Elian Fernandez, 823256194

Project Summary:

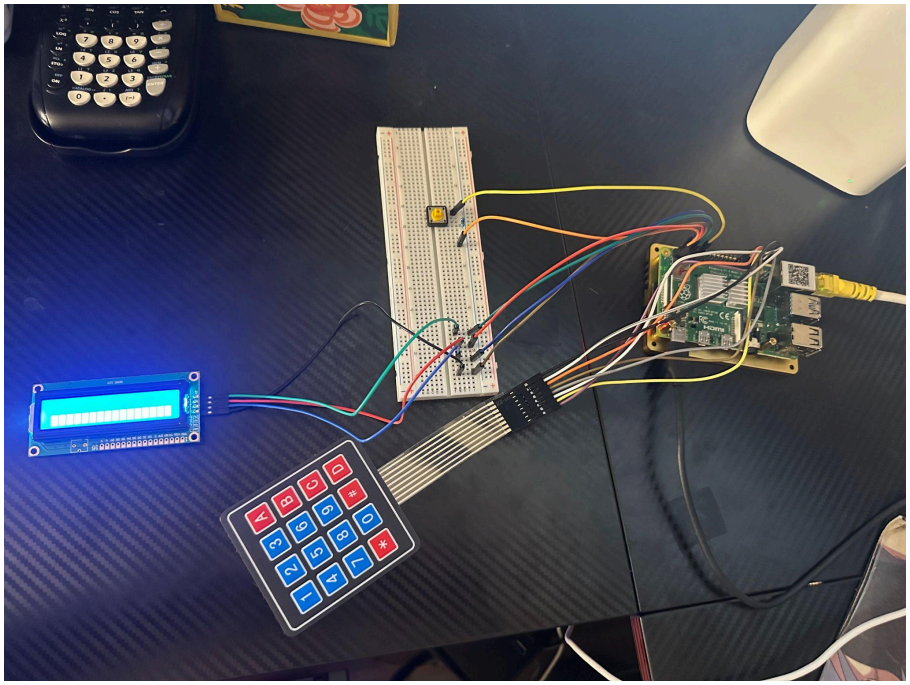
My object code calculator is a perfect substitute for having to pull out your code instead you pull this calculator out and you are able to decipher object code within seconds .

Hardware:

- Raspberry Pi
- LCD screen with I2C interface
- Membrane keypad with four buttons
- General Purpose Input/Output (GPIO) pins for user input and LCD control

Software:

- Python libraries:
- RPi_I2C_driver: for LCD communication
- RPi.GPIO: for GPIO pin control
- time: for timing operations
- https://circuitdigest.com/microcontroller-projects/interfacing-i2c-lcd-and-4x4-keypad-with-raspberry-pi-zero-w
- The above is a link to a guide that i followed which enabled me to communicate with the i2C display using python



Input Handling:

- Accepts user input of object code instructions through sixteen keypad buttons.
- Each button corresponds to a specific hexadecimal digit.
- Users can press a button located on the breadboard to stop further input.

Data Processing:

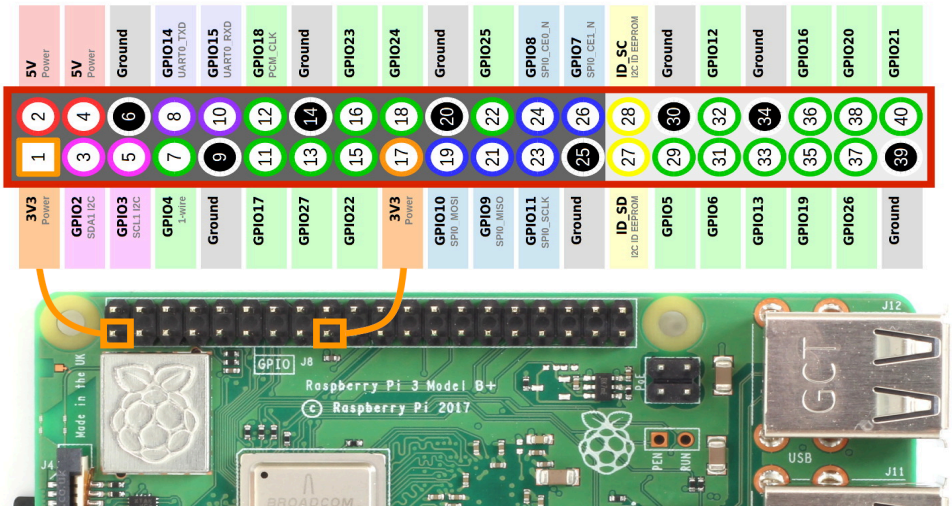
- Identifies the instruction format (2, 3, or 4).
- Decodes the object code and outputs the mnemonic, addressing mode, operand, and format
- Validates the instruction and displays an error message if invalid.

Output Display:

- Displays the following on the LCD screen:
- Displays an error message for invalid instructions.
- For format 2 instructions the lcd will display the object code followed by the format on the first row and the mnemonic on the second row
- For formats 3 and 4 the first row of the lcd will display the object code followed by the format “F:” followed by the addressing mode on the second row we will see the mnemonic followed by the operand for the addressing mode

Diagram

- This diagram will be necessary for the implementation of the I2C display and the keypad membrane please come back and refer to it in the readme



Video link

https://youtu.be/FKI5eifYyJM?feature=shared