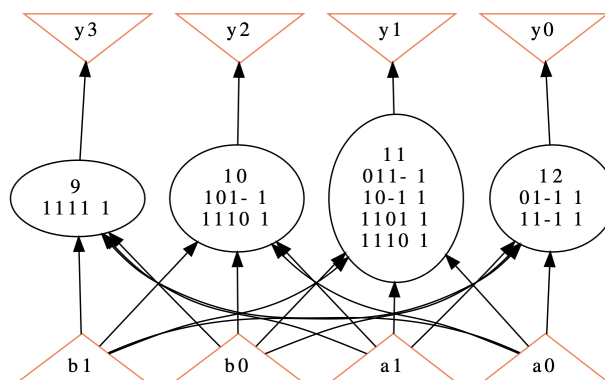


r12921045 電機碩一劉虹伶

(a) create a BLIF file named "mul.blif"

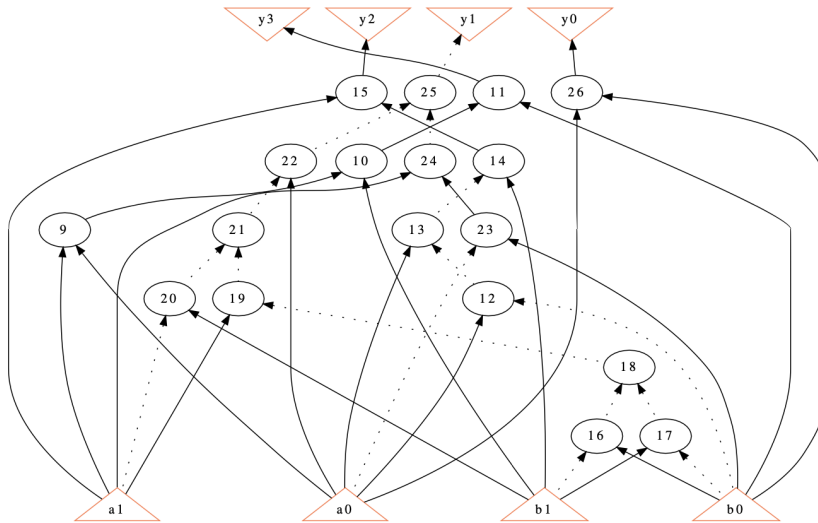


4. convert to AIG (command "strash")
5. visualize the AIG (command "show")

```
abc 02> strash
abc 03> show
```

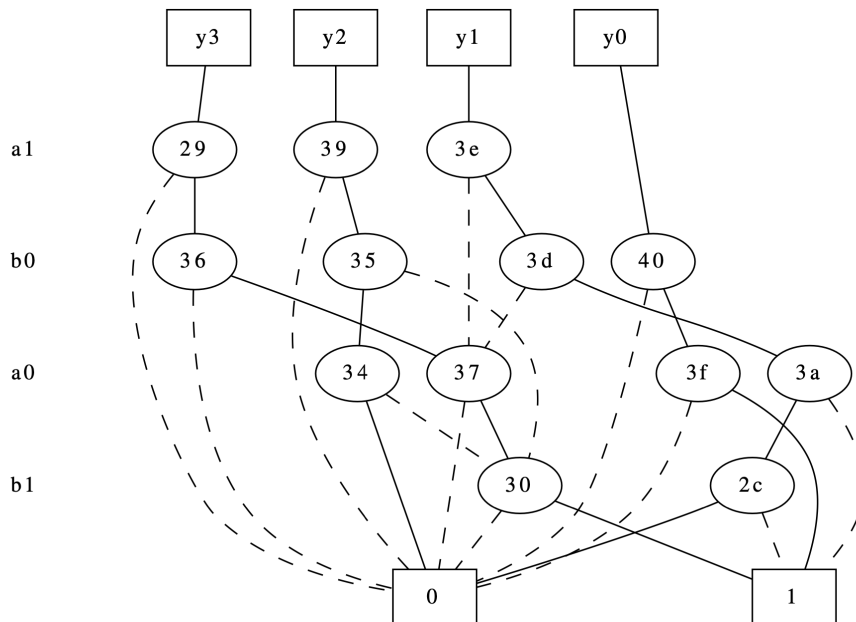
Network structure visualized by ABC
Benchmark "mul". Time was Thu Sep 14 14:22:58 2023.

The network contains 18 logic nodes and 0 latches.



6. convert to BDD (command "collapse")
7. visualize the BDD

```
abc 03> collapse
abc 04> show_bdd -g
```



3 [ABC Boolean Function Representations]

(a) Compare the following differences with the two-bit unsigned multiplier example. Screenshot the results and briefly describe your findings in your report.

1. logic network in AIG (by command "aig") vs. structurally hashed AIG (by command "strash")

	aig	strash
result		
finding	<p>Converts local functions of the nodes to AIGs.</p> <p>It's still the same as the original one.</p>	<p>Transforms the current network into an AIG by one-level structural hashing. The resulting AIG is a logic network composed of two-input AND gates and inverters represented as complemented attributes on the edges.</p>

2. logic network in BDD (by command "bdd") vs. collapsed BDD (by command "collapse")

	bdd (show)	collapse
result		
finding	<p>Converts local functions of the nodes to BDDs.</p> <p>- It's still the same as the original one.</p>	<p>Recursively composes the fanin nodes into the fanout nodes resulting in a network, in which each CO is produced by a node, whose fanins are CIs. Collapsing is performed by building global functions using BDDs and is, therefore, limited to relatively small circuits. After collapsing, the node functions are represented using BDDs.</p>

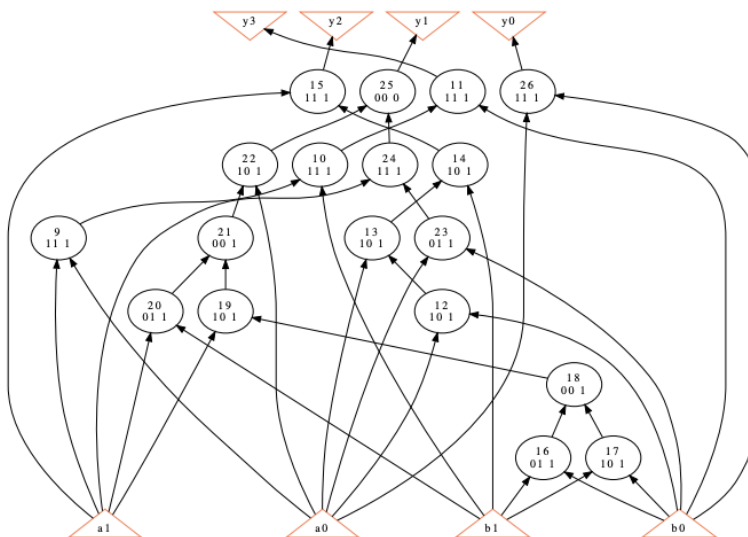
(b) Given a structurally hashed AIG, find a sequence of ABC commands to convert it to a logic network with node function expressed in sum-of-products (SOP). Use the two-bit unsigned multiplier example to test your command sequence, screenshot the results, and put them in your report.

ANS: command "logic"

```
abc 01> read mul.blif
abc 02> strash
abc 03> logic
```

Network structure visualized by ABC
Benchmark "mul". Time was Thu Sep 14 17:10:13 2023.

The network contains 18 logic nodes and 0 latches.



Reference

<https://people.eecs.berkeley.edu/~alanmi/abc/>