Stage 2: Planning and Getting Started

Part 1: Key Planning

1. **ASK:**

- **Needs:**
  - A timer that has a maximum user input of 9m and 59s.
  - Press A = Start the timer.
  - Press B = Stop/turn off timer.
  - Press D = Input time.
  - Once value is entered, LED lights up.
  - LCD will display time remaining of the timer and once timer stops, displays 'Times Up'.
  - Once 'Times Up' is declared, multiple LEDS will turn on.

- **Constraints:**
  - One of the noticed constraints is that it must run 'forever'.
    - What is 'forever' in a finite time system?

2. **RESEARCH/IMAGINE**

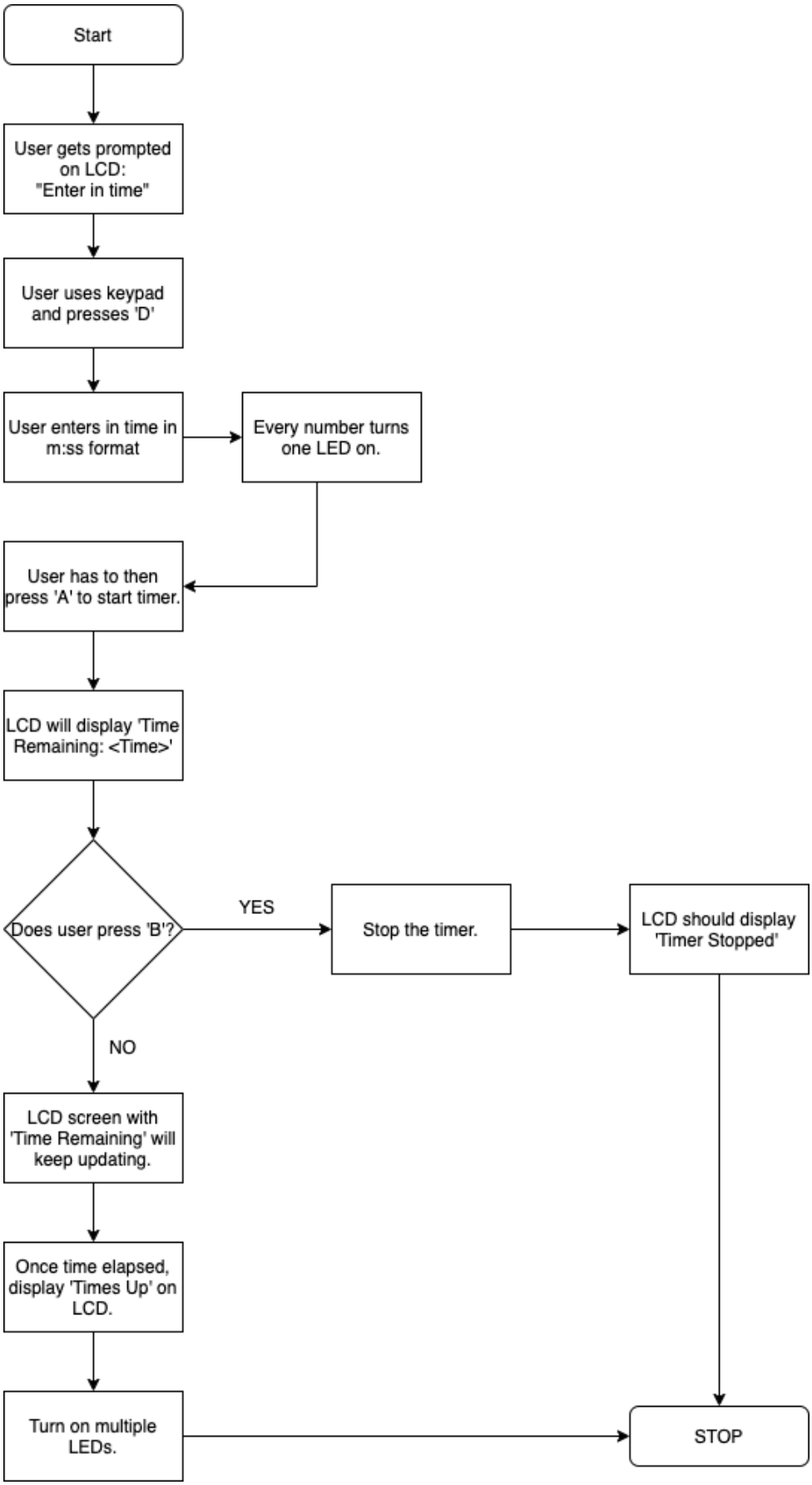
The external peripherals added to Nucleo:

1. LCD screen
2. Keypad
3. LEDs
4. Solderless breadboard
5. Jumper wires

Initial planning process:

- Make appropriate connections to peripherals with Nucleo.
- Configure system timer.
- User should be prompted on LCD to enter in timer time.
- To input time, they have to first press D, following with the time that they want to set it to. The maximum that they can go up to is 9 minutes and 59 seconds. Every time they type in a number, an LED will light up.
- Once they enter in the time, they can then press A when they want the timer to begin.
- Once the timer begins, they can press B at any time to stop or turn off the timer.
- As the timer counts down, the LCD should display 'Time Remaining: < time >"
- Once the timer ends, the LCD will then display 'Times Up', consequently multiple LEDs will turn on.

3. PLAN


Start
User gets prompted on LCD: "Enter in time"
User uses keypad and presses 'D'
User enters in time in m:ss format
Every number turns one LED on.
User has to then press 'A' to start timer.
LCD will display 'Time Remaining: <Time>'
Does user press 'B'?
YES
Stop the timer.
LCD should display 'Timer Stopped'
NO
LCD screen with 'Time Remaining' will keep updating.
Once time elapsed, display 'Times Up' on LCD.
Turn on multiple LEDs.
STOP