REPORT COL215 HW ASSIGNMENT 2

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APPROACH

the inner clock runs at 100Mhz , so using it we made two signals temp1 and temp2 that runs at 250Hz and 10Hz respectively.

we used temp2 to update time.(by maintaining a counter)

we used temp1 to update anodes and cathodes.(by maintaining a counter)

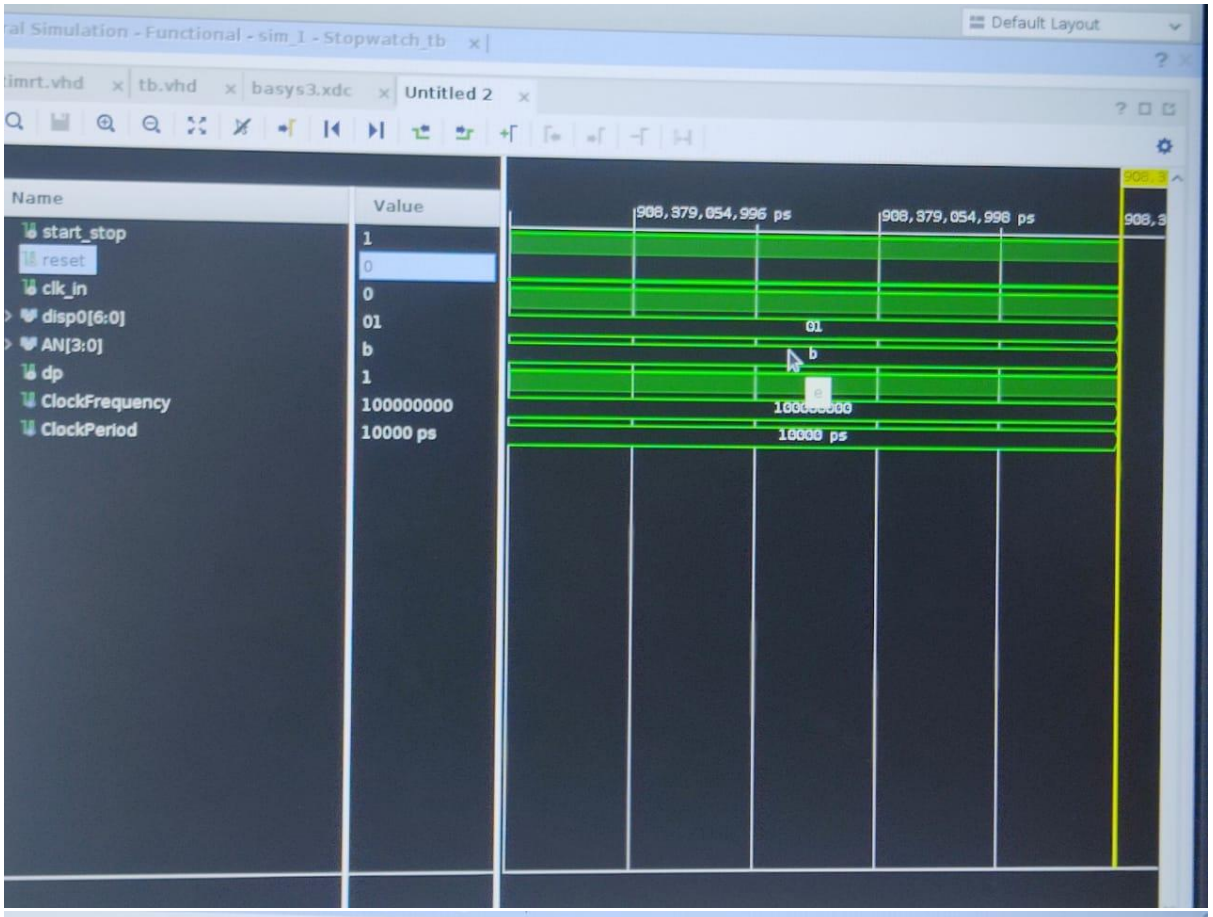
There are 4 vectors each of length 4 named bin0,bin1,bin2,bin3 ; and corresponds to one tenth of a second , second and minutes. The display digits on basys board corresponds to bin0,bin1…. What we do is using the temp2 signal increment the bits and for each digit we have a cathode signal in vector form i.e. a total of 4 cathode vectors corresponding to each digit and each cathode value is obtained by running each bit into process and assigning their values as in 7 segment decoder. Now using the 250Hz signal we select a particular anode and correspondingly particular cathode , which then gives us the required stopwatch.

PROBLEMS ENCOUNTERED

(In our first approach , we selected the anodes with 250Hz frequency(i.e. each anode was on for 4ms) , and based on the time we know which anode would be active and corresponding to that we should select the cathode in such a way it displays that digit. for example between 0 to 4ms , 1st anode is active , and we should assign cathodes in such a way that it displays 1st digit.

Hence we select the ith digit and convert it into cathodes using 7 segment-decoder. but that didn’t serve the purpose i.e. for some reasons it didn’t ran , it was stuck, hence we come up with a different implementation.)

there were more errors coming and since we were unable to debug them , we didn’t import any modules rather we did everything in one single file.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timrt.vhd
tb.vhd
basys3.xdc
Untitled 2
Name
Value
start_stop
reset
clk_in
disp0[6:0]
AN[3:0]
dp
ClockFrequency
ClockPeriod
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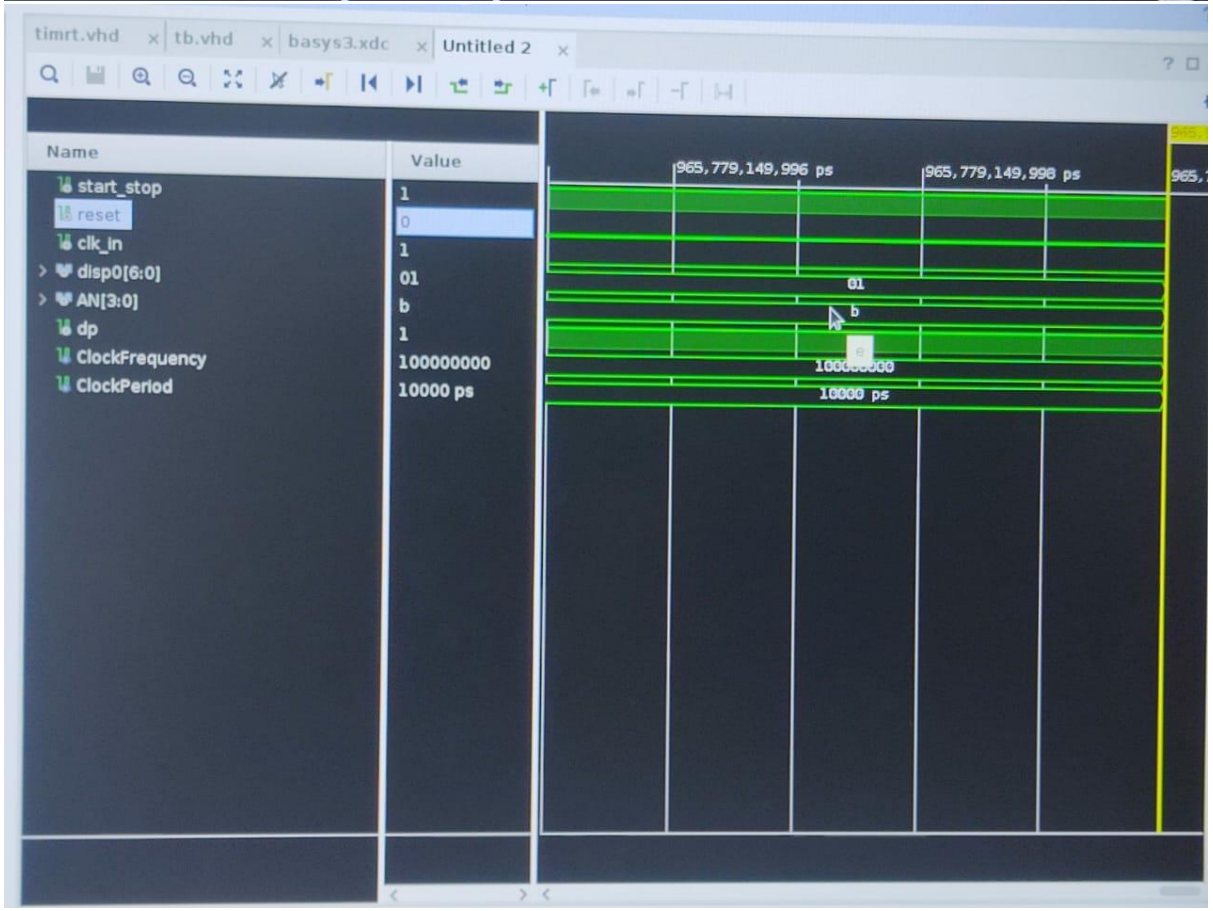
0
0
01
b
1
100000000
10000 ps
908,379,054,996 ps
908,379,054,998 ps


timrt.vhd
tb.vhd
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Untitled 2
Name
Value
start_stop
reset
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disp0[6:0]
AN[3:0]
dp
ClockFrequency
ClockPeriod
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01
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10000 ps
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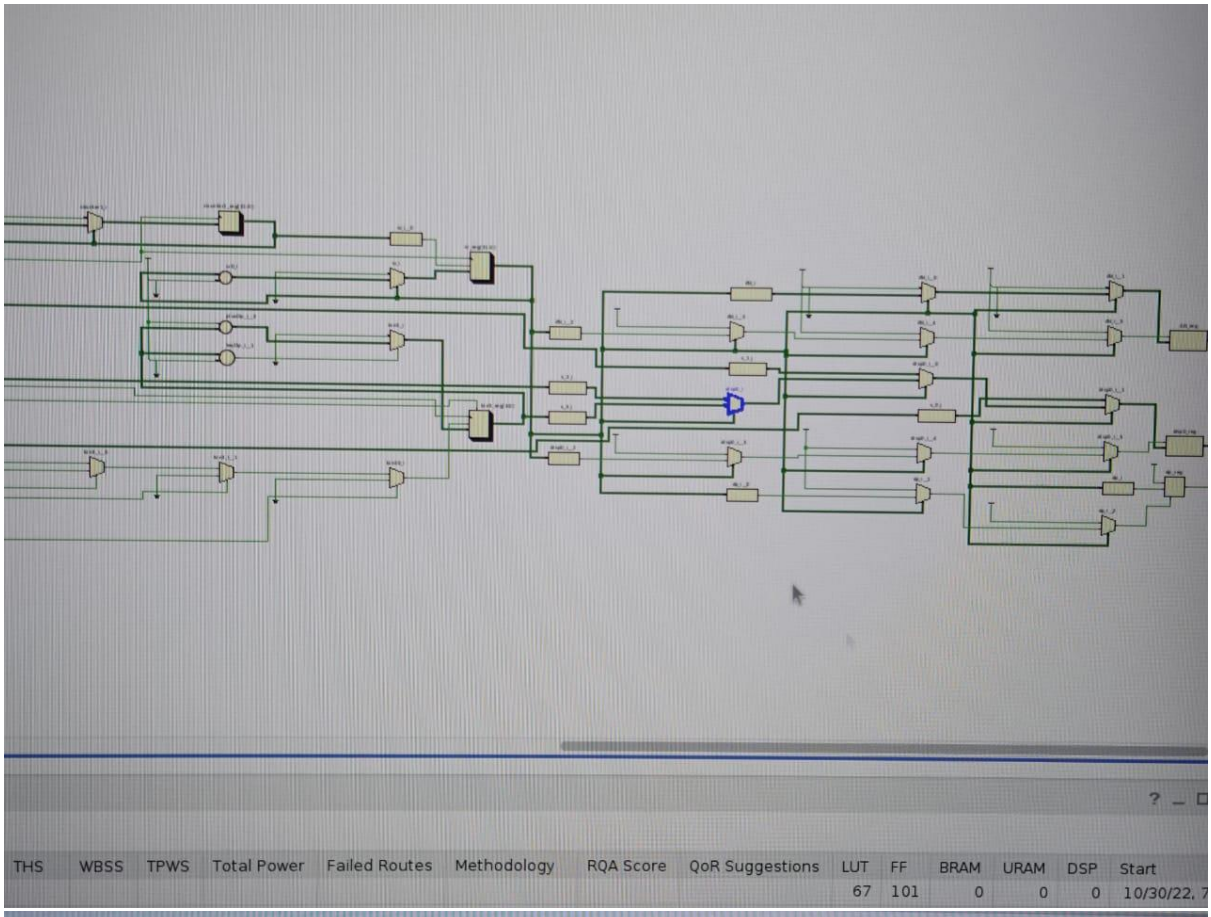
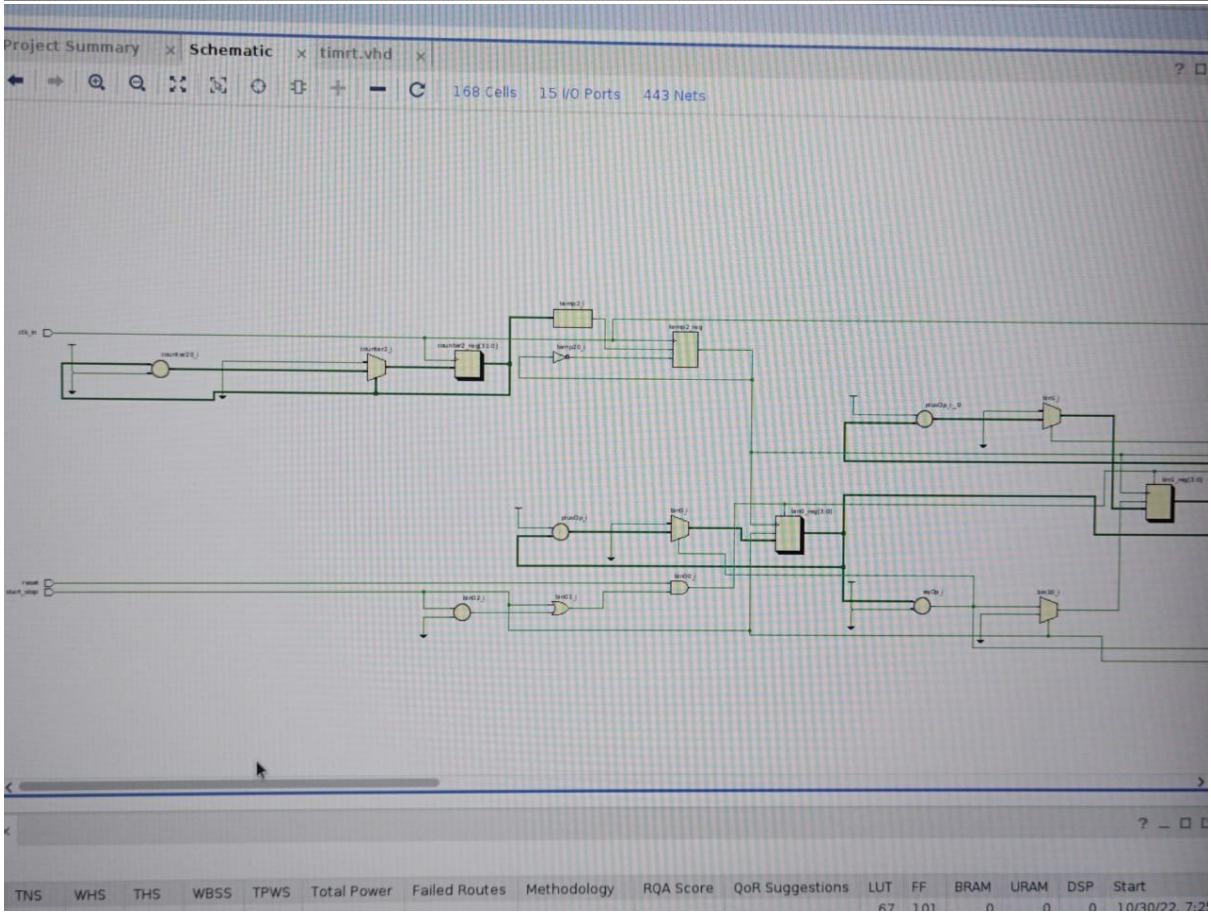


THS	WBSS	TPWS	Total Power	Failed Routes	Methodology	RQA Score	QoR Suggestions	LUT	FF	BRAM	URAM	DSP	Start
								67	101	0	0	0	10/30/22, 7



TNS	WHS	THS	WBSS	TPWS	Total Power	Failed Routes	Methodology	RQA Score	QoR Suggestions	LUT	FF	BRAM	URAM	DSP	Start
										67	101	0	0	0	10/30/22, 7:2