BDD

B11115032 陳尚澤

1. PLA1 (4 個輸入)

```
.i 4
.o 1
.ilb a b c d
.ob F
.p 8
0000 1
0011 1
0110 1
1100 1
0101 1
1010 1
1001 1
1111 1
.e
```

表格化簡：

id	variable	elseEdge	thenEdge	comment
0	0	-1	-1	Boolean 0
1	a	2	3	
2	b	4	5	
3	b	6	7	
4	c	8	9	
5	c	9	8	
6	c	9	8	
7	c	8	9	
8	d	16	0	
9	d	0	16	
10	d	0	16	redundant
11	d	16	0	redundant
12	d	0	16	redundant
13	d	16	0	redundant
14	d	16	0	redundant
15	d	0	16	redundant
16	1	-1	-1	Boolean 1

id	variable	elseEdge	thenEdge	comment
0	0	-1	-1	Boolean 0
1	a	2	3	
2	b	4	5	
3	b	5	4	
4	c	8	9	
5	c	9	8	
6	c	9	8	redundant
7	c	8	9	redundant
8	d	16	0	
9	d	0	16	
10	d	0	16	redundant
11	d	16	0	redundant
12	d	0	16	redundant
13	d	16	0	redundant
14	d	16	0	redundant
15	d	0	16	redundant
16	1	-1	-1	Boolean 1

DOT 檔案:

```
digraph BDD {
    {rank=same 1 }
    {rank=same 2 3 }
    {rank=same 4 5 }
    {rank=same 8 9 }

    0 [label="0", shape=box]
    1 [label="a"]
    2 [label="b"]
    3 [label="b"]
    4 [label="c"]
    5 [label="c"]
    8 [label="d"]
```
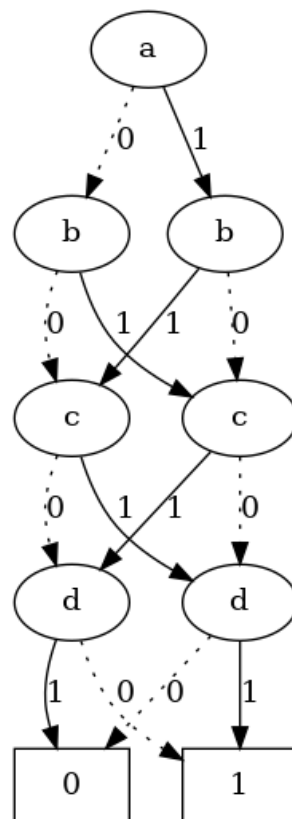
```
    9 [label="d"]
    16 [label="1", shape=box]

    1 -> 2 [label="0", style=dotted]
    1 -> 3 [label="1", style=solid]
    2 -> 4 [label="0", style=dotted]
    2 -> 5 [label="1", style=solid]
    3 -> 5 [label="0", style=dotted]
    3 -> 4 [label="1", style=solid]
    4 -> 8 [label="0", style=dotted]
    4 -> 9 [label="1", style=solid]
    5 -> 9 [label="0", style=dotted]
    5 -> 8 [label="1", style=solid]
    8 -> 16 [label="0", style=dotted]
    8 -> 0 [label="1", style=solid]
    9 -> 0 [label="0", style=dotted]
    9 -> 16 [label="1", style=solid]
}
```

結果圖檔:

2. PLA2 (5 個輸入)

```
.i 5
.o 1
.ilb a b c d e
.ob F
.p 4
1-1-1 1
-0-0- 1
0-0-0 1
-1-1- 1
.e
```

表格化簡：

id	variable	elseEdge	thenEdge	comment
0	0	-1	-1	Boolean 0
1	a	2	3	
2	b	4	5	
3	b	6	7	
4	c	8	9	
5	c	10	11	
6	c	12	13	
7	c	14	15	
8	d	32	17	
9	d	32	0	
10	d	17	32	
11	d	0	32	
12	d	32	0	
13	d	32	27	
14	d	0	32	
15	d	27	32	
16	e	32	32	redundant
17	e	32	0	
18	e	32	32	redundant
19	e	0	0	redundant
20	e	32	0	redundant
21	e	32	32	redundant
22	e	0	0	redundant
23	e	32	32	redundant
24	e	32	32	redundant
25	e	0	0	redundant
26	e	32	32	redundant
27	e	0	32	
28	e	0	0	redundant
29	e	32	32	redundant
30	e	0	32	redundant
31	e	32	32	redundant
32	1	-1	-1	Boolean 1

id	variable	elseEdge	thenEdge	comment
0	0	-1	-1	Boolean 0
1	a	2	3	
2	b	4	5	
3	b	6	7	
4	c	8	9	
5	c	10	11	
6	c	9	13	
7	c	11	15	
8	d	32	17	
9	d	32	0	
10	d	17	32	
11	d	0	32	
12	d	32	0	redundant
13	d	32	27	
14	d	0	32	redundant
15	d	27	32	
16	e	32	32	redundant
17	e	32	0	
18	e	32	32	redundant
19	e	0	0	redundant
20	e	32	0	redundant
21	e	32	32	redundant
22	e	0	0	redundant
23	e	32	32	redundant
24	e	32	32	redundant
25	e	0	0	redundant
26	e	32	32	redundant
27	e	0	32	
28	e	0	0	redundant
29	e	32	32	redundant
30	e	0	32	redundant
31	e	32	32	redundant
32	1	-1	-1	Boolean 1

DOT 檔案:

```
digraph BDD {
    {rank=same 1 }
    {rank=same 2 3 }
    {rank=same 4 5 6 7 }
    {rank=same 8 9 10 11 13 15 }
    {rank=same 17 27 }

    0 [label="0", shape=box]
    1 [label="a"]
    2 [label="b"]
    3 [label="b"]
    4 [label="c"]
    5 [label="c"]
    6 [label="c"]
    7 [label="c"]
    8 [label="d"]
    9 [label="d"]
    10 [label="d"]
    11 [label="d"]
    13 [label="d"]
    15 [label="d"]
    17 [label="e"]
    27 [label="e"]
    32 [label="1", shape=box]

    1 -> 2 [label="0", style=dotted]
    1 -> 3 [label="1", style=solid]
    2 -> 4 [label="0", style=dotted]
    2 -> 5 [label="1", style=solid]
    3 -> 6 [label="0", style=dotted]
    3 -> 7 [label="1", style=solid]
    4 -> 8 [label="0", style=dotted]
    4 -> 9 [label="1", style=solid]
    5 -> 10 [label="0", style=dotted]
    5 -> 11 [label="1", style=solid]
    6 -> 9 [label="0", style=dotted]
```

```
    6 -> 13 [label="1", style=solid]
    7 -> 11 [label="0", style=dotted]
    7 -> 15 [label="1", style=solid]
    8 -> 32 [label="0", style=dotted]
    8 -> 17 [label="1", style=solid]
    9 -> 32 [label="0", style=dotted]
    9 -> 0 [label="1", style=solid]
    10 -> 17 [label="0", style=dotted]
    10 -> 32 [label="1", style=solid]
    11 -> 0 [label="0", style=dotted]
    11 -> 32 [label="1", style=solid]
    13 -> 32 [label="0", style=dotted]
    13 -> 27 [label="1", style=solid]
    15 -> 27 [label="0", style=dotted]
    15 -> 32 [label="1", style=solid]
    17 -> 32 [label="0", style=dotted]
    17 -> 0 [label="1", style=solid]
    27 -> 0 [label="0", style=dotted]
    27 -> 32 [label="1", style=solid]
}
```

結果圖檔：