

The diagram illustrates the Booth's multiplication algorithm. It shows the multiplicand (A) and multiplier (B) registers at the top, with their bit labels A3, A2, A1, A0 and B3, B2, B1, B0. Below these, the partial products are generated and shifted. The partial products are shown as a series of boxes, each containing a 4-bit segment of the product. The boxes are arranged in a staircase pattern, with each row shifted one position to the right relative to the row above it. The partial products are labeled as follows:

- Row 1: B0 A3, B0 A2, B0 A1, B0 A0
- Row 2: B1 A3, B1 A2, B1 A1, B1 A0
- Row 3: B2 A3, B2 A2, B2 A1, B2 A0
- Row 4: B3 A3, B3 A2, B3 A1, B3 A0

Arrows indicate the shifting of the partial products to the right. The final product is shown at the bottom, labeled P7, P6, P5, P4, P3, P2, P1, P0. The partial products are added together to produce the final product.

ISE Project Navigator (P.20131013) - D:\term 5\CA\lab\Computer-Architecture-Lab\7 - multipliers\array\array\array.xise - [Design Summary]

File Edit View Project Source Process Tools Window Layout Help

Design Overview

Design Properties

Design Summary

ArrayMultiplier Project Status

Project File:	array.xise	Parser Errors:	No Errors
Module Name:	ArrayMultiplier	Implementation State:	Placed and Routed
Target Device:	xc7a100t-3csg324	Errors:	No Errors
Product Version:	ISE 14.7	Warnings:	18 Warnings (12 new)
Design Goal:	Balanced	Routing Results:	All Signals Completely Routed
Design Strategy:	Virtex Default (unlocked)	Timing Constraints:	
Environment:	System Settings	Final Timing Score:	0 (Timing Report)

Device Utilization Summary

Slice Logic Utilization	Used	Available	Utilization	Note(s)
Number of Slice Registers	0	126,800	0%	
Number of Slice LUTs	13	63,400	1%	
Number used as logic	13	63,400	1%	
Number using O6 output only	9			
Number using O6 output only	0			
Number using O6 and O6	4			
Number used as ROM	0			
Number used as Memory	0	19,000	0%	
Number used exclusively as route-thrus	0			
Number of occupied Slices	4	15,850	1%	
Number of LUT Flip Flop pairs used	13			
Number with an unused Flip Flop	13	13	100%	
Number with an unused LUT	0	13	0%	

Console

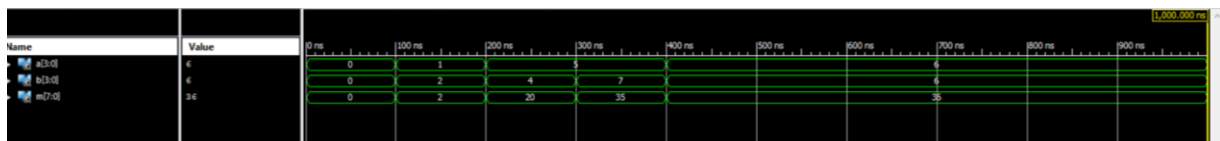
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Launching ISim simulation engine GUI...
"D:\term 5\CA\lab\Computer-Architecture-Lab\7 - multipliers\array\array\TBArray_isim_beh.exe" -intstyle ise -gui -tclbatch isim.cmd -vdb "D:\term 5\CA\lab\Computer-Architecture-Lab\7 - m
ISim simulation engine GUI launched successfully

Process "Simulate Behavioral Model" completed successfully
  
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در این پیاده سازی 13 تا LUT استفاده شده است.



همان طور که در شبیه سازی مشخص است ضرب کننده به درستی کار میکند و حاصل ضرب دو ورودی را نشان میدهد.