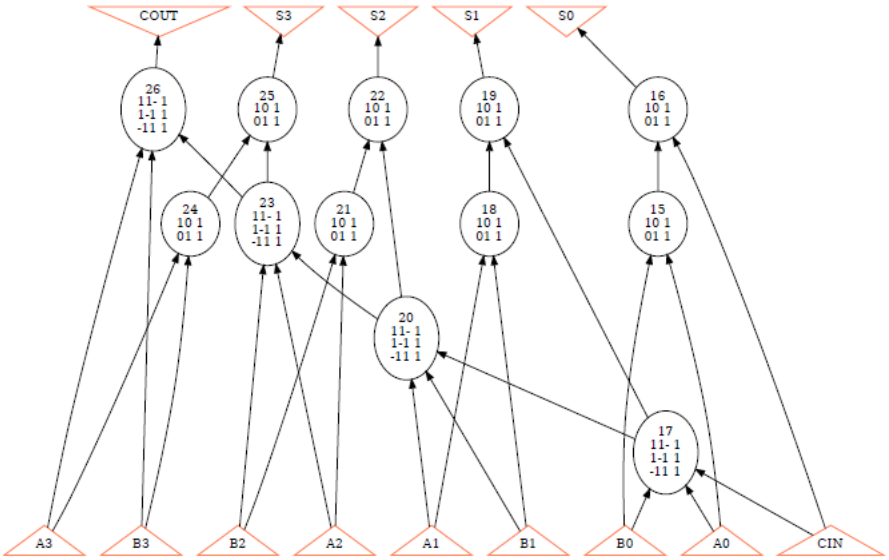
1.

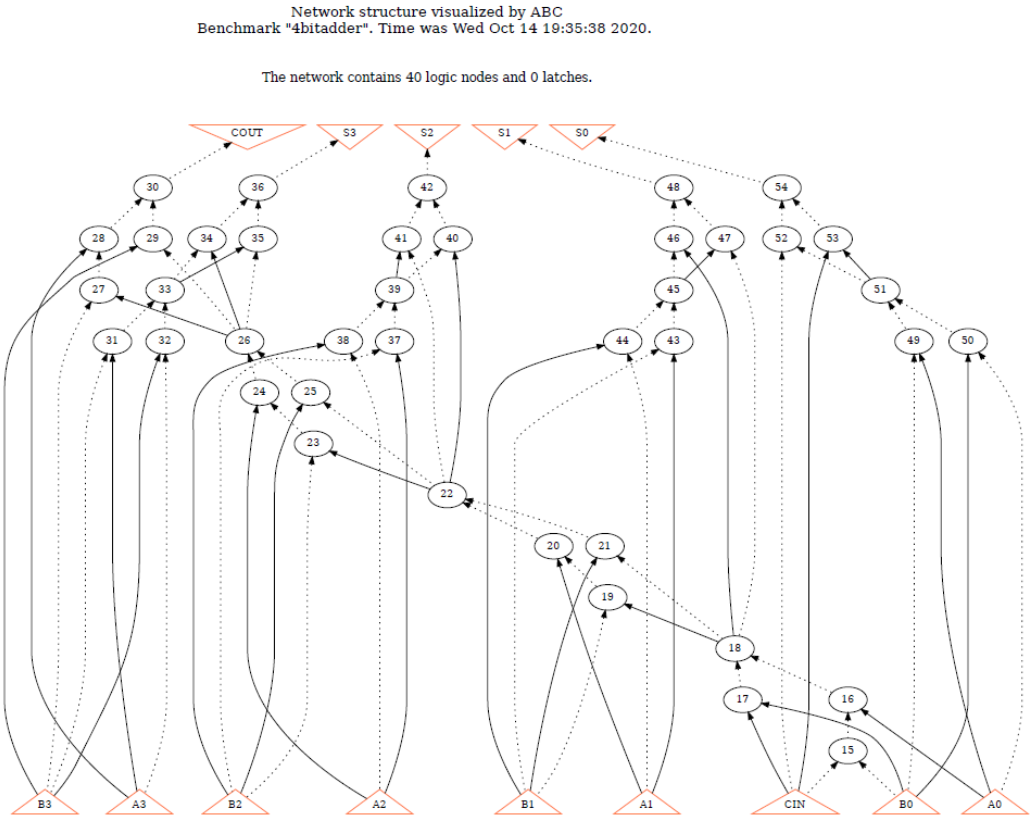
Original show

Network structure visualized by ABC
Benchmark "4bitadder". Time was Wed Oct 14 19:35:17 2020.

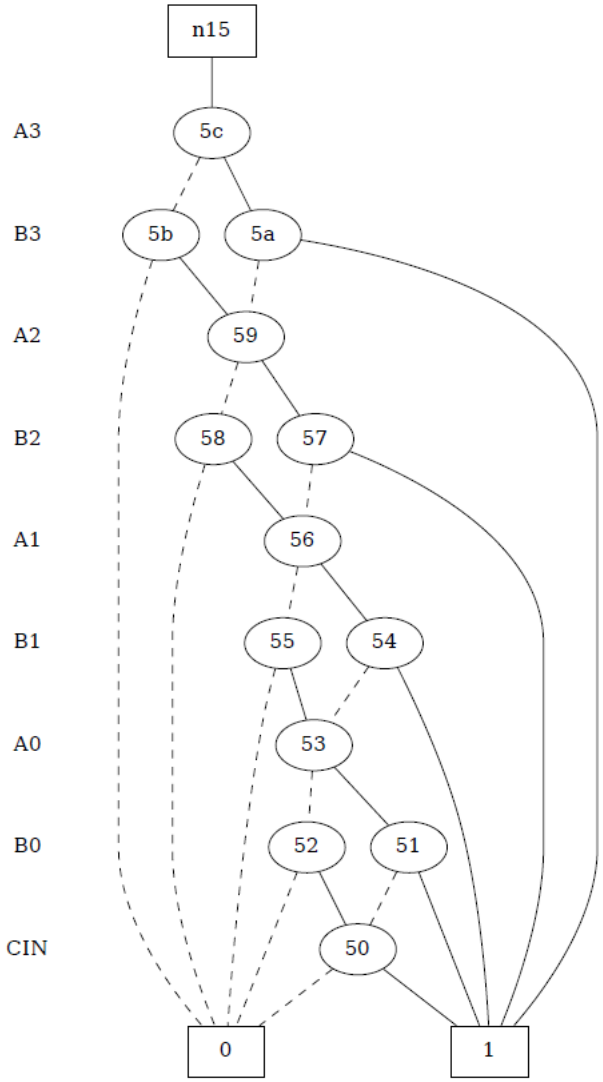
The network contains 12 logic nodes and 0 latches.



Show (strash)


Network structure visualized by ABC
Benchmark "4bitadder". Time was Wed Oct 14 19:35:38 2020.
The network contains 40 logic nodes and 0 latches.
COUT
S3
S2
S1
S0
30
36
42
48
54
28
29
34
35
41
40
46
47
52
53
27
33
39
45
51
31
32
26
38
37
44
43
49
50
24
25
23
22
20
21
19
18
17
16
15
B3
A3
B2
A2
B1
A1
CIN
B0
A0

Show_bdd (collapse)



2.

(a)

strash – Transforms the current network into an AIG by one-level structural hashing, which means when a new AND-gate is added, checks is performed for a node with the same fanins

aig - When an AIG is constructed without strashing, AND-gates are added one at a time without checking whether an AND-gate with the same fanins already exists in the graph.

Collapse - Recursively composes the fanin nodes into the fanout nodes resulting in a network, "collapse" usually obtains a smaller network

Bdd - simply transforms logic network into a global BDD.

(b)

logic – Given a structurally hashed AIG (command “strash”), and we can use command “logic” to covert the logic network with node function expression in SOP.