

#### Overall Project:

The project is going to be to make a talking calculator that uses text-to-speech, supports high-level math, has tactile indicators on the buttons, and is modular. My part of the project is going to be writing the C++ code that runs on the microcontroller to calculate the equations, speak through the various audio outputs, etc.

#### Necessary Research:

I'm going to need to research how to write C/C++ code for microcontrollers (particularly the ESP32), how to deploy it when the IDE is inaccessible, many more fundamentals of audio output (at a very low level) for outputting to the speakers, and memory management. Memory is a precious commodity, and I'll have to figure out how to not waste it.

#### Technology Required:

I'll be using C++, CMake, VS Code with the ESP32 extension, eSpeak, audiotools, and a library for some of the mathematical computations.

#### End Project:

We'll have a physical model of the calculator, code samples, and sketches done during development.

#### Project Objectives:

- \* Learn how to write C++ code for microcontrollers.
- \* Get an awesome project on my resume
- \* Improve math for blind people
- \* Majorly improve my teamwork abilities, especially as far as code collaboration goes
- \* Learn how to write code to output through the speakers and low-level audio hardware.