DIGITAL STOPWATCH

Abstract:

Stopwatches find use as time keeping device in many fields, namely sports. Stopwatches may be analogue or digital. Its function is to find out how long it takes in an activity. Digital stopwatches are much more common the analogue version owing to their higher accuracy and ease of use. Here we have tried to realize a digital stopwatch of reasonable accuracy and reliability. The circuit is relatively simple and easy to realize. The circuit uses counter and decoder stages. Furthermore, uses a seven segment LED to display time.

Problem Introduction:

Stopwatches can be classified into two categories:

1- Which consist of digital design employing quartz oscillators and electronic circuitry to measure time intervals.
2- Which have analogue design and use mechanical mechanisms to measure time intervals.

A portable device known as Stopwatch is a device which is easy to use to find the elapsed time. The device is used when time periods must be measured precisely. This device supports wall clock, CPU clock as well as the breakdown of the CPU clock. This must return times in seconds. We have used this scenario to apply on our project as it is common now adays and by this it will be easier for all of us to understand the basic understanding of the working behind a stopwatch.

Problem Faced:

There were a lot of new things to learn in this project. After great research when we started to implement logics on the project everything seems easy. But the problem came at the last moment that our stopwatch was not stopping and pausing. This was the major problem, but after studying and discussing with group members we were able to solve this problem. In the end we got the result as per our will.

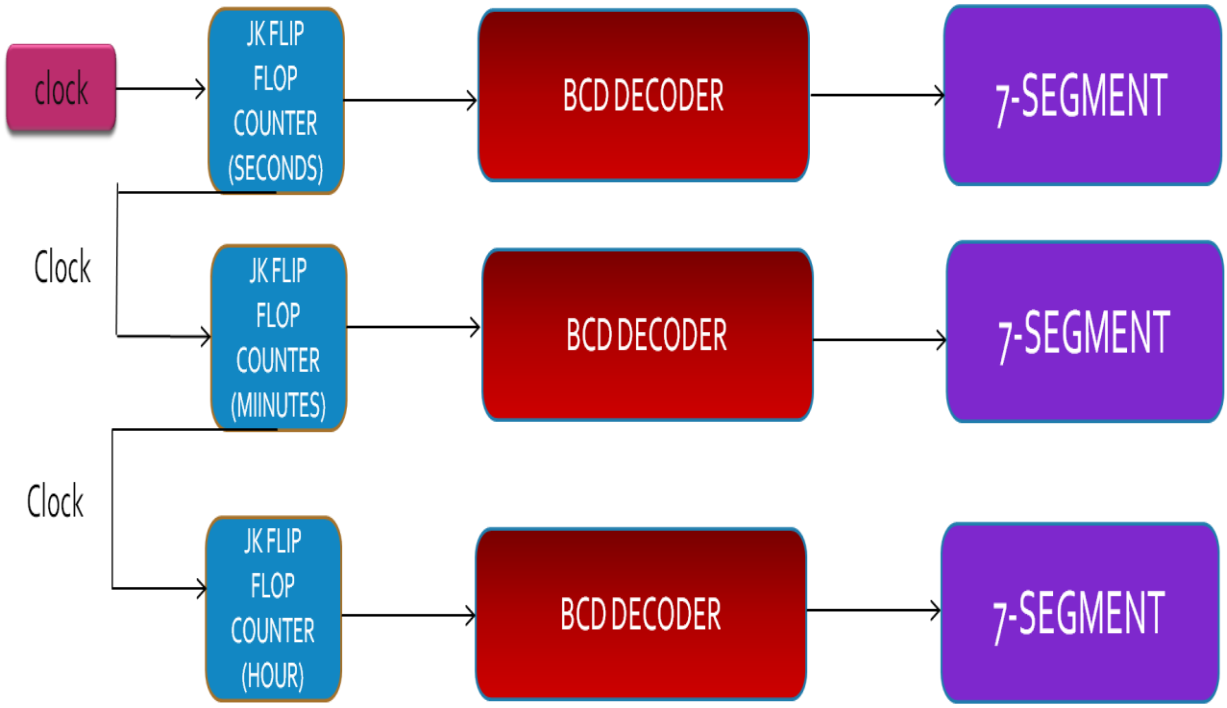
Methodology:

Components used are 3 & 4-bit JK flip flop as the synchronize counter. These will help counting the numbers which will be sending to the BCD decoder. NOR and NAND gate used

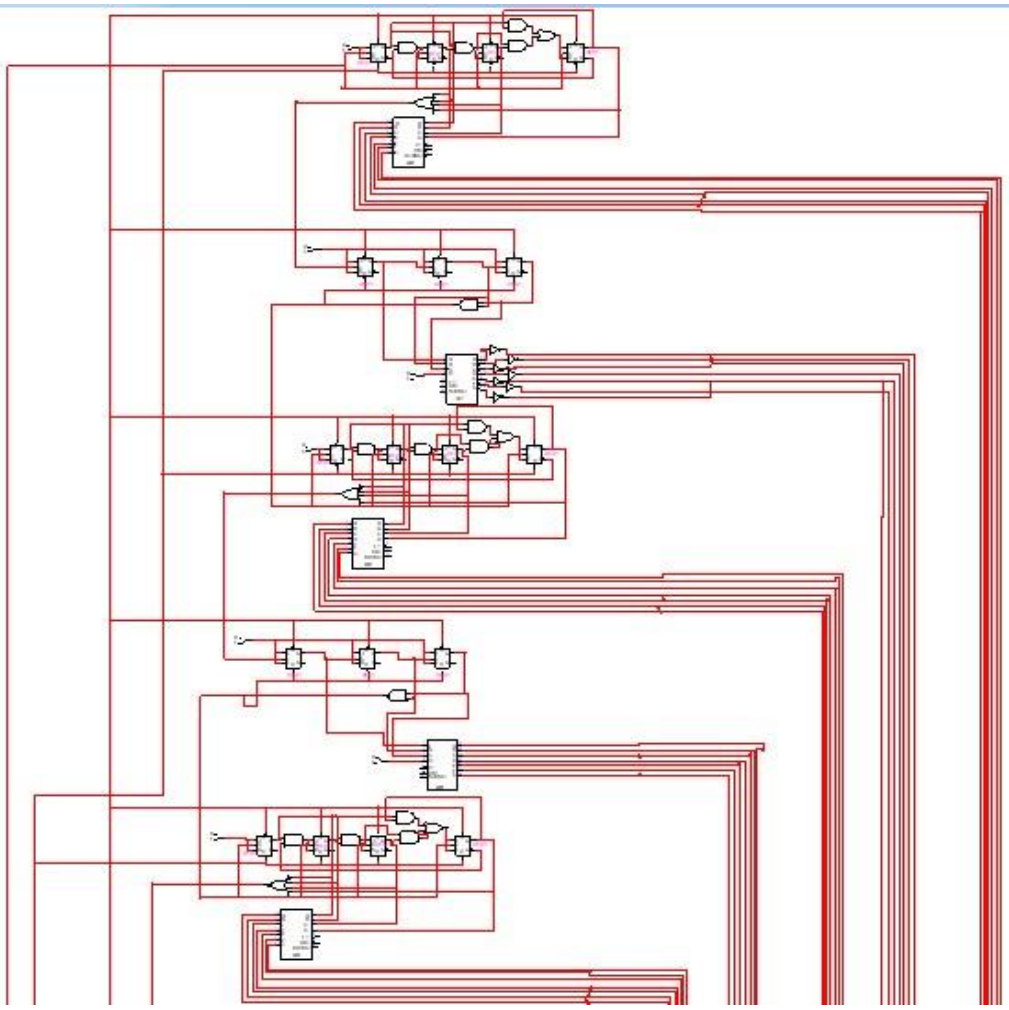
for clock for minutes and hours and clock for seconds. 6 7 Segment Display are used. This is used to show the presentation of time period. In further we have used a SPST switch for pausing the clock and more switches to reset the stopwatch.

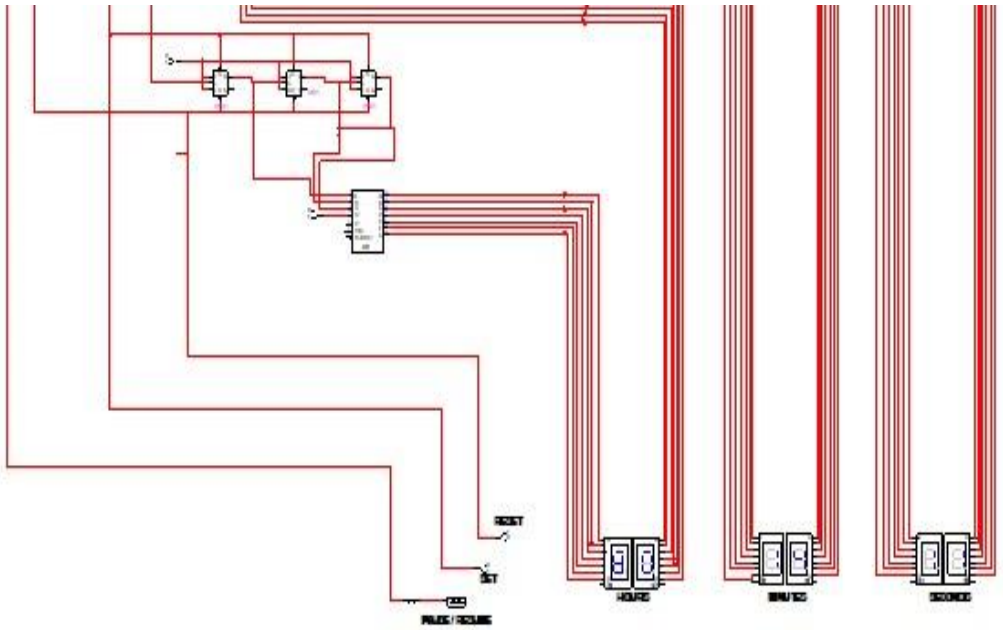
Circuit:

Stopwatch Flow Diagram:

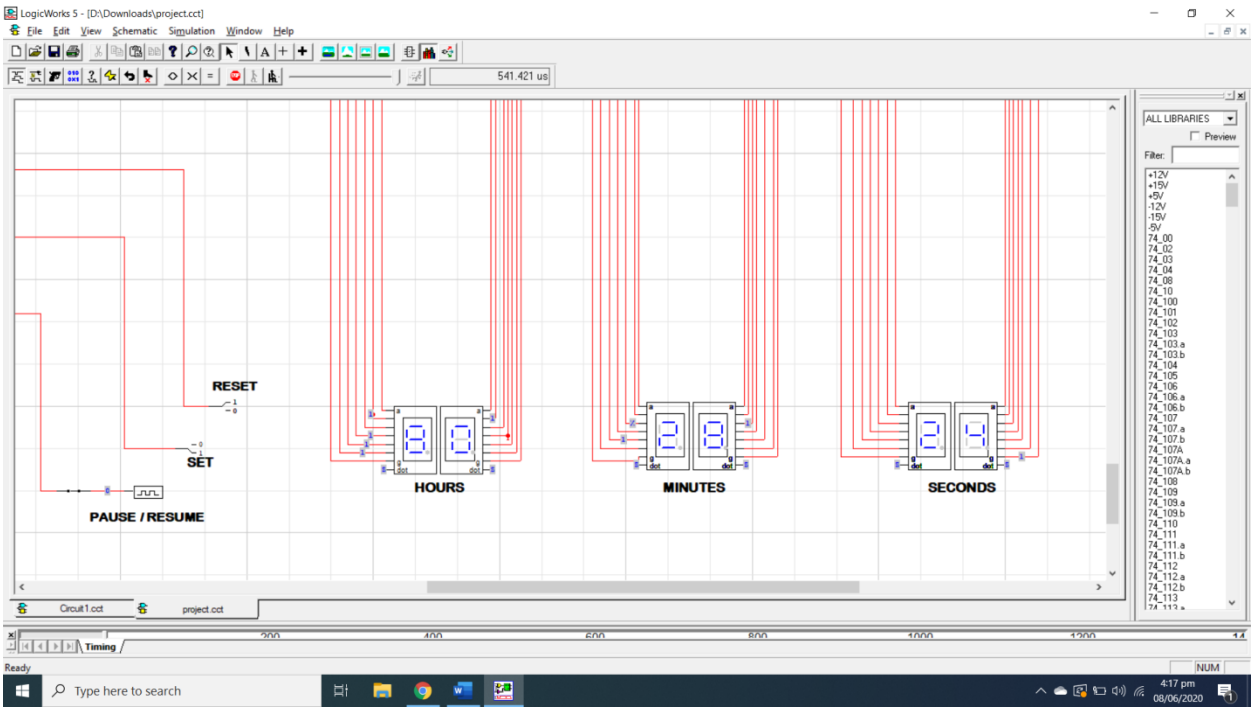


Stopwatch Circuit Diagram:





Output:



Conclusion:

After completion of this stopwatch project I have learnt some knowledge in designing the circuit and understood the coding process. The circuit has been implemented software based and can be link with many different things in future. This circuit can operate in two modes with play and pause switches.

References:

https://microcontrollerslab.com/digital-logic-design-projects-list/

https://nevonprojects.com/digital-electronics-projects/

These sites help us giving the better idea and helped us in solving our problems.