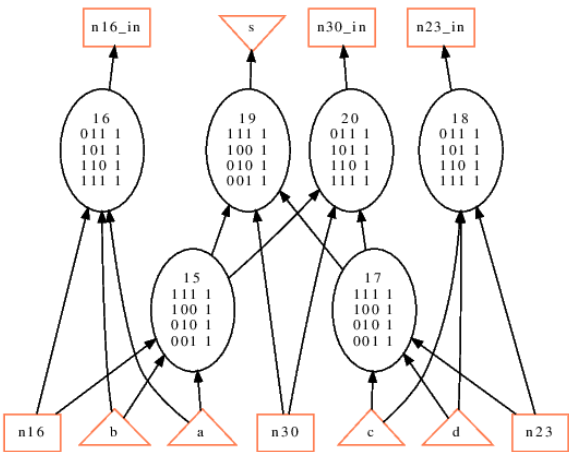


1.(b)
3.

Network structure visualized by ABC
Benchmark "serial_adder". Time was Wed Oct 6 23:13:54 2021.

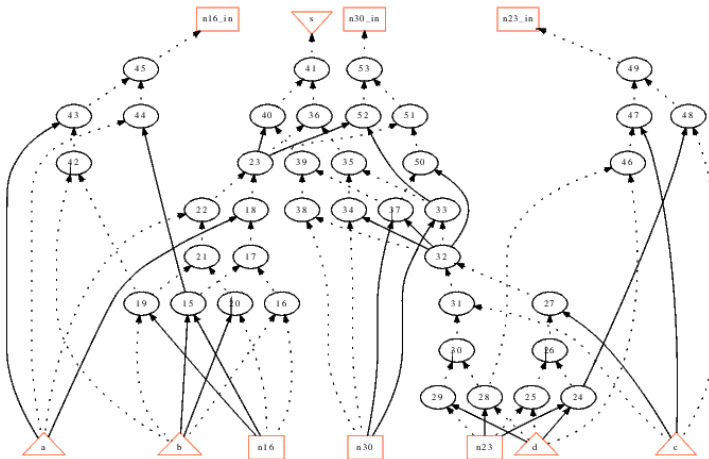
The network contains 6 logic nodes and 3 latches.



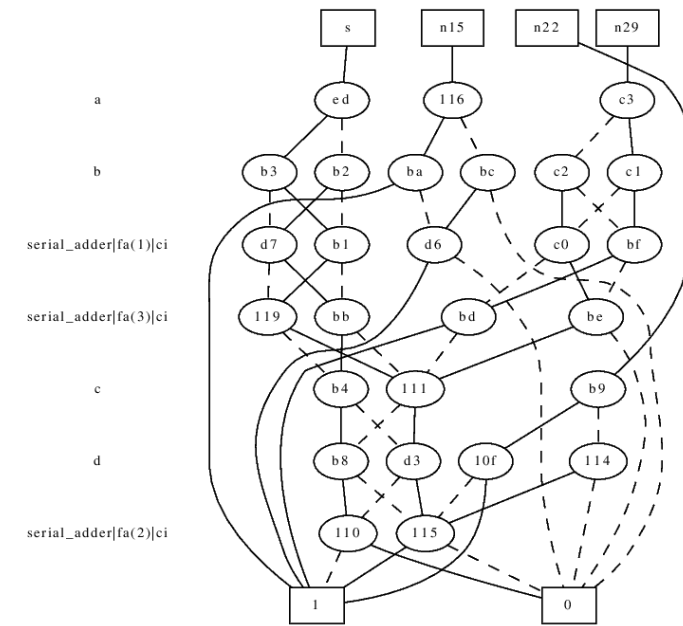
5.

Network structure visualized by ABC
Benchmark "serial_adder". Time was Wed Oct 6 23:14:58 2021.

The network contains 39 logic nodes and 3 latches.



7.



2.(a)

1.

Structurally hash helps to reuse the constructed nodes by the hash table when constructing the AIG, so the number of nodes would be smaller than the same AID without hashed.

2.

Since the BDD is already in the canonical form, and the variable order does not change after collapse, the difference between collapsed and without collapsed are small.

(b)

Structurally hashed AIG → command 'logic' → command 'sop'
 → Structurally hashed AIG with node function in SOP expression