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The process:

This program’s base is the loop: right after main: This loop checks the current state of the program: 0 being a new number is chosen, 1 being the process has been paused by the D key, and 3 for the process has been resumed after being paused. The state is all handled in the interrupt KEY\_ISR by look at the inputted value on the keyboard. The interrupt evaluates many things once called. First off, the state is recalled so that the recent inputs can properly be implemented as desired. Such as, if the state is 1(currently paused) it will acknowledge this and branch to the controls point. If the state is 0, then the control keys will be ignored except for the pause button. In this 0 state the interrupt continues down and locates and places the first location for the led. Also found in this section is the max and min LED location that the input value can travel to. This is what the timer uses when the LED is shifted to max, min, and base values. A value is set so that the time it takes for the LED to travel is different for the 3 respective distances. It then edits the stack pc to return to the main loop. This is done so it will always go to the max LED location after a new number is input.

The travelling of the LED’s is handled by 4 methods: Max: Min: back\_2\_base: and back\_2\_base1. These work by keeping a counter of the current value of the LED location and compares it to the max, min, or base value and shifts it until the branch condition is met. Each of these methods have a locator variable that is changed after the pc enters the method. This is done solely for the resume function of the project. The main loop looks to see if the state is 3, if so it goes through a series of if statements involving the locator variable. If the locator variable matches it branches to that method.

The delay it implemented using the TSCR,TFLG2, and the cycle variable that is set in the interrupt. This is branched to every time the LEDS variable, is shifted. So that is easily viewable that the LEDS are controlled via the cycles variable.