Assignment 6

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This assignment is built over Assignment 3.

Design

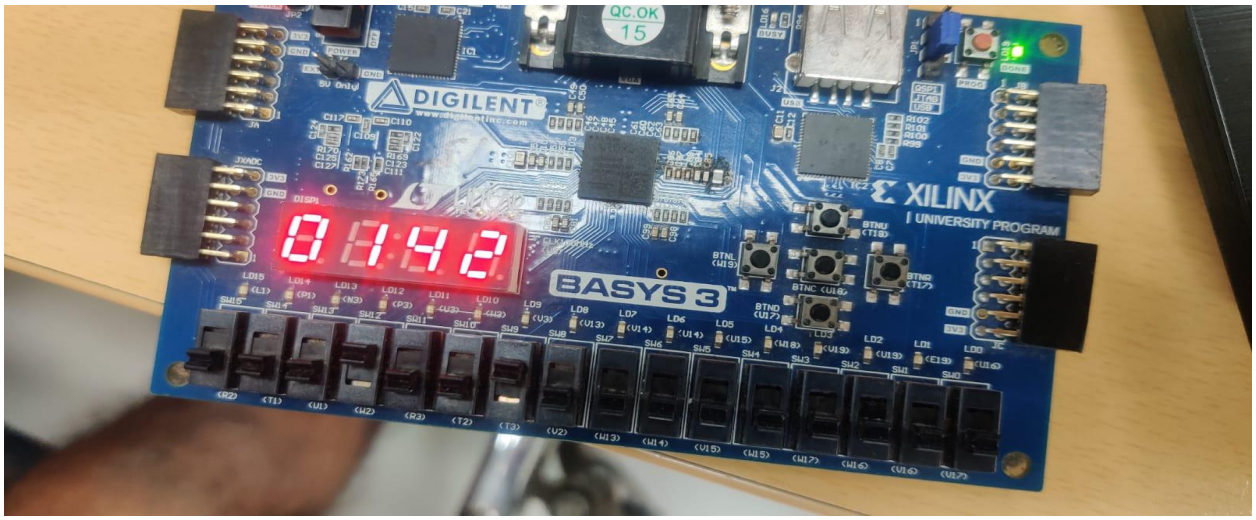
We will add four local integers and 4-bit vectors.
Each pair of integer and vector will calculate one LED.
The first pair will calculate 100 milliseconds, the second will calculate 1 second, the third will calculate 10 seconds and the fourth will calculate 1 minute.
We also added 3 buttons to start, stop and reset the stopwatch.

CIRCUIT

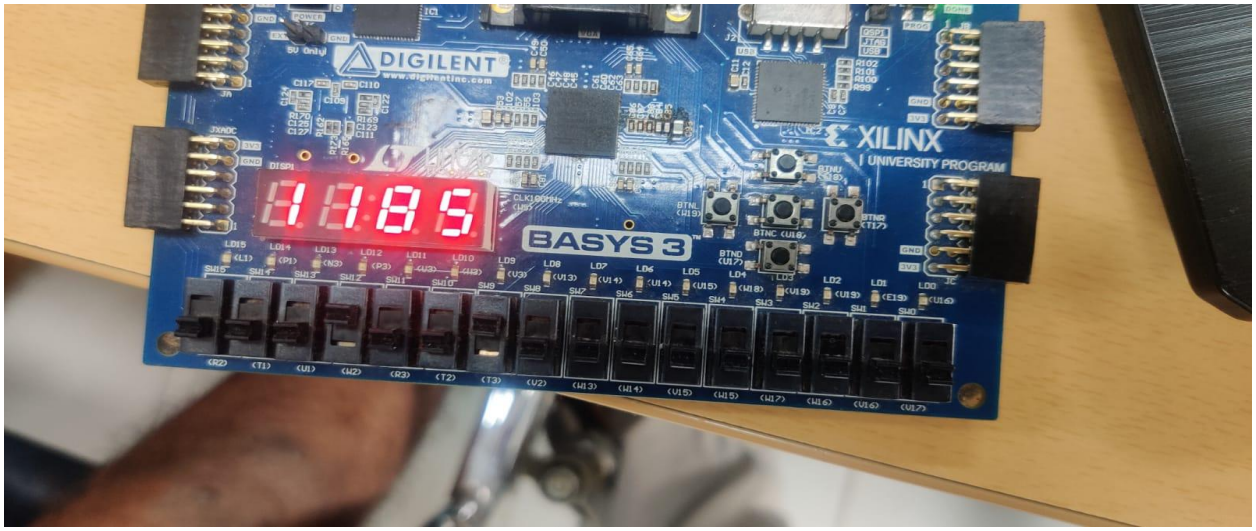
In this circuit to start the stopwatch we will press the leftmost button, to stop the stopwatch we will press the middle button, and to reset the stopwatch we will press the rightmost button.
The leftmost LED will show minutes,2nd and 3rd leftmost will show Seconds and the rightmost LED will show 1/10 seconds.

Photo of FPGAS

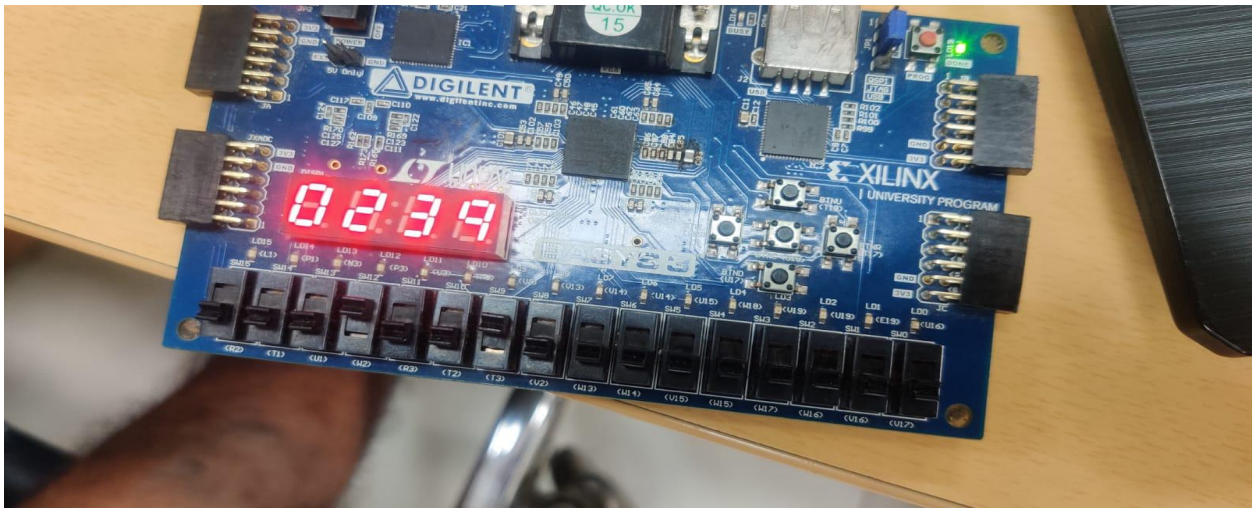
For time: 0 minutes,14 seconds, and 200 milliseconds



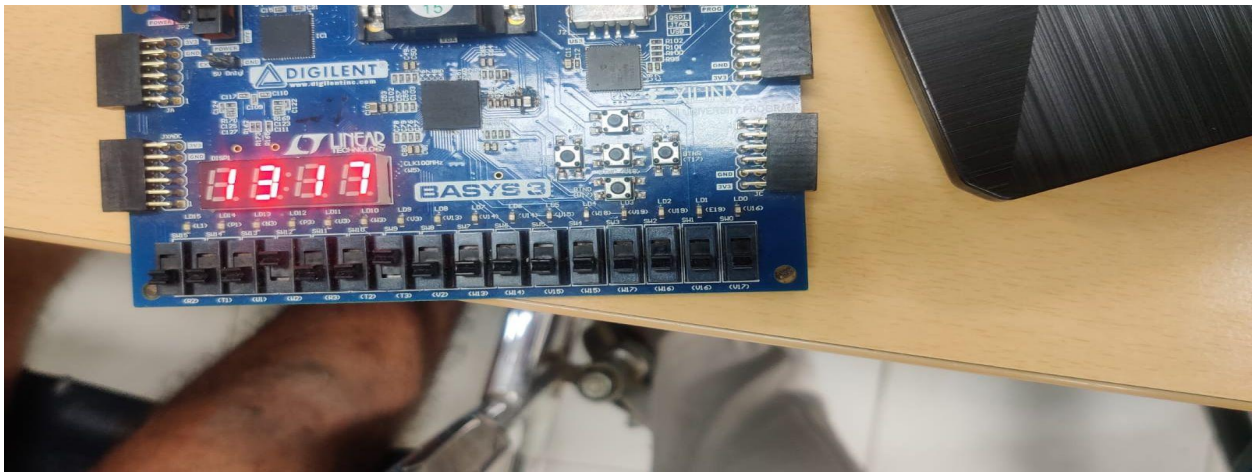
For time: 1 minute,18 seconds, and 500 milliseconds



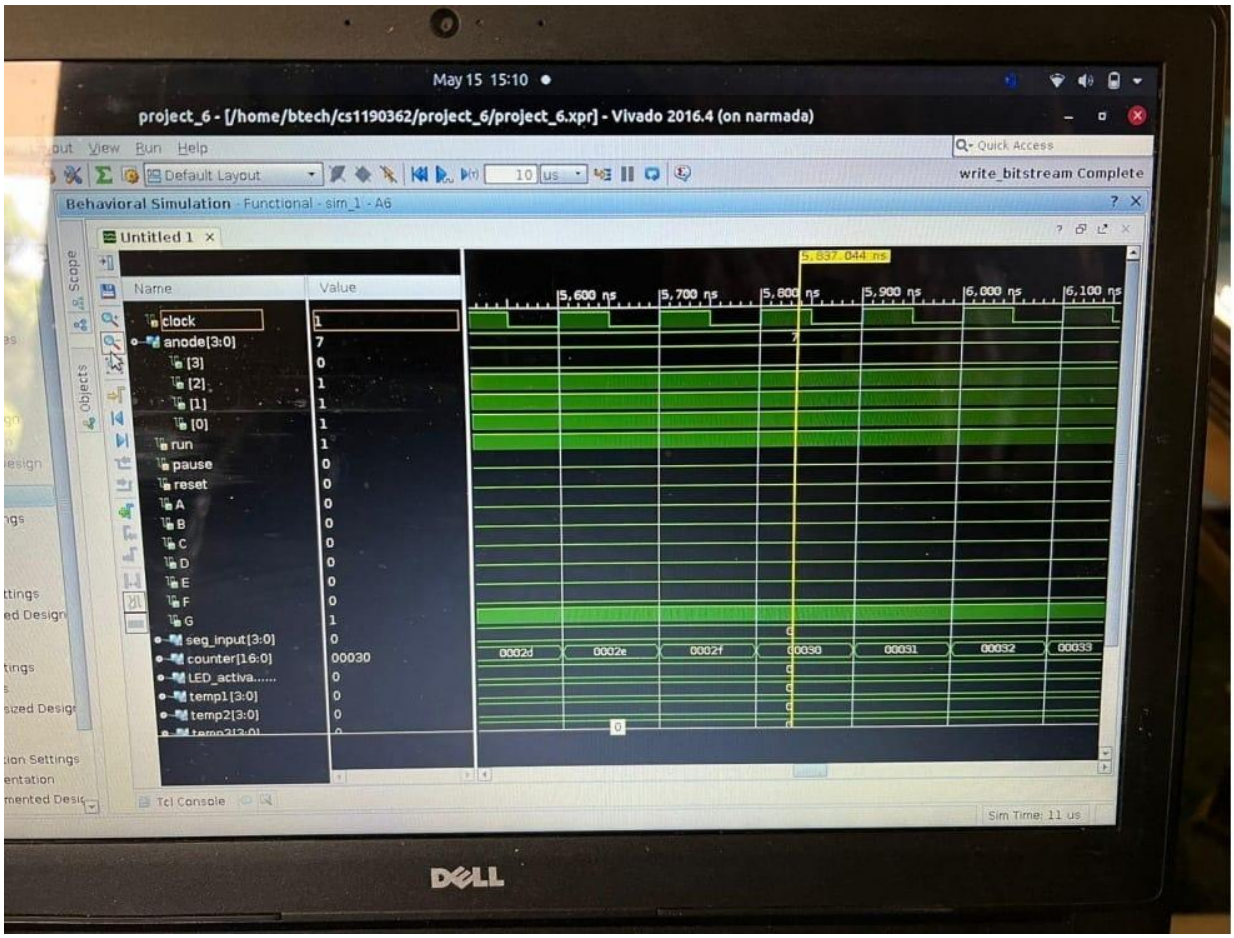
For time: 2 minutes,23 seconds, and 900 milliseconds



For time: 1 minute,31 seconds, and 700 milliseconds



Screenshot of Simulation :



1. Memory

Site Type	Used	Fixed	Available	Util%
Block Ram Title	0	0	50	0.00
RAMB36/FIFO*	0	0	50	0.00
RAMB18	0	0	100	0.00

2. DSP

Site Type	Used	Fixed	Available	Util%
DSPs	0	0	90	0.00

3. Primitives

Ref Name	Used	Functional Category
LUT2	9	LUT
LUT1	174	LUT
FDRE	192	Flop & Latch
CARRY4	44	Carrylogic
IBUF	4	IO
OBUF	11	IO
LUT4	46	LUT
LUT6	6	LUT
LUT3	4	LUT
BUFG	1	Clock