

EE112 Project

STOPWATCH

Group 7 | Introduction to Electronics | April 10, 2018

Team Details

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Block Diagram

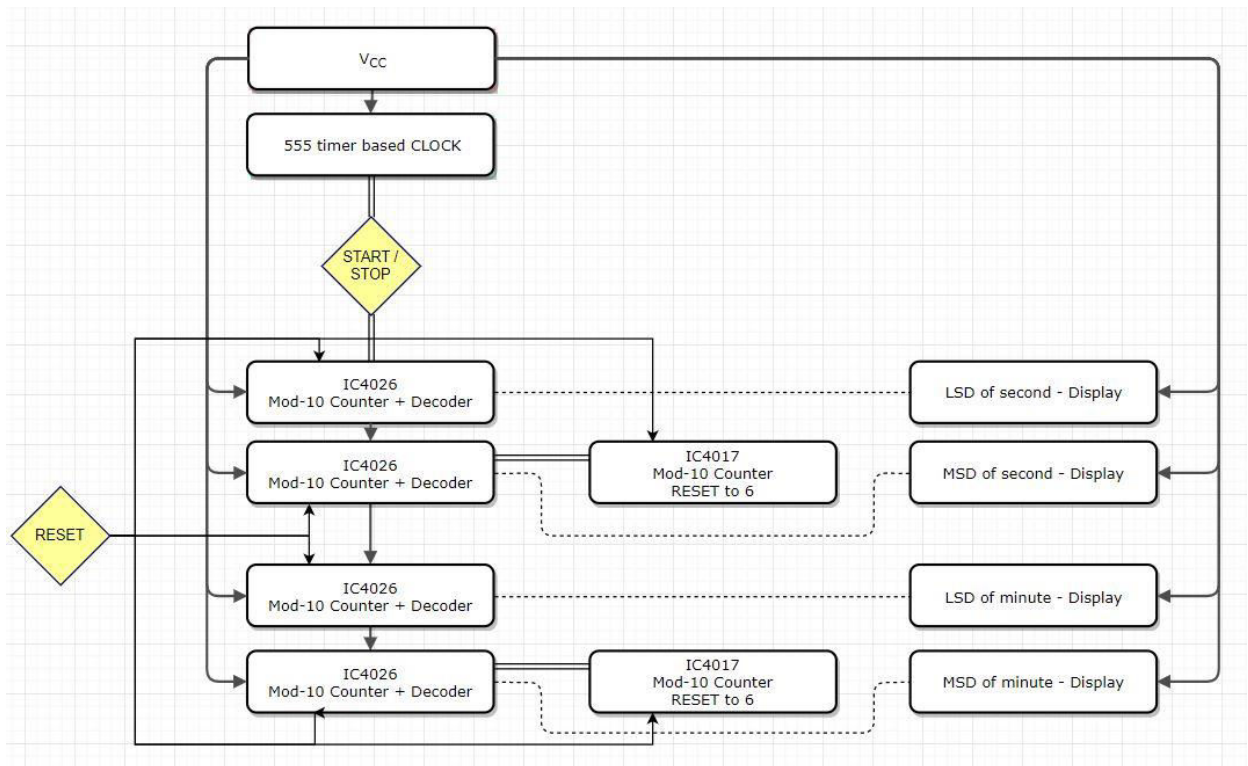


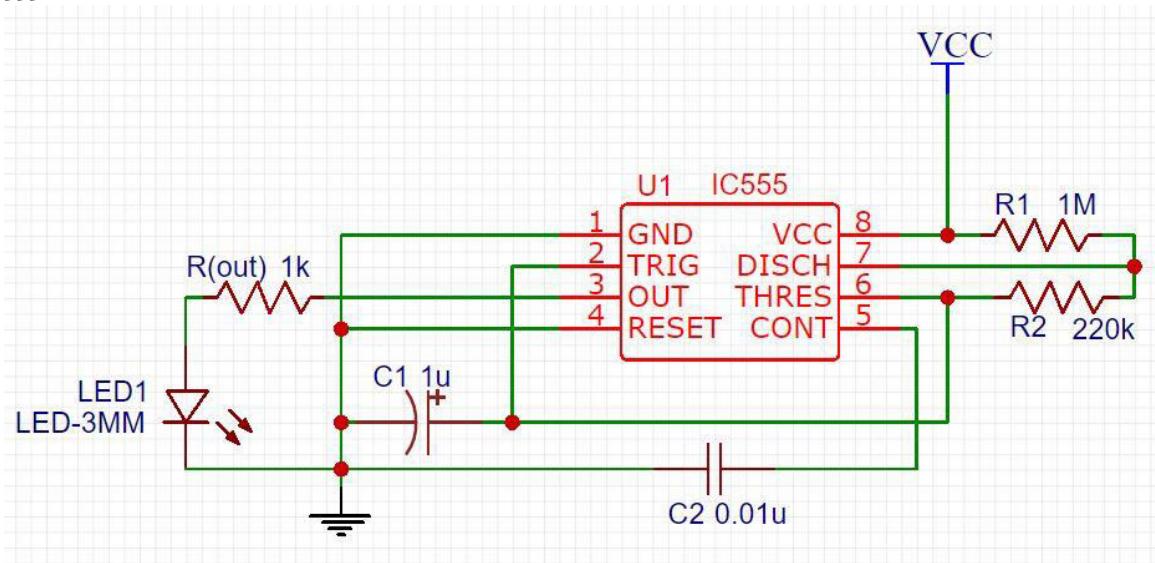
Diagram Description

- V_{CC} refers to the input voltage supplied with respect to the ground connection.
- The circuit runs on a 1-second-timed clock using a 555 timer IC.
- The START-STOP mechanism uses a push button which in turn flips the output value of a J-K flipflop, hence opening or closing the connection between the clock and V_{CC} .
- IC4026 has been used as the major counter for the circuit. Moreover, this IC embodies a decoder and hence can be directly used to connect the a-g connections required for the 7-segmented LED display.
- IC4017 has been used as a minor counter for the circuit. This IC helps in supplying a high to the RESET of the 4026 when it hits the sixth count, hence making that particular counter system mod-6.

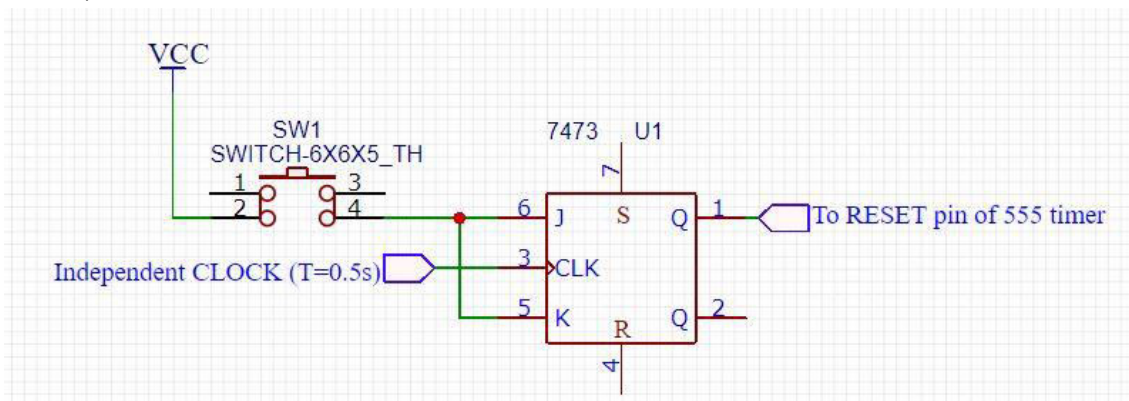
- As mentioned in #4, 7-segment LED displays have been used for the required mm-ss display mechanism.
- A RESET push button resets all IC4056 and IC4017 counters to value 0 and hence all four displays show the value 0. The RESET button is connected to the 6th pin of second 4017 ICs through a forward-biased diode so that current does not flow from the 6th pin back to the RESET button, which would have forced the other displays to reset as well.

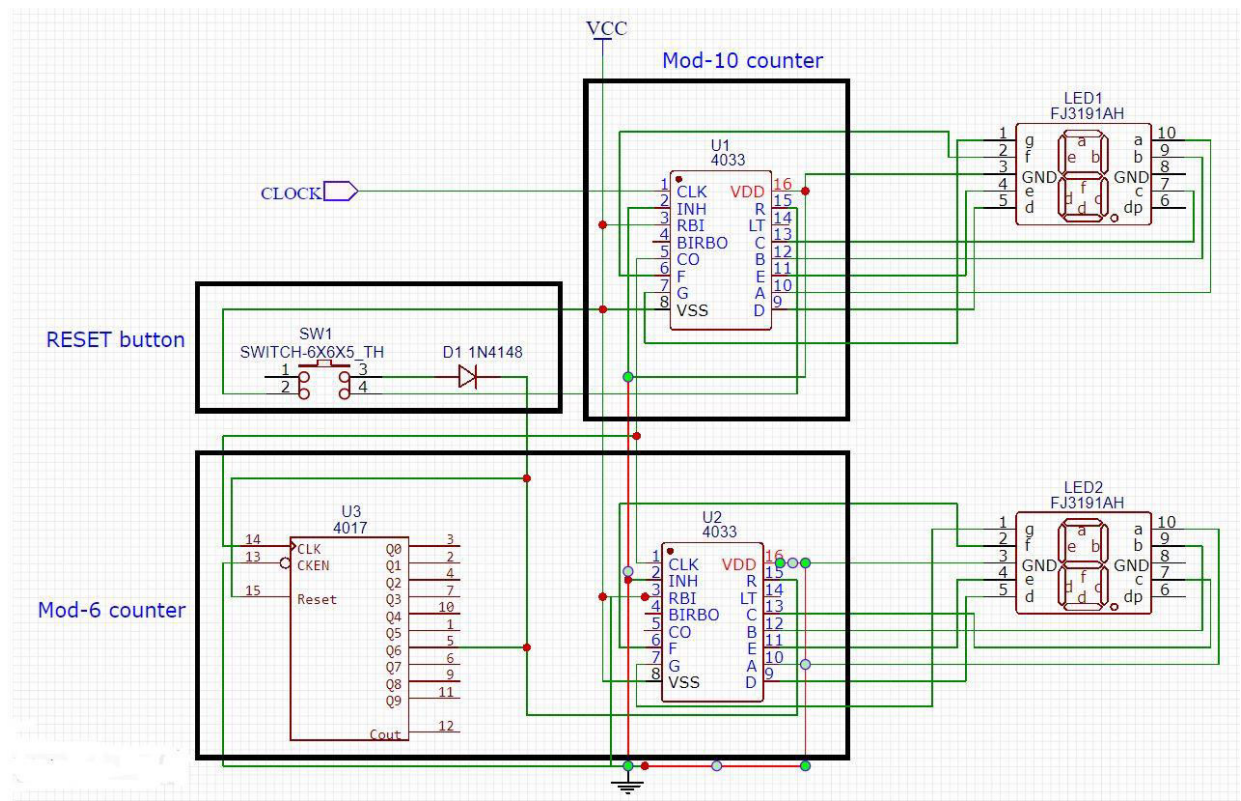
Block Circuits

1. 555 timer-based clock



2. START/STOP mechanism





3. Mod-10 and mod-6 counter circuit (RESET attached)

Component List

1. ICs
 - a. IC4026
 - b. IC555
 - c. IC4017
 - d. IC7473
2. Display – 5503 common cathode 7-segment display