TinkerTech Labs Assignment Documentation

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Project Timeline

- June 09, 2021
  - GitHub repository created and started working on the project.
  - Went through the fundamental concepts and working of SSD1306.
  - Used a simulation of the system to get accustomed to working with the display device.

- June 10, 2021
  - Required components were procured to start working on.
  - Basic text displaying code was written.
  - A code to scroll the text was written where we use a for loop to change the cursor position continuously.
  - Encountered **Problem 1**.
  - Problem resolved and the code has been updated.
  - Encountered **Problem 2**.
  - Video for demonstration made and uploaded on GitHub Repository

- June 11, 2021
  - Documentation and GitHub repository submitted.

Bug Report

- **Problem 1:** Till when to scroll the screen.
    - The problem faced was that the screen was scroll down even after the text has completely disappeared and this is a problem as it is supposed to stop scrolling once the end of the text was reached.
    - To solve this problem a formula was devised to find the end value for the **for** loop used in the program.
    - It was observed that at max, every line on the SSD1306 can accommodate 20 characters and at once it can display 4 lines.
    - Since the display is a 128*64 screen and the screen can display 4 lines, each line takes 16 lines pixels (64/4 = 16).
    - We can find the length of the string and calculate the number of lines required to display the code. Let us store this value in the variable **b**.
    - Since the first lines are displayed at the start, the number of lines yet to be displayed are **b – 4**.
    - Now in order to display the complete text, the screen has to scroll the pixels (**b-4)*16** times. Let us store this value in the variable **c**.
    - Therefore, we initialize the value of the **for** loop from 0 to -c.
        - for(int i = 0; i <= -1*c; i++){
            ----Code----
            Display.setCursor(0,i);
            ----Code----}
        - This will decrement that value of y axis from 0 to -c.

- **Problem 2:** Limitations in the amount of text a variable can store.
    - Input from the serial monitor was being stored in the SRAM which has limited memory space. Hence only up to 800 characters of text is being able stored.
    - To solve this problem, the string was initially stored in PROGMEM (Program Memory). However, this failed as program memory is a read-only memory and hence writing the stored variable is not possible.
    - The next step was to store the variable in Flash memory and then check if it is working.
    - **Problem yet to be resolved.**