Digital Stopwatch

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Abstract

Here we present the design and implementation of a digital stopwatch using a 555 timer as the clock source. The stopwatch displays time in minutes and seconds, utilizing basic digital electronics components such as counters, decoders, and seven-segment displays. The 555 timer is configured in astable mode to generate a clock pulse with a frequency of 1 Hz, serving as the time base for the stopwatch. A series of 60-second counts is accumulated for the seconds, and upon reaching 60, a minute counter increments. These counters are implemented using combination of binary and decade counters, and the output is decoded and displayed on four seven-segment displays, two for minutes and the other two for seconds. Control functionalities include start, stop, and reset buttons are also present to control the operation of the stopwatch.

Project Estimate

Components	Quantity	Approx. Cost
7447 - 7 segment decoder	4	80
7408 - AND gate	2	20
7432 - OR gate	2	20
7404 - NOT gates	1	15
7490 - decade counter	2	70
7493 - 4bit counter	2	70
555 timer	1	15
Breadboard	4-5	∼200
Capacitor	4-5	∼20
Resistors	35	∼40
7 segment display	4	120
Potentiometer (100k)	1	20
Total		∼ 690