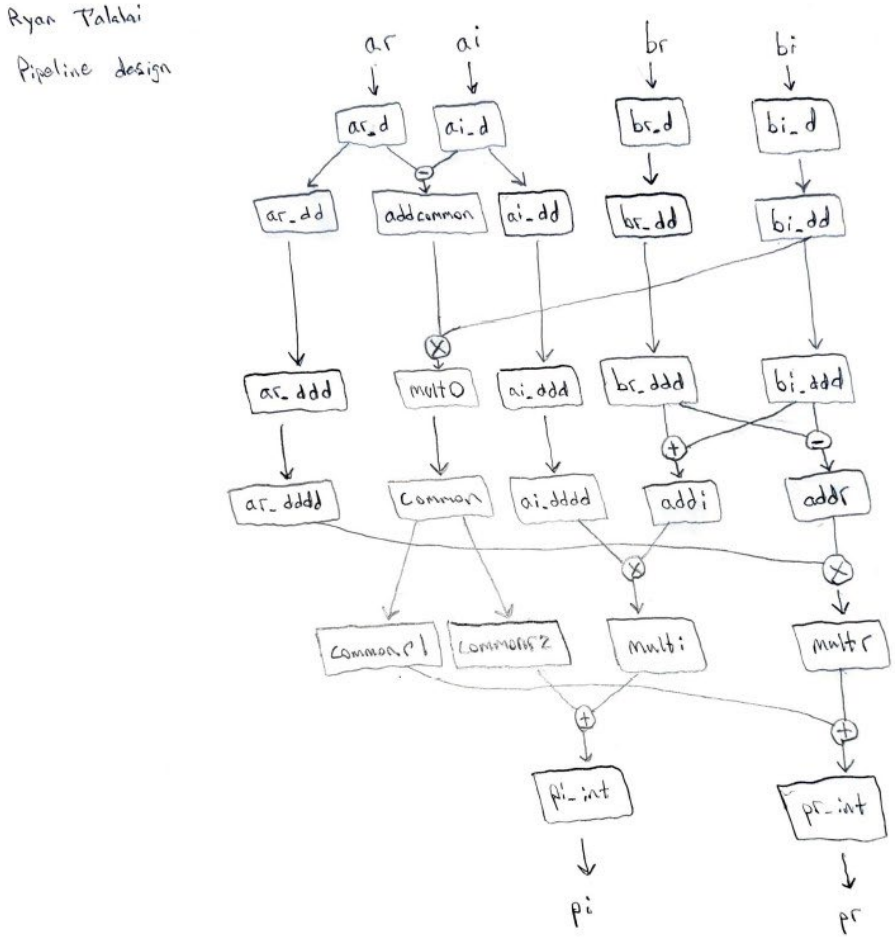
Ryan Joseph Talalai

CMPEN 417

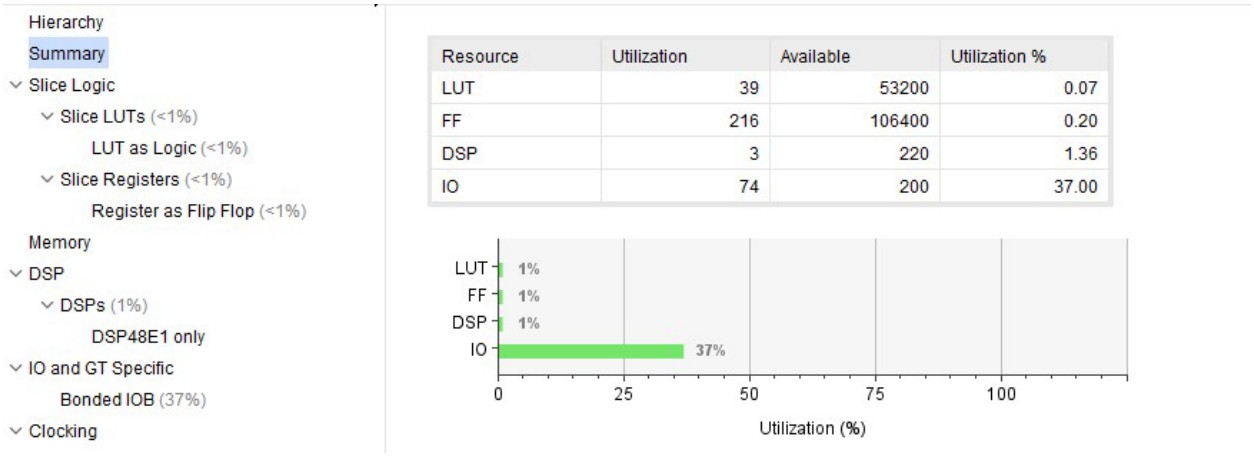
Lab 2

Part 1:

Pipelined Design:



Resource Usage:



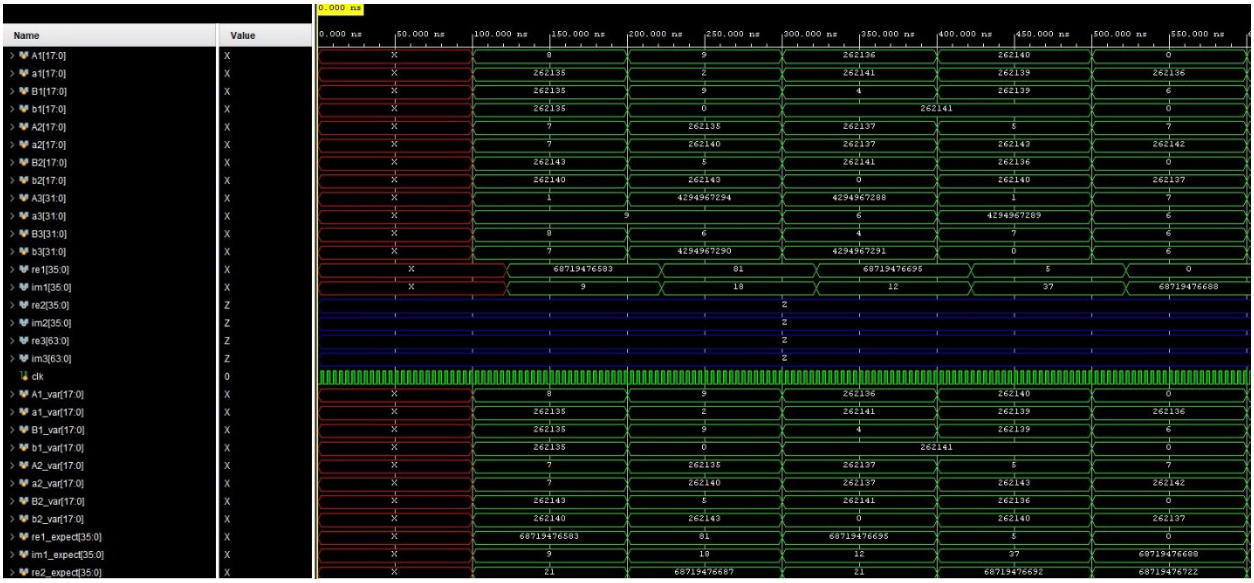
Resource	Utilization	Available	Utilization %
LUT	39	53200	0.07
FF	216	106400	0.20
DSP	3	220	1.36
IO	74	200	37.00

Timing Summary:

WNS = 17.180 ns

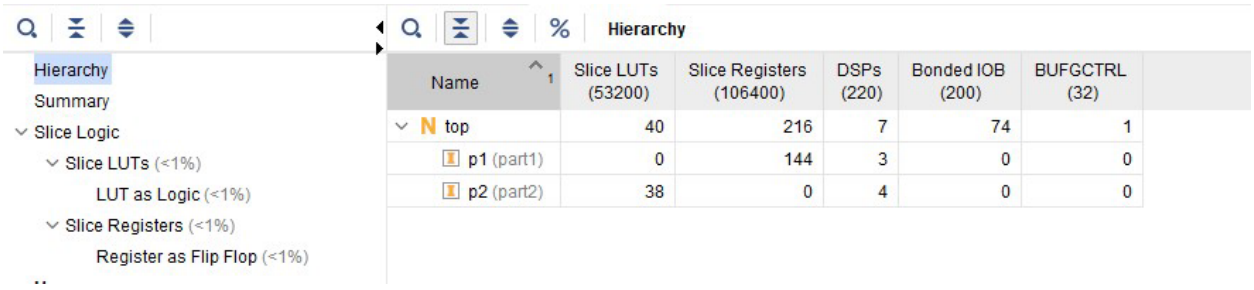
Frequency = 354.6 MHz

Waveform:


Name
Value
A1[17:0]
a1[17:0]
B1[17:0]
b1[17:0]
A2[17:0]
a2[17:0]
B2[17:0]
b2[17:0]
A3[31:0]
a3[31:0]
B3[31:0]
b3[31:0]
re1[35:0]
im1[35:0]
re2[35:0]
im2[35:0]
re3[63:0]
im3[63:0]
clk
A1_var[17:0]
a1_var[17:0]
B1_var[17:0]
b1_var[17:0]
A2_var[17:0]
a2_var[17:0]
B2_var[17:0]
b2_var[17:0]
re1_expect[35:0]
im1_expect[35:0]
re2_expect[35:0]

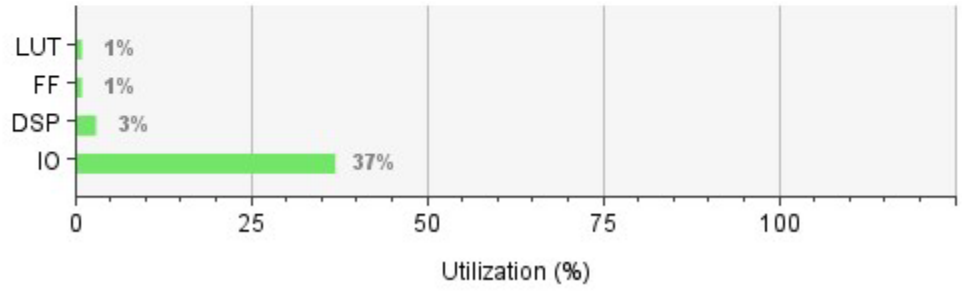
Part 2:

Resource Usage:



Summary

Resource	Utilization	Available	Utilization %
LUT	40	53200	0.08
FF	216	106400	0.20
DSP	7	220	3.18
IO	74	200	37.00



Timing Summary:

Design Timing Summary

Setup		Hold		Pulse Width	
Worst Negative Slack (WNS):	15.643 ns	Worst Hold Slack (WHS):	0.144 ns	Worst Pulse Width Slack (WPWS):	9.500 ns
Total Negative Slack (TNS):	0.000 ns	Total Hold Slack (THS):	0.000 ns	Total Pulse Width Negative Slack (TPWS):	0.000 ns
Number of Failing Endpoints:	0	Number of Failing Endpoints:	0	Number of Failing Endpoints:	0
Total Number of Endpoints:	723	Total Number of Endpoints:	723	Total Number of Endpoints:	220

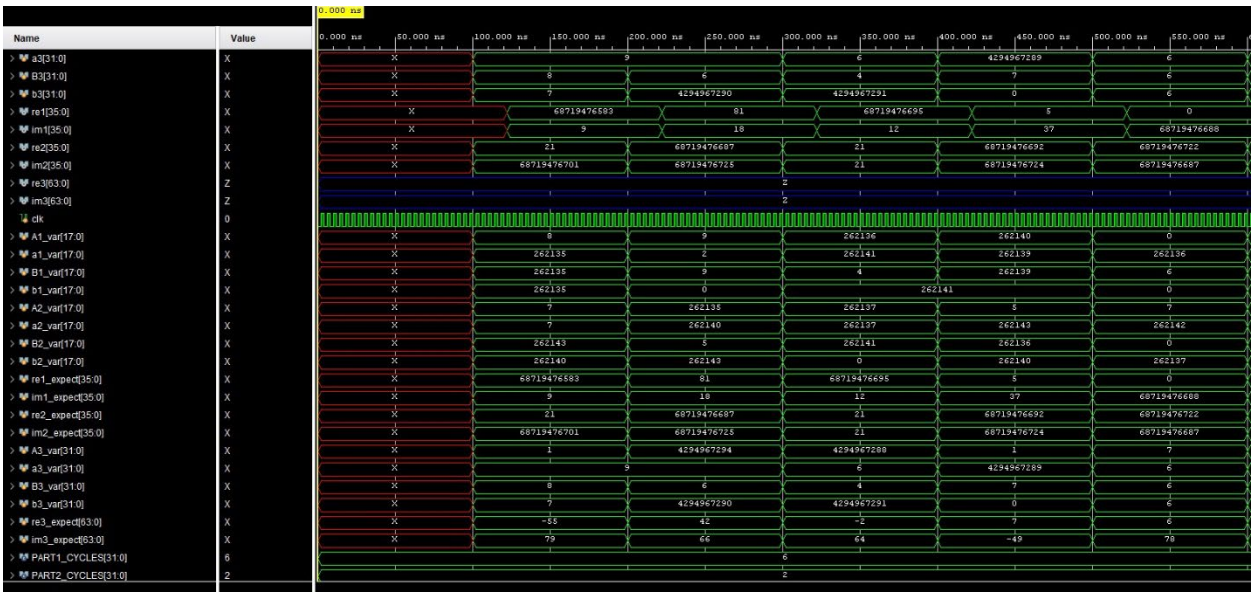
All user specified timing constraints are met.

WNS = 15.643 ns

Frequency = 229.5 MHz

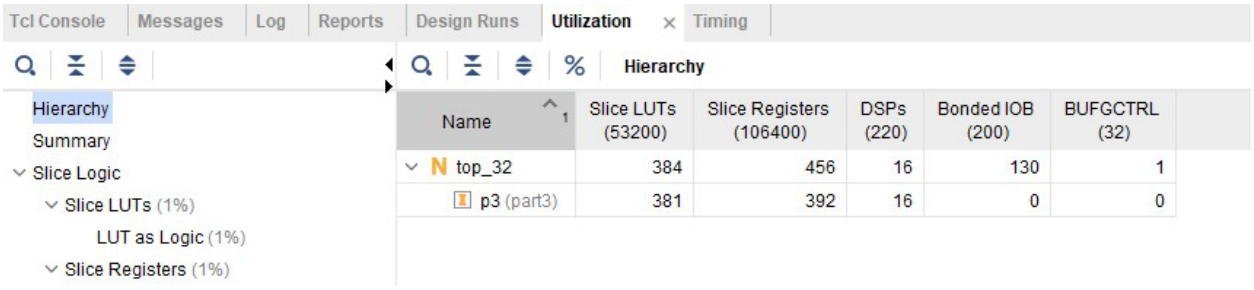
PART2_CYCLES = 2;

Waveform:



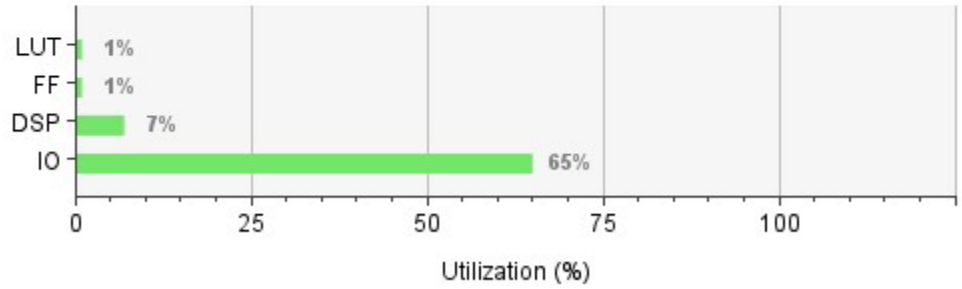
Part 3:

Resource Usage:



Summary

Resource	Utilization	Available	Utilization %
LUT	384	53200	0.72
FF	456	106400	0.43
DSP	16	220	7.27
IO	130	200	65.00



Timing Summary:

Design Timing Summary

Setup		Hold		Pulse Width	
Worst Negative Slack (WNS):	14.159 ns	Worst Hold Slack (WHS):	0.152 ns	Worst Pulse Width Slack (WPWS):	9.500 ns
Total Negative Slack (TNS):	0.000 ns	Total Hold Slack (THS):	0.000 ns	Total Pulse Width Negative Slack (TPWS):	0.000 ns
Number of Failing Endpoints:	0	Number of Failing Endpoints:	0	Number of Failing Endpoints:	0
Total Number of Endpoints:	1448	Total Number of Endpoints:	1448	Total Number of Endpoints:	465

All user specified timing constraints are met.

WNS = 14.159 ns

Frequency = 171.2 MHz

PART3_CYCLES = 3;

Waveform: