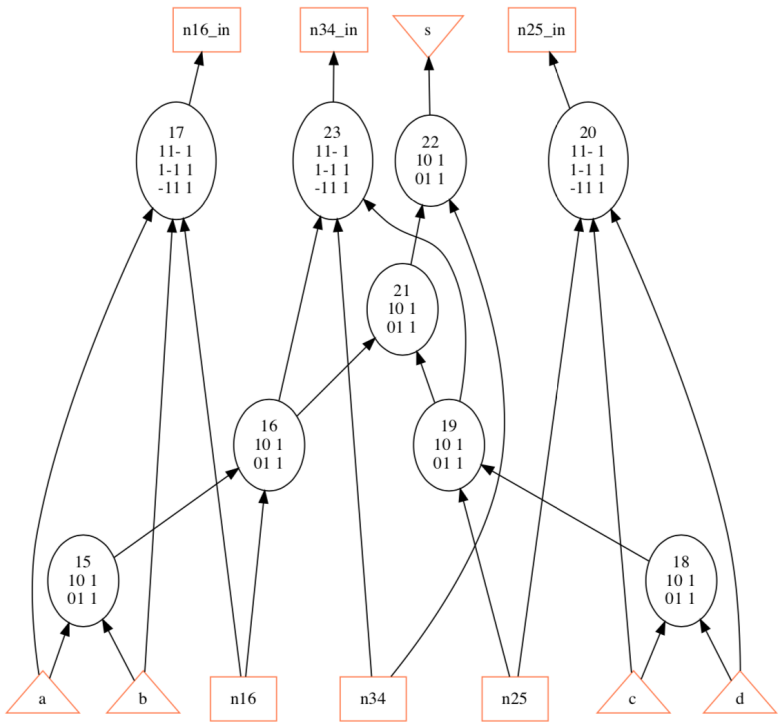R10943098 李崇嘉

Part1

Show

Network structure visualized by ABC
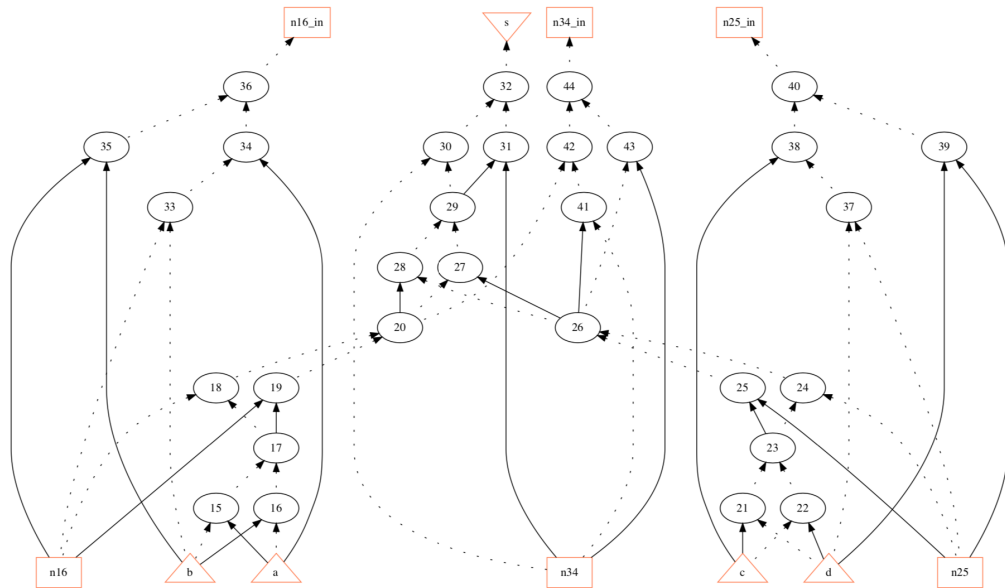Benchmark "4_bit_serial_adder". Time was Mon Oct 4 14:01:53 2021.

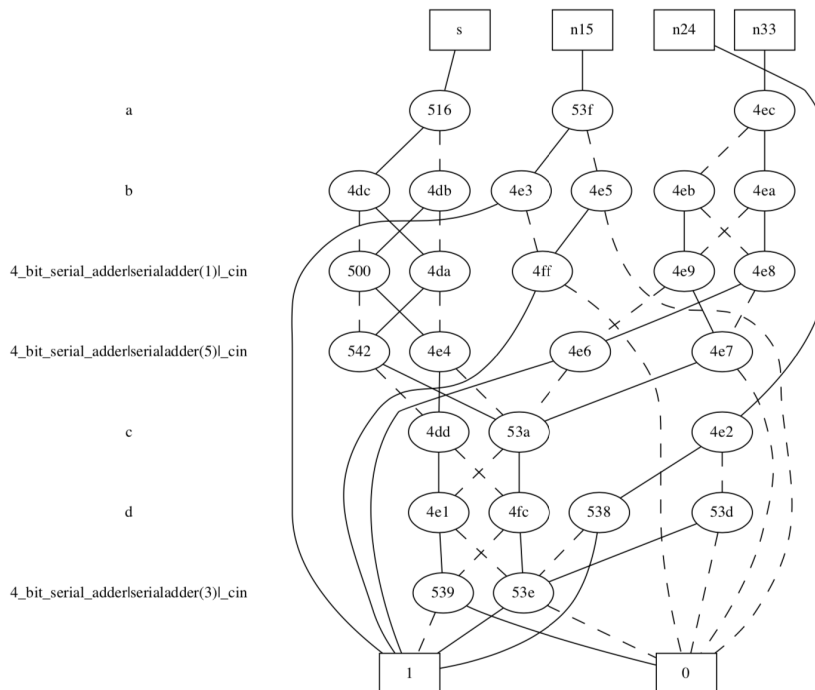The network contains 9 logic nodes and 3 latches.

Show after strash command (AIG)

Network structure visualized by ABC
Benchmark "4_bit_serial_adder". Time was Mon Oct 4 14:16:11 2021.

The network contains 30 logic nodes and 3 latches.

Show after collapse command (BDD)

Part2(a)

Difference between AIG and structurally hashed AIG:

Before adding a node in the network, structurally hashed AIG will check whether there already exists a node having the same fanins. If typing the command "aig", abc will transform each node into AIG form but not be represented in the circuit by the

command "show"; if typing the command "strash", the circuit will be transformed into AIG form and can be show by the command "show".

Difference between bdd and collapsed bdd:

For a collapsed bdd, each fanin having same parent and same Boolean value will be composed to a lower depth for each collapsing iteration in order to reduce the number of nodes.

Part2(b)

For a AIG, we can type the command "logic" to transform AIG into a logic network at first, and then type the command "sop" to transform the logic network into SOP form.