

Project Proposal

Project:

Calculator with audio effect, implemented by a keypad, a peripheral stereo, and a display screen connected to STM32L476G

Team:

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Overview:

This project aims to design an arithmetic calculator which is able to perform addition, subtraction, multiplication, division, reset. The board receives the input from the keypad to the STM32L476G and extracts the operands and operators, displays the input on the screen, performs calculation, and finally gives out the results on the screen, which is also interfaced to the STM32L476G. When pressing the key on the keypad and displaying the result, there will be sound effect played from the stereo.

Peripherals:

1. Keypad - Grayhill 88BB2-072

<https://www.digikey.com/product-detail/en/grayhill-inc/88BB2-072/GH5016-ND/210423>

2. Display - JANSANE 16x2 1602 LCD Display Screen

https://www.amazon.com/JANSANE-Arduino-Display-Interface-Raspberry/dp/B07D83DY17/ref=sr_1_2?crd=1VNVEDOP3GVLO&keywords=lcd+display&qid=1581382279&sprefix=LCD+displa%2Caps%2C210&sr=8-2

3. Output Stereo - SoundCore Bluetooth Speaker

<https://www.anker.com/products/variant/soundcore-bluetooth-speaker/A3102011>

Block Diagram of the system:

Goals:

We will learn how to connect different peripherals to STM32L476G in this project, in the end, we will use keypad to calculate some simple formulas, and show the result on the LCD screen. Also we want to add different voice to each key. When pressing the key on the keypad, because the codes will start working and correct connection, there will be displaying the result, sound effect played from the stereo.

Stretch Goal:

Responsibilities:

Yuxiao and Ming are responsible for all the pin assignment and other hardware configurations. Yuxiao will be doing a little more of the software job.