Logic Synthesis & Verification PA1 report

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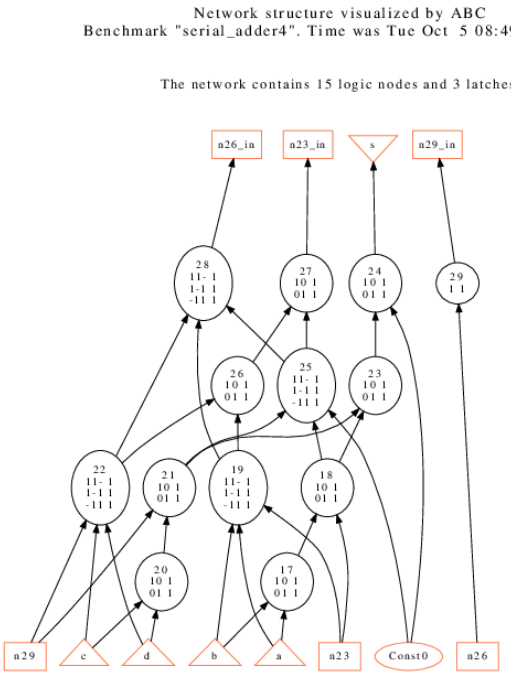
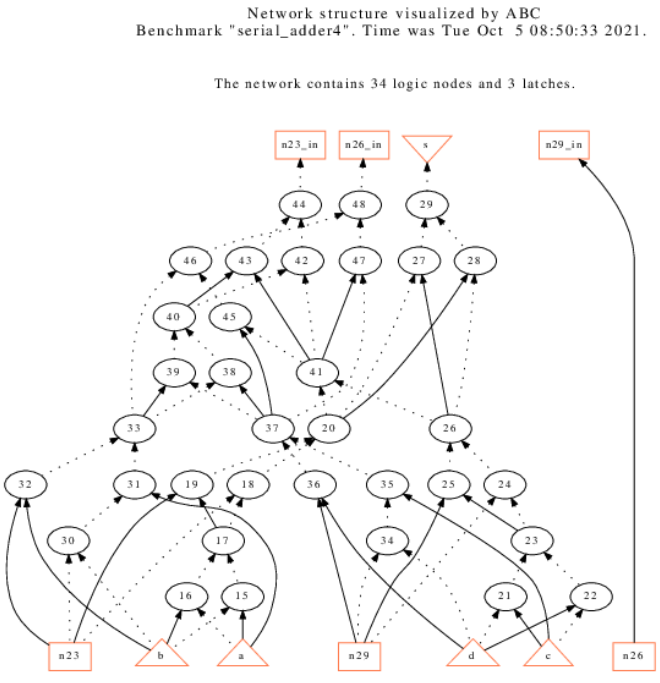
1. [Using ABC]

(b)

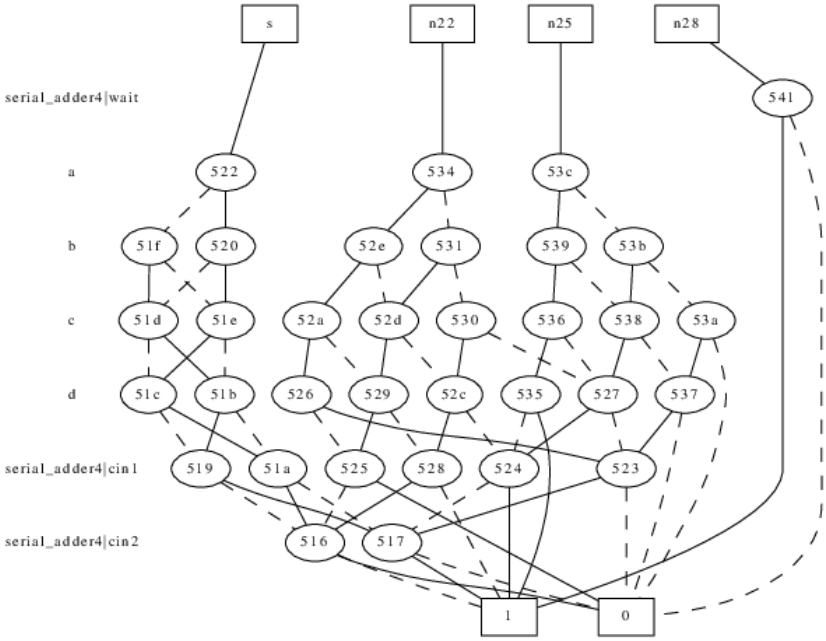
3. visualize the network structure (command "show")



5. visualize the AIG (command "show")



7. visualize the BDD (command "show bdd -g")



2. [ABC Boolean Function Representations]

(a)1. Compared to the logic network in AIG, “strash” also apply one-level structural hashing, which will merge two AIG nodes that have the same fanins. Take four-number serial adder as example, we can use the command “print_stats” to observe the difference between them.

For “aig”: i/o = 4/1, lat = 3, nd = 15, edge = 29, aig = 40, lev = 4

For “strash”: i/o = 4/1, lat = 3, and = 34, lev = 8

(a)2. Compared to the logic network in BDD, collapsed BDD has less node, edge, bdd and level. Therefore, collapsed BDD is more compact.

For “bdd”: i/o = 4/1, lat = 3, nd = 15, edge = 29, bdd = 32, lev = 4

For “collapse”:i/o = 4/1, lat = 3, nd = 4, edge = 19, bdd = 28, lev = 1

(b) For structurally hashed BDD, we can first use “logic” command to turn it to logic network. After that, we can type in “sop” to turn it to the sop form.