```
.i 4
.o 1
.ilb a b c d
.ob F
.p 7
00-0 1
0-11 1
1-01 1
0101 1
1111 -
100- 1
-01- 1
.e
```

$$F = a'b'd' + a'cd + ac'd + a'bc'd + ab'c' + b'c$$

Don't care: abcd

a'b'd': m₀, m₂ a'cd: m₃, m₇ ac'd: m₉, m₁₃ a'bc'd: m₅ ab'c': m₈, m₉ b'c: m₂, m₃, m₁₀, m₁₁ abcd: m₁₅

$$F = \sum m(0, 2, 3, 5, 7, 8, 9, 10, 11, 13) + d(15)$$

Group	Minterm	4-literal term	Minterms	3-literal term Minterms		2-literal term	
0	m _o	0000	m ₀ , m ₂	00-0	m ₀ , m ₂ , m ₈ , m ₁₀	-0-0	
			m ₀ , m ₈	-000			
0	m ₂	0010	m ₂ , m ₃	001-	m ₂ , m ₃ , m ₁₀ , m ₁₁	-01-	
			m ₂ , m ₁₀	-010			
	m ₈	1000	m ₈ , m ₉	100-	m ₈ , m ₉ , m ₁₀ , m ₁₁	10	
			m ₈ , m ₁₀	10-0			
2	m ₃	0011	m ₃ , m ₇	0-11	m ₃ , m ₇ , m ₁₁ , m ₁₅	11	
			m ₃ , m ₁₁	-011			
	m ₅	0101	m ₅ , m ₇	01-1	m ₅ , m ₇ , m ₁₃ , m ₁₅	-1-1	
			m ₅ , m ₁₃	-101			
	m ₉	1001	m ₉ , m ₁₁	10-1	m ₉ , m ₁₁ , m ₁₃ , m ₁₅	11	
			m ₉ , m ₁₃	1-01			
	m ₁₀	1010	m ₁₀ , m ₁₁	101-			
3	m ₇	0111	m ₇ , m ₁₅	-111			
	m ₁₁	1011	m ₁₁ , m ₁₅	1-11			
	m ₁₃	1101	m ₁₃ , m ₁₅	11-1			
4	m ₁₅	1111					

灰底字表示 prime implicant (PI)

Symbol	Notation	Product term	m ₀	m ₂	m ₃	m ₅	m ₇	m ₈	m ₉	m ₁₀	m ₁₁	m ₁₃
U	-0-0	b'd'	✓	-				✓		✓		
V	-01-	b'c		✓	✓					✓	✓	
W	10	ab'						✓	✓	✓	✓	
х	11	cd			✓		✓				✓	
Υ	-1-1	bd				✓	✓					✓
Z	11	ad							✓		✓	✓

Essential prime implicant (EPI): b'd', bd (: m₀, m₅ is covered by only one PI)

Symbol	Notation	Product term	m ₃	m ₉	m ₁₁	
V	-01-	b'c	✓		✓	
W	10	ab'		✓	✓	
х	11	cd	✓		✓	
Z	11	ad		✓	✓	

$$(V + X) (W + Z) (V + W + X + Z)$$

$$= (VW + VZ + WX + XZ) (V + W + X + Z)$$

$$= VW + VWX + VWZ + VZ + VXZ + WX + WXZ + XZ$$

: VW, VZ, WX, XZ are feasible solutions (i.e., minimum number of product terms)

$$F = b'd' + bd + b'c + ab'$$

$$F = b'd' + bd + b'c + ad$$

$$F = b'd' + bd + ab' + cd$$

$$F = b'd' + bd + cd + ad$$

Output one of the above 4 functions to a PLA file.

Take F = b'd' + bd + b'c + ab' as an example.

- .i 4
- .0 1
- .ilb a b c d
- .ob f
- .p 4
- -0-0 1
- -1-1 1
- -01- 1
- 10-- 1

.e