

Ryan Joseph Talalai

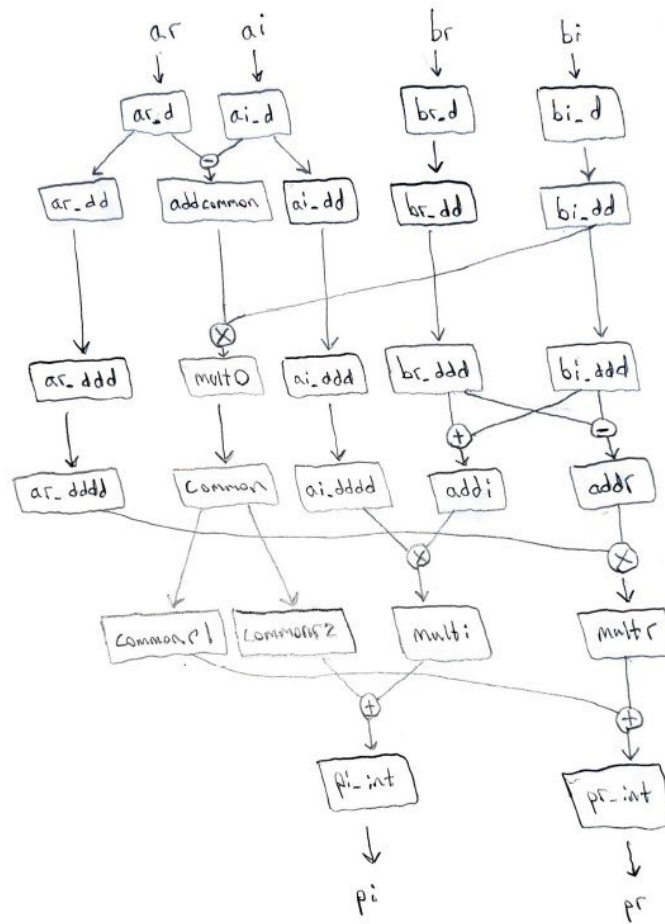
CMPEN 417

Lab 2

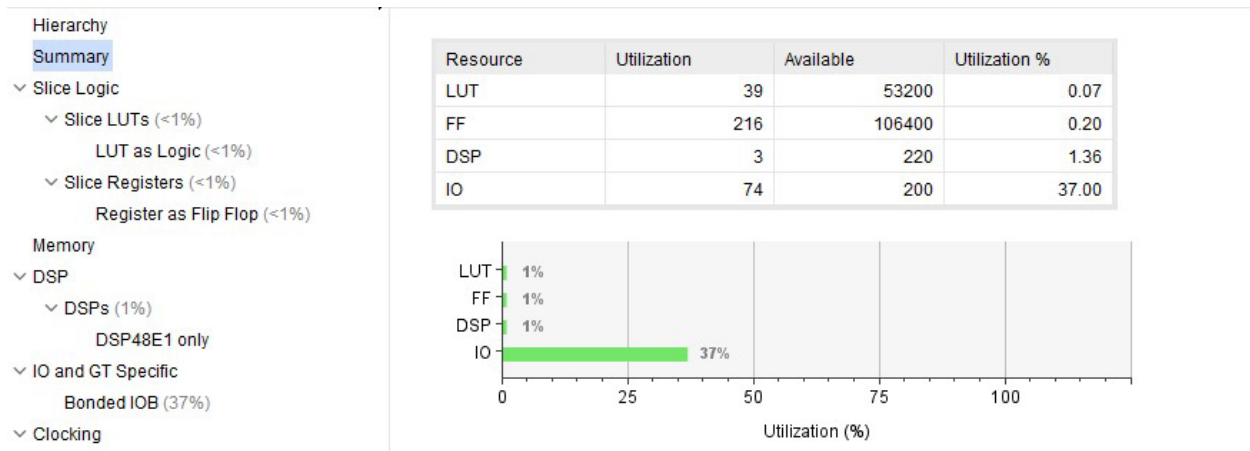
Part 1:

Pipelined Design:

Ryan Talalai
Pipeline design



Resource Usage:



Timing Summary:

General Information

Timer Settings

Design Timing Summary

Clock Summary (1)

Methodology Summary

> Check Timing (73)

▼ Intra-Clock Paths

▼ clk

Setup 17.180 ns (10)

Hold 0.142 ns (10)

Pulse Width 9.500 ns (30)

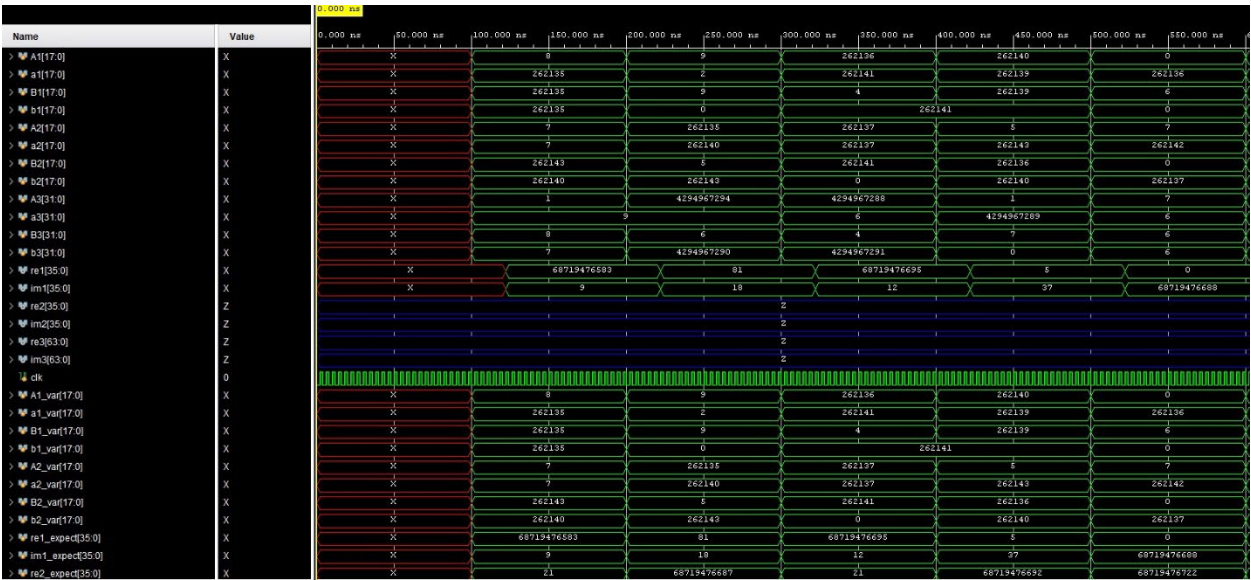
Setup	Hold	Pulse Width
Worst Negative Slack (WNS): 17.180 ns	Worst Hold Slack (WHS): 0.142 ns	Worst Pulse Width Slack (WPWS): 9.500 ns
Total Negative Slack (TNS): 0.000 ns	Total Hold Slack (THS): 0.000 ns	Total Pulse Width Negative Slack (TPWS): 0.000 ns
Number of Failing Endpoints: 0	Number of Failing Endpoints: 0	Number of Failing Endpoints: 0
Total Number of Endpoints: 531	Total Number of Endpoints: 531	Total Number of Endpoints: 220

All user specified timing constraints are met.

WNS = 17.180 ns

Frequency = 354.6 MHz

Waveform:



Part 2:

Resource Usage:

Hierarchy

Summary

▼ Slice Logic

▼ Slice LUTs (<1%)

LUT as Logic (<1%)

▼ Slice Registers (<1%)

Register as Flip Flop (<1%)

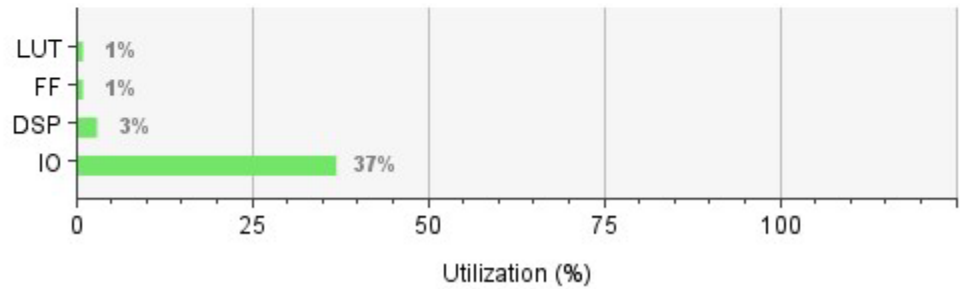
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Hierarchy

Name	Slice LUTs (53200)	Slice Registers (106400)	DSPs (220)	Bonded IOB (200)	BUFGCTRL (32)
▼ top	40	216	7	74	1
p1 (part1)	0	144	3	0	0
p2 (part2)	38	0	4	0	0

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:

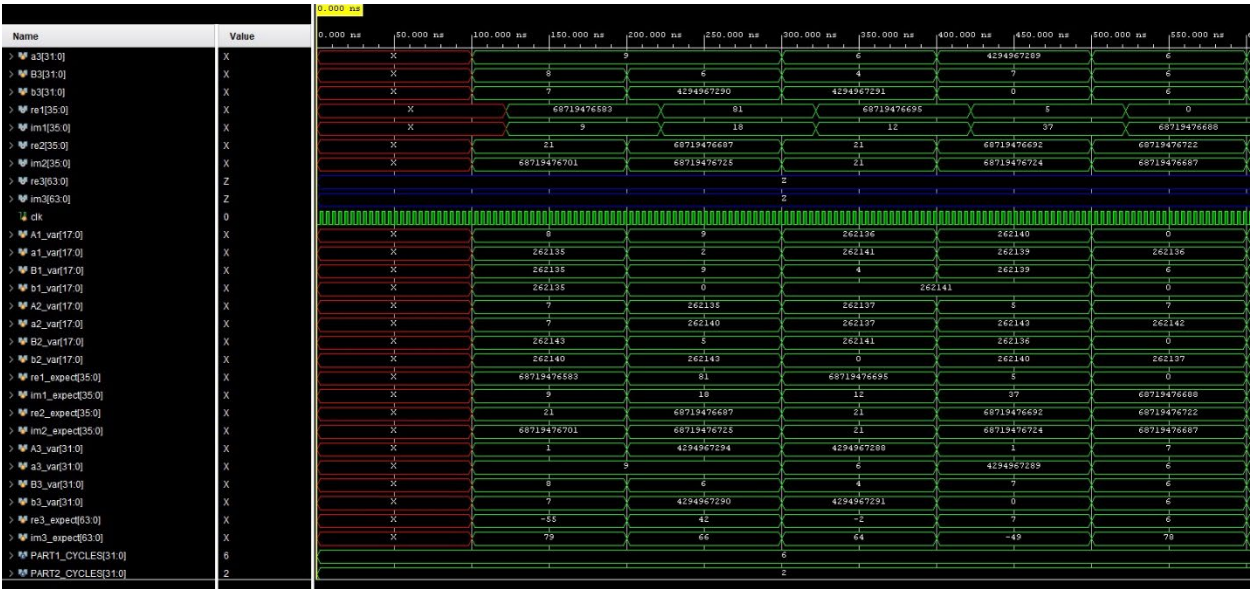
Design Timing Summary			
Setup		Hold	Pulse Width
Worst Negative Slack (WNS): 15.643 ns		Worst Hold Slack (WHS): 0.144 ns	Worst Pulse Width Slack (WPWS): 9.500 ns
Total Negative Slack (TNS): 0.000 ns		Total Hold Slack (THS): 0.000 ns	Total Pulse Width Negative Slack (TPWS): 0.000 ns
Number of Failing 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:

Tcl ConsoleMessagesLogReportsDesign RunsUtilization xTiming

HierarchySummary

▼ Slice Logic

▼ Slice LUTs (1%)

LUT as Logic (1%)

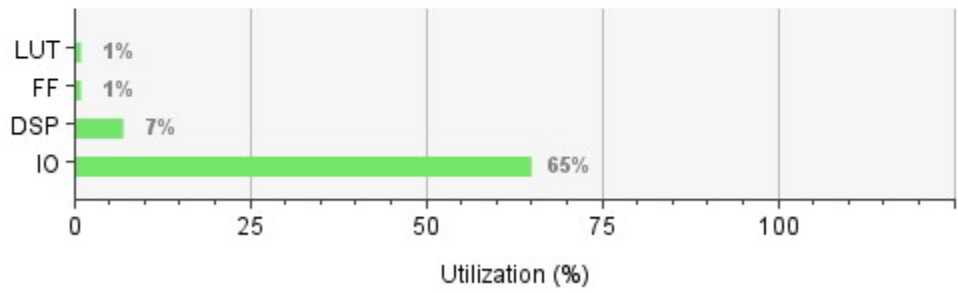
▼ Slice Registers (1%)

Hierarchy

Name	Slice LUTs (53200)	Slice Registers (106400)	DSPs (220)	Bonded IOB (200)	BUFGCTRL (32)
▼ top_32	384	456	16	130	1
p3 (part3)	381	392	16	0	0

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



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.					

Frequency = 171.2 MHz

Waveform:



