactions.
- The creation of intuitive UI.
- Presentation of simulation results

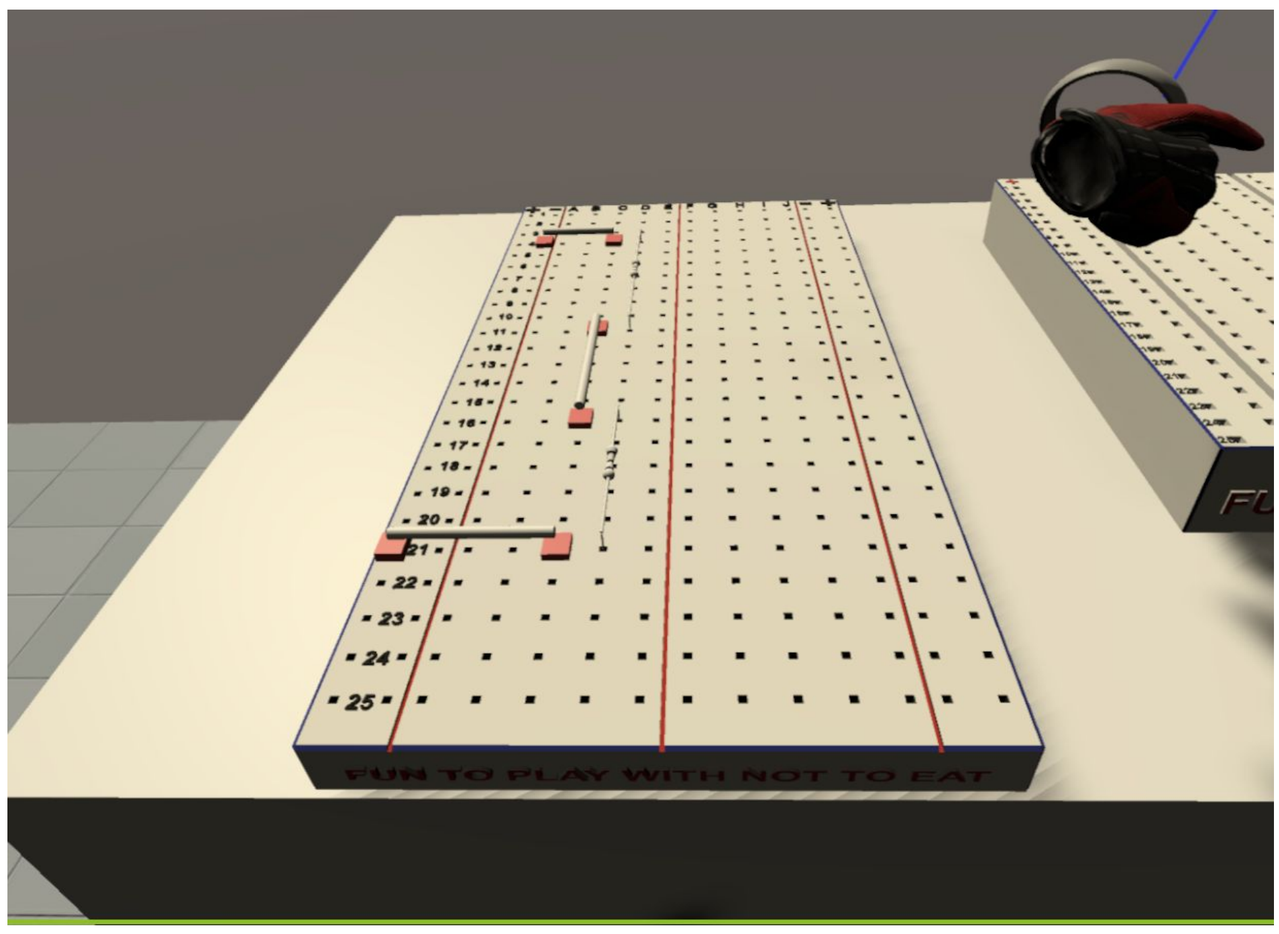
Circuit Creation and Simulation

When a circuit is created the program keeps track of the components that are added to the breadboard. This allows the components to be replicated in our backed circuit simulator called CircuitSim. The results are then displayed on a custom UI which appears on each active node of the circuit.



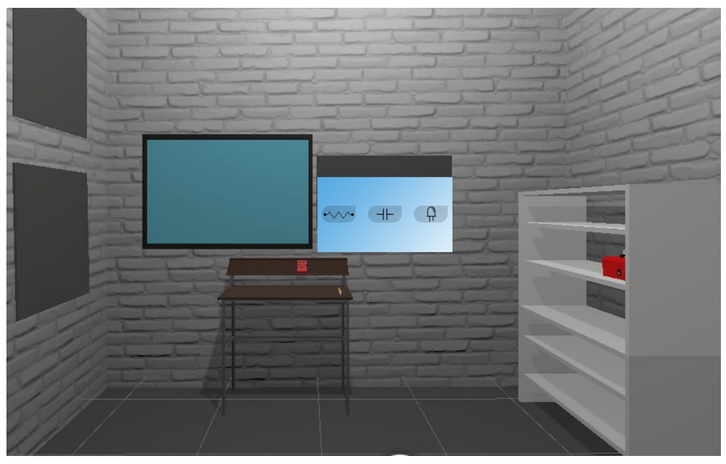


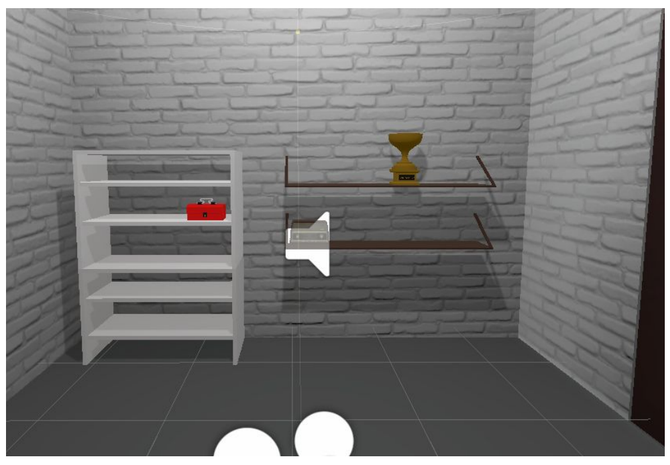


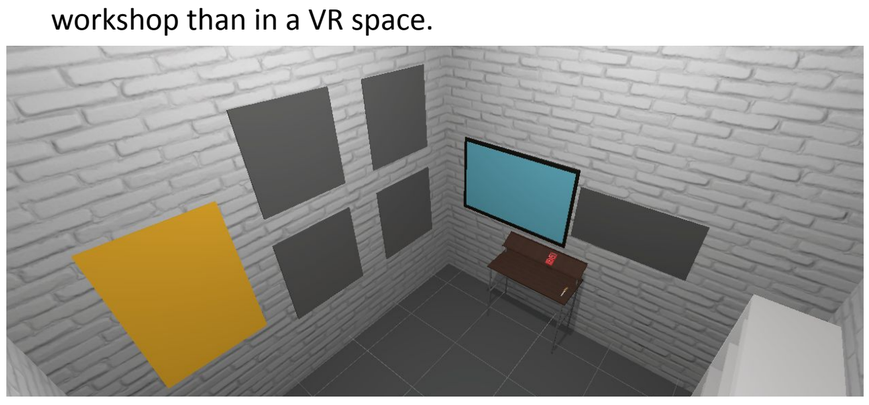


Tutorial

- This tutorial is meant as an introduction to both the games mechanics as well as the basics of circuit creation
- The player will make three circuits. This includes one that uses 1 resistor, one that uses multiple resistors in series, and one that uses multiple resistors in parallel.
- The environment also features things such as music and props to make the player feel more like they are in their own workshop than in a VR space.







Unity and Steam VR

For this project we used Unity in conjunction with Steam VR as our main development tools. Steam VR allowed us to integrate virtual reality into the project.

+ unity

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