LSV Programming Assignment #1

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1 Part 1

Network structure visualized by ABC Benchmark "adder4s". Time was Fri Oct 8 00:33:07 2021.

The network contains 14 logic nodes and 3 latches.

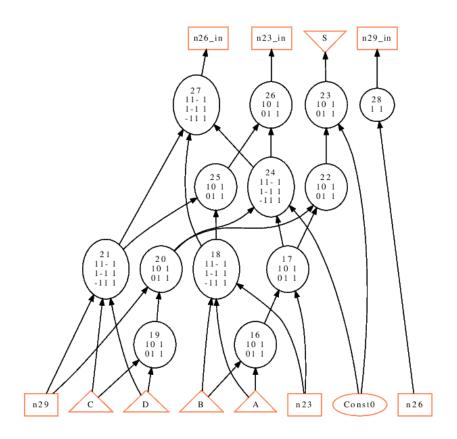


Figure 1: Original network

 n23_in
 n26_in
 8

 44
 48
 29

 46
 43
 42
 47
 27
 28

 40
 45

 39
 38
 41

 33
 37
 20
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 16
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 21
 22

The network contains 34 logic nodes and 3 latches.

Figure 2: Strashed network

2 Part 2

- (a) The difference between:
 - 1. logic network in AIG (by command aig) vs. structurally hashed AIG (by command strash) The command aig only converts the local functions of each nodes into AIG. The nodes in the network remain the same. After the command, the command show will show the exact same network, but the command print_stats will show the number of aig nodes.
 - The command strash structurally hash the whole network and turn it into AIG.
 - 2. logic network in BDD (by command bdd) vs. collapsed BDD (by command collapse)
 The command bdd only converts the local function of each nodes into BDD. The command show_bdd can show the bdd of each PO.
 - The command collapse collapses the network, resulting in one node for each PO, whose fanins are all PIs. A global BDD is built and showing the BDD of a single PO is not available.
- (b) The command logic transforms the AIG into a logic network with the SOP representation of the two-input AND-gates.

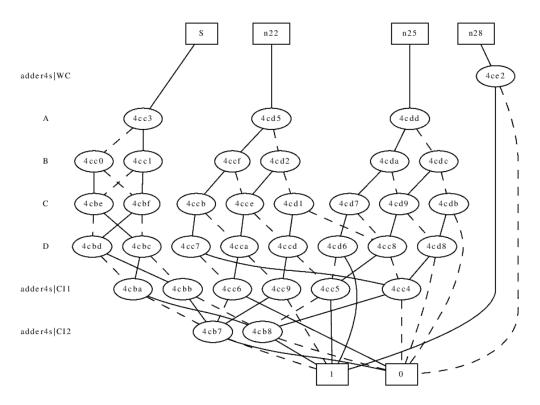


Figure 3: BDD of flattened network