

Diagrame Veitch-Karnaugh – ORDINEA DE COMPLETARE

Patru variabile - **Completare pe orizontala**

1. $m(11,5,7,2,13,0,15,14,10,6,3,1)$; 2. $M(9,2,15,3,13,8,10,11,14,4,0,12)$

3. $m(12,3,0,10,15,14,8,4,7,2,9,11)$;

Digit	A	B	C	D	F(A,B,C,D)	F'
0	0	0	0	0	1	0
1	0	0	0	1	1	0
2	0	0	1	0	1	0
3	0	0	1	1	1	0
4	0	1	0	0	0	1
5	0	1	0	1	1	0
6	0	1	1	0	1	0
7	0	1	1	1	1	0
8	1	0	0	0	0	1
9	1	0	0	1	0	1
10	1	0	1	0	1	0
11	1	0	1	1	1	0
12	1	1	0	0	0	1
13	1	1	0	1	1	0
14	1	1	1	0	1	0
15	1	1	1	1	1	0

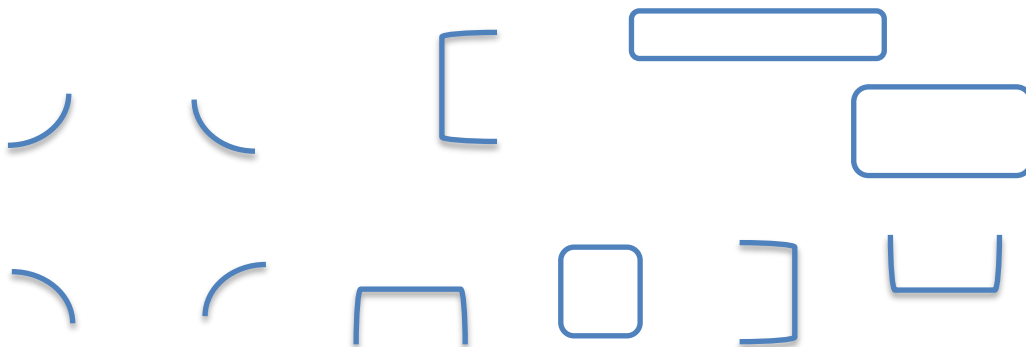
		CD			
		C'D'	C'D	CD	CD'
AB	00	0	0	0	0
	01	1	0	0	0
	11	1	0	0	0
	10	1	1	0	0

$F = C + A'B' + BD$; nr.op.=2or+2not+2and=6op

$F' = BC'D' + AB'C'$ cu deMorgan se obtine

$(F')' = F = (B' + C + D)(A' + B + C)$

nr.op.=1and+2not+4or=7op



Completare pe verticala

Patru variabile - Completare pe verticala

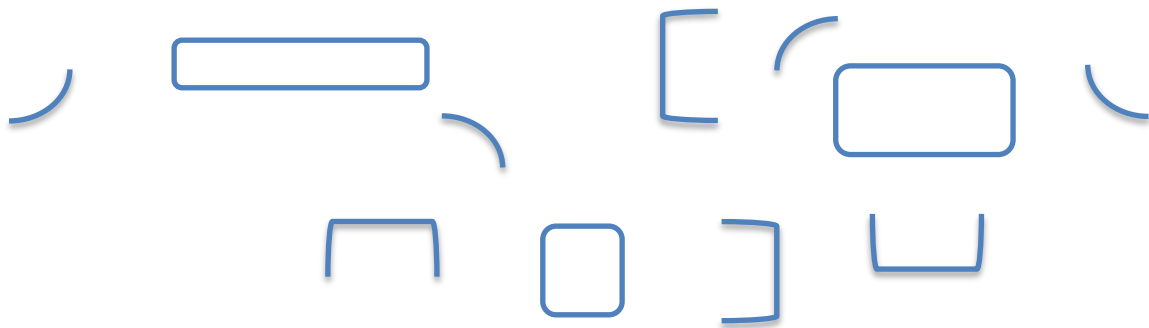
1. $m(11,5,7,2,13,0,15,14,10,6,3,1)$; 2. $M(9,2,15,3,13,8,10,11,14,4,0,12)$

3. $m(12,3,0,10,15,14,8,4,7,2,9,11)$;

Digit	A	B	C	D	F(A,B,C,D)	F'
0	0	0	0	0	1	0
1	0	0	0	1	1	0
2	0	0	1	0	1	0
3	0	0	1	1	1	0
4	0	1	0	0	0	1
5	0	1	0	1	1	0
6	0	1	1	0	1	0
7	0	1	1	1	1	0
8	1		0	0	0	1
9	1	0	0	1	0	1
10	1	0	1	0	1	0
11	1	0	1	1	1	0
12	1	0	0	0	0	1
13	1	1	0	1	1	0
14	1	1	1	0	1	0
15	1	1	1	1	1	0

		AB		A'B'	A'B	AB	AB'
		CD		00	01	11	10
C'D'		00		1	0	0	0
C'D		01		1	1	1	0
CD		11		1	1	1	1
CD'		10		1	1	1	1

$$F = C + A'B' + BD$$



Patru variabile - Completare pe orizontala

2. M(9,2,15,3,13,8,10,11,14,4,0,12)

Digit	A	B	C	D	F(A,B,C,D)	F'
0	0	0	0	0	0	
1	0	0	0	1	1	
2	0	0	1	0	0	
3	0	0	1	1	0	
4	0	1	0	0	0	
5	0	1	0	1	1	
6	0	1	1	0	1	
7	0	1	1	1	1	
8	1	0	0	0	0	
9	1	0	0	1	0	
10	1	0	1	0	0	
11	1	0	1	1	0	
12	1	1	0	0	0	
13	1	1	0	1	0	
14	1	1	1	0	0	
15	1	1	1	1	0	

		CD			
		C'D'	C'D	CD	CD'
AB	00	1	0	1	1
	01	1	0	0	0
	11	1	1	1	1
	10	1	1	1	1

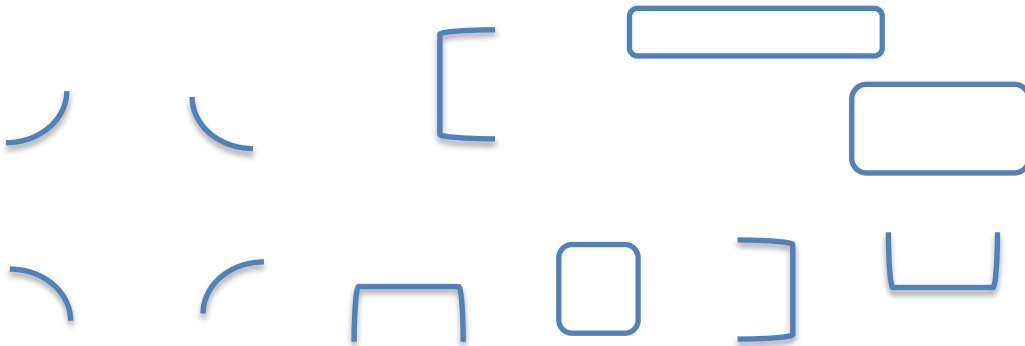
$F = A'C'D + A'BC$ (nr.op.=2not+1or+4and=7op)

$F' = A + C'D' + B'C$ (nr.op.=3not+2or+2and=7op)

$(F')' = F = (A') \cdot (C+D) \cdot (B+C')$

(nr.op.=2not+2and+2or=6op)

$F' = A + A'C'D' + A'B'C$ nr.op.=4not+2or+4and=10op



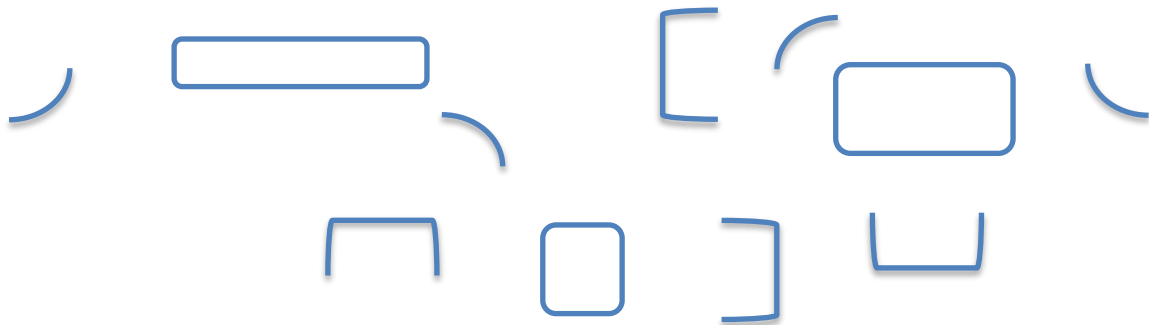
Completare pe verticala

Patru variabile - Completare pe verticala

2.M(9,2,15,3,13,8,10,11,14,4,0,12)

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1		0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	0	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

		AB		A'B'	A'B	AB	AB'
		CD		00	01	11	10
C'D'	00			0	4	12	8
C'D	01			1	5	13	9
CD	11			3	7	15	11
CD'	10			2	6	14	10



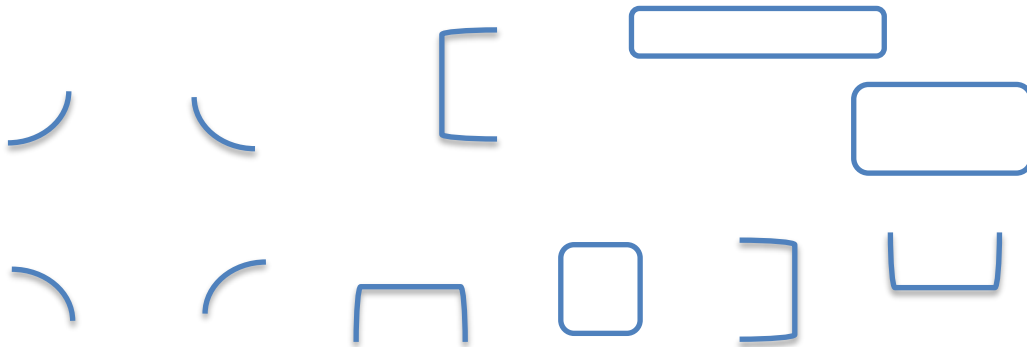
Patru variabile - Completare pe orizontala

3. m(12,3,0,10,15,14,8,4,7,2,9,11)

Digit	A	B	C	D	F(A,B,C,D)	F'
0	0	0	0	0	1	
1	0	0	0	1	0	
2	0	0	1	0	1	
3	0	0	1	1	1	
4	0	1	0	0	1	
5	0	1	0	1	0	
6	0	1	1	0	0	
7	0	1	1	1	1	
8	1	0	0	0	1	
9	1	0	0	1	1	
10	1	0	1	0	1	
11	1	0	1	1	1	
12	1	1	0	0	1	
13	1	1	0	1	0	
14	1	1	1	0	1	
15	1	1	1	1	1	

		CD			
		C'D'	C'D	CD	CD'
AB		00	01	11	10
	A'B'		1		
	A'B		1		1
	AB		1		
	AB'				

$F = \text{nr.op.} = \underline{C'D'} + \underline{CD} + \underline{AB'} +$
 $\quad \underline{B'D'} + \underline{B'C} + \underline{AC(AD')}$
 $F1 = C'D' + CD + AB' + B'D' + AC$; nr.op.=3not+4or+5and
 $F2 = C'D' + CD + AB' + B'D' + AD'$; nr.op.=3not+4or+5and
 $F3 = C'D' + CD + AB' + B'C + AC$; nr.op.=12op
 $F4 = C'D' + CD + AB' + B'C + AD'$; nr.op.=12op
 $F' = A'BCD' + A'C'D + BC'D$;
 nr.op.=3not+2or+7and=12op
 $F' = A'BCD' + C'D(A'+B) \rightarrow 3\text{not}+2\text{or}+5\text{and}=10\text{op}$
 $(F')' = F = (A+B'+C+D)(A+C+D')(B'+C+D')$

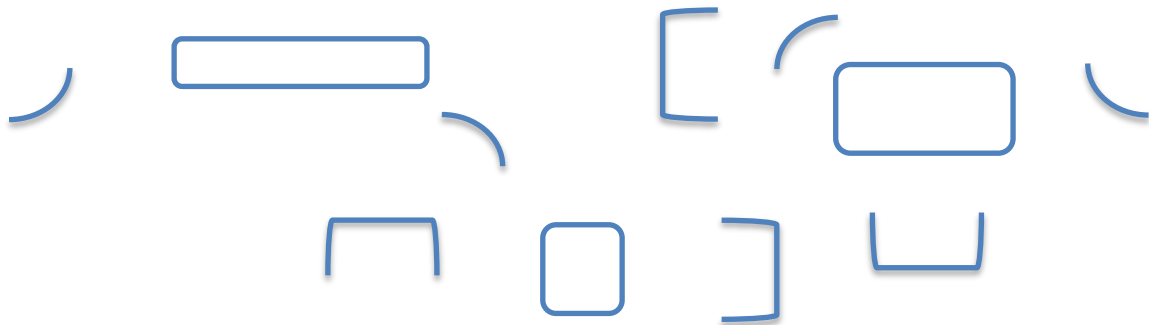


Completare pe verticala

Patru variabile - Completare pe verticala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1		0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	0	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

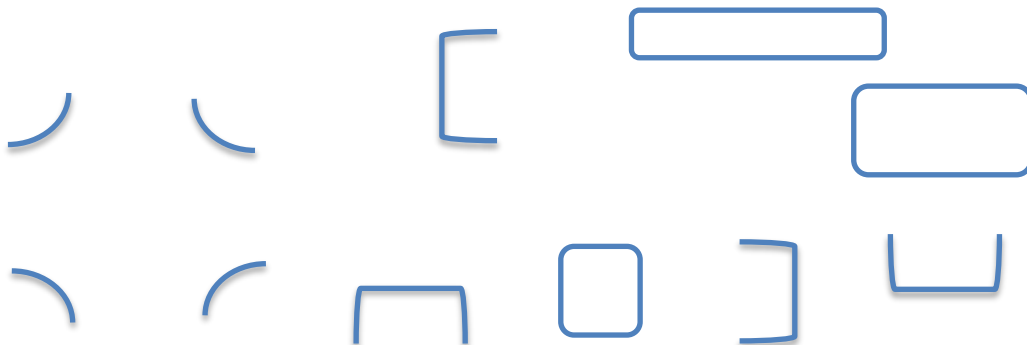
		AB	A'B'	A'B	AB	AB'
		CD	00	01	11	10
C'D'	00		0	4	12	8
C'D	01		1	5	13	9
CD	11		3	7	15	11
CD'	10		2	6	14	10



Patru variabile - Completare pe orizontala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	1	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

		CD			
		C'D'	C'D	CD	CD'
AB	00	0	1	3	2
	01	4	5	7	6
	11	12	13	15	14
	10	8	9	11	10

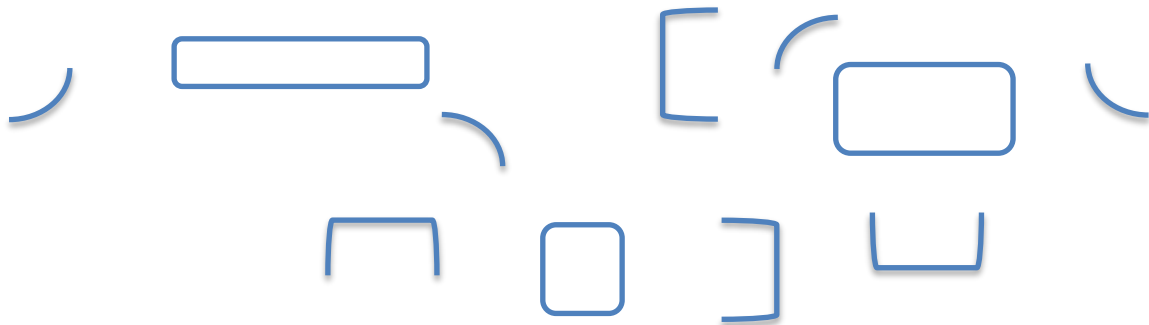


Completare pe verticala

Patru variabile - Completare pe verticala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1		0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	0	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

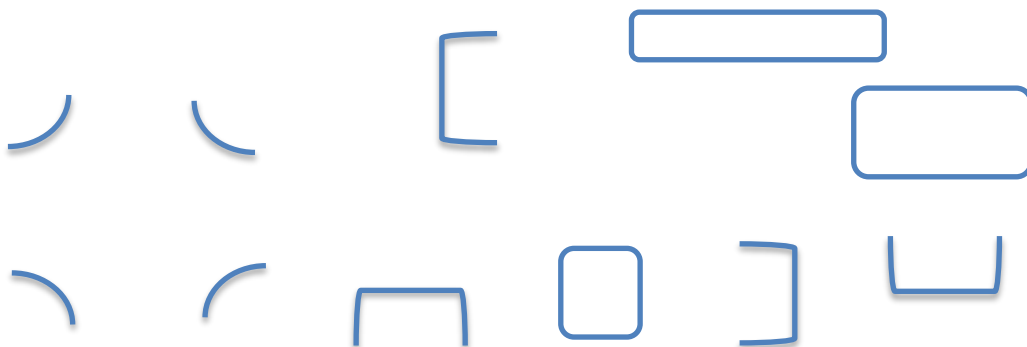
		AB	A'B'	A'B	AB	AB'
		CD	00	01	11	10
C'D'	00		0	4	12	8
C'D	01		1	5	13	9
CD	11		3	7	15	11
CD'	10		2	6	14	10



Patru variabile - Completare pe orizontala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	1	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

		CD			
		C'D'	C'D	CD	CD'
AB	00	0	1	3	2
	01	4	5	7	6
	11	12	13	15	14
	10	8	9	11	10

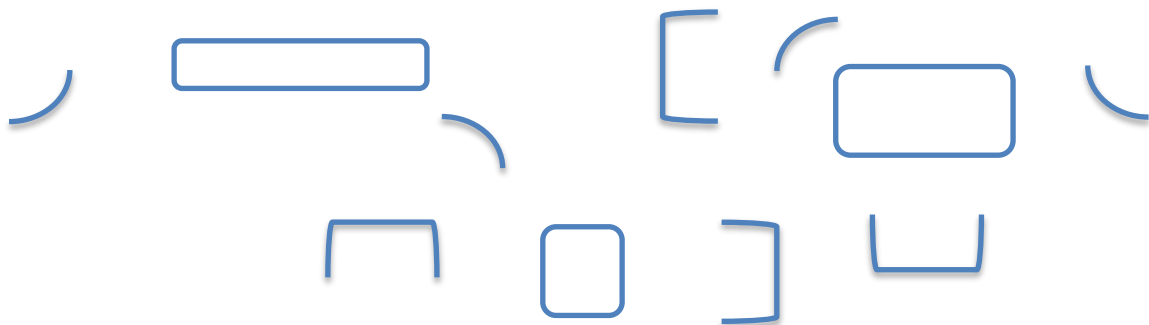


Completare pe verticala

Patru variabile - Completare pe verticala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1		0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	0	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

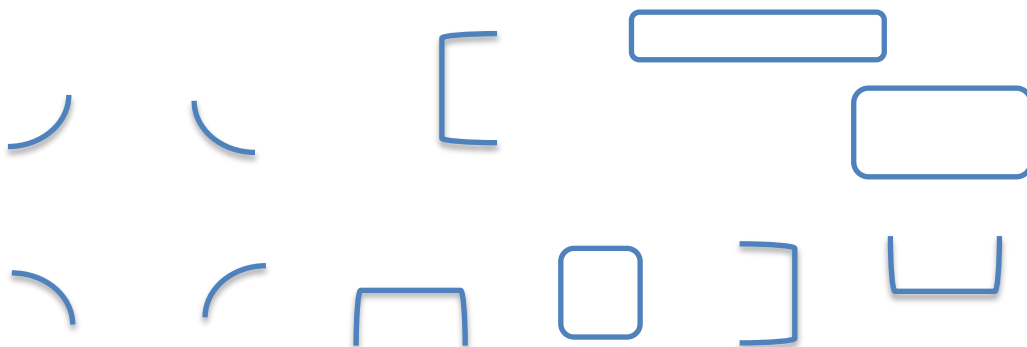
		AB	A'B'	A'B	AB	AB'
		CD	00	01	11	10
C'D'	00		0	4	12	8
C'D	01		1	5	13	9
CD	11		3	7	15	11
CD'	10		2	6	14	10



Patru variabile - Completare pe orizontala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	1	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

		CD			
		C'D'	C'D	CD	CD'
AB	00	0	1	3	2
	01	4	5	7	6
	11	12	13	15	14
	10	8	9	11	10

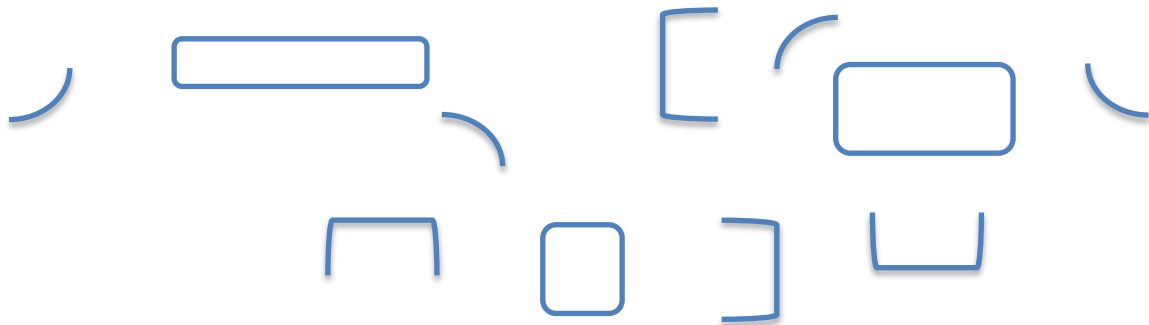


Completare pe verticala

Patru variabile - Completare pe verticala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1		0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	0	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

		AB	A'B'	A'B	AB	AB'
		00	01	11	10	
CD						
C'D'	00	0	4	12	8	
C'D	01	1	5	13	9	
CD	11	3	7	15	11	
CD'	10	2	6	14	10	

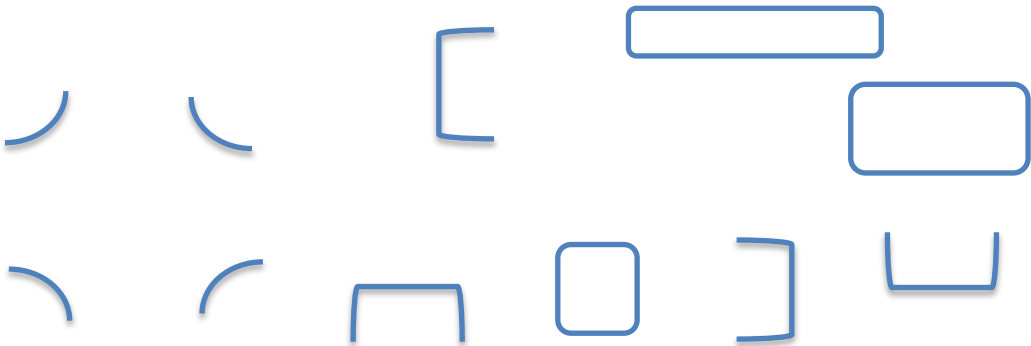


Patru variabile - Completare pe orizontala

m()

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	1	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

AB \ CD		CD	C'D'	C'D	CD	CD'
		00	01	11	10	
A'B'	00	0	1	3	2	
A'B	01	4	5	7	6	
AB	11	12	13	15	14	
AB'	10	8	9	11	10	



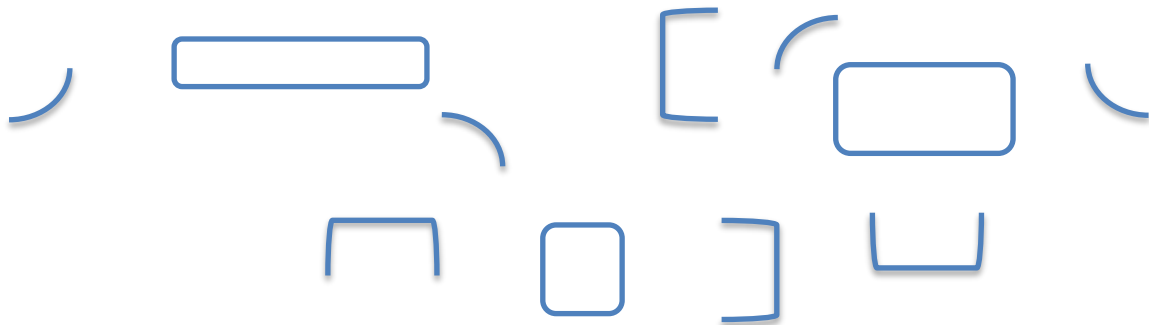
Completare pe verticala

Patru variabile - Completare pe verticala

m()

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1		0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	0	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

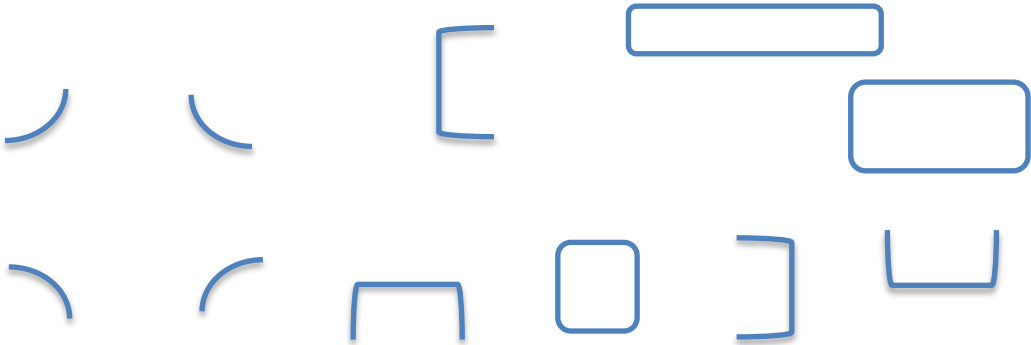
		AB			
		A'B'	A'B	AB	AB'
CD	00	0	4	12	8
	01	1	5	13	9
CD	11	3	7	15	11
CD'	10	2	6	14	10



Patru variabile - Completare pe orizontala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	1	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

		CD			
		C'D'	C'D	CD	CD'
AB	00	0	1	3	2
	01	4	5	7	6
AB	11	12	13	15	14
AB'	10	8	9	11	10

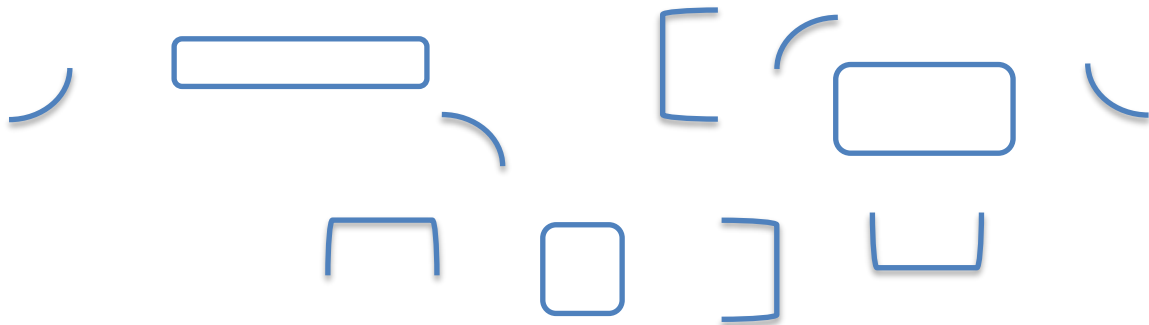


Completare pe verticala

Patru variabile - Completare pe verticala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1		0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	0	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

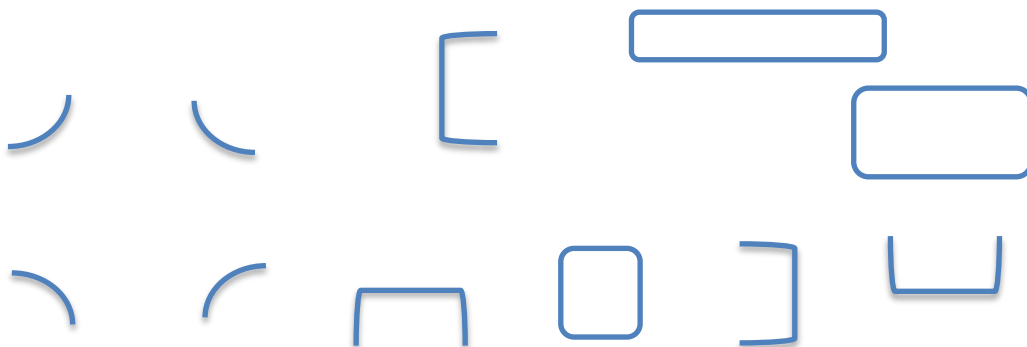
		AB	A'B'	A'B	AB	AB'
		CD	00	01	11	10
C'D'	00		0	4	12	8
C'D	01		1	5	13	9
CD	11		3	7	15	11
CD'	10		2	6	14	10



Patru variabile - Completare pe orizontala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	1	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

		CD			
		C'D'	C'D	CD	CD'
AB	00	0	1	3	2
	01	4	5	7	6
	11	12	13	15	14
	10	8	9	11	10

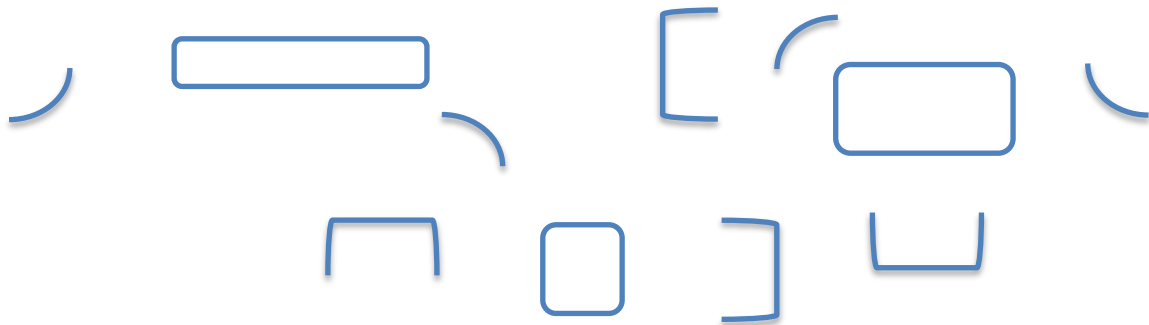


Completare pe verticala

Patru variabile - Completare pe verticala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1		0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	0	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

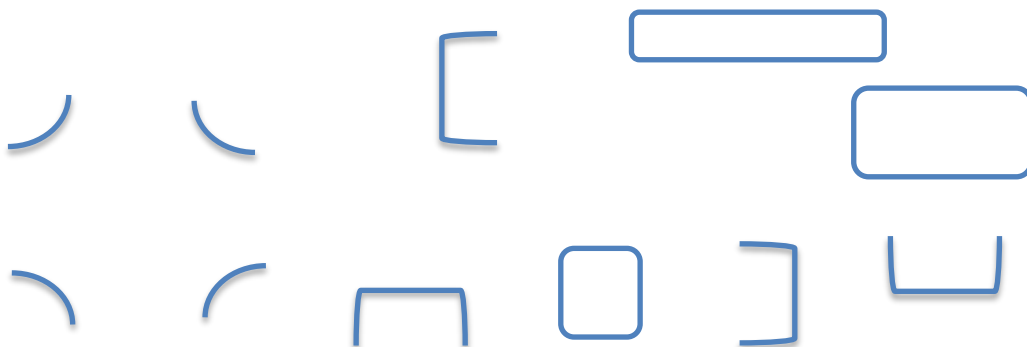
		AB	A'B'	A'B	AB	AB'
		CD	00	01	11	10
C'D'	00		0	4	12	8
C'D	01		1	5	13	9
CD	11		3	7	15	11
CD'	10		2	6	14	10



Patru variabile - Completare pe orizontala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	1	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

		CD			
		C'D'	C'D	CD	CD'
AB	00	0	1	3	2
	01	4	5	7	6
	11	12	13	15	14
	10	8	9	11	10

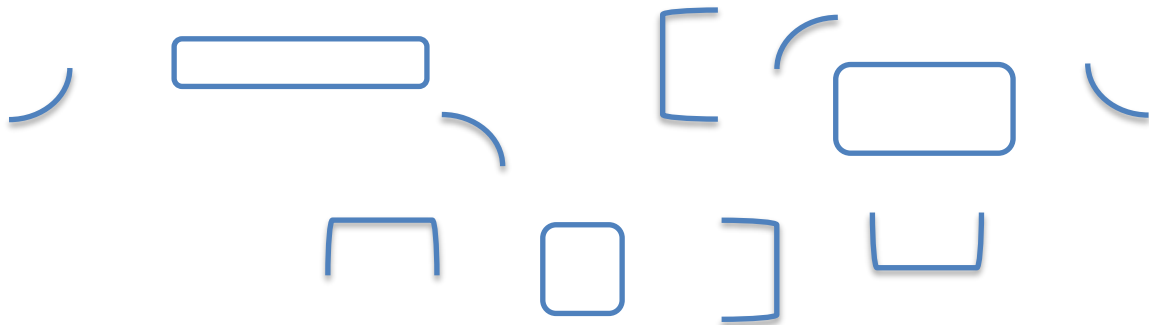


Completare pe verticala

Patru variabile - Completare pe verticala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1		0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	0	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

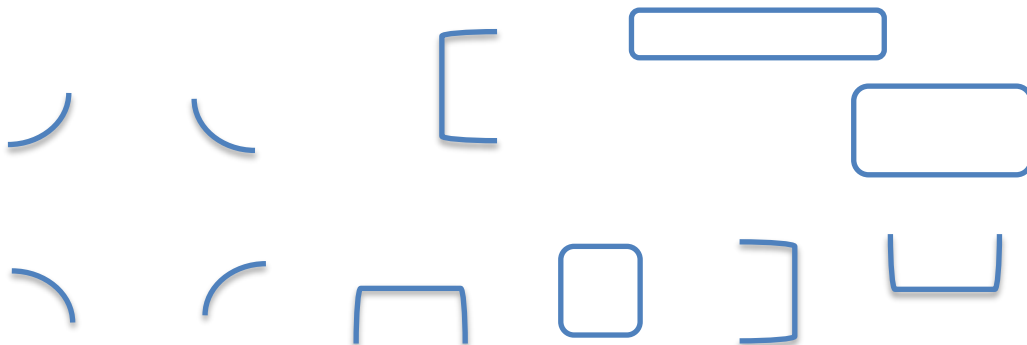
		AB	A'B'	A'B	AB	AB'
		00	01	11	10	
CD						
C'D'	00	0	4	12	8	
C'D	01	1	5	13	9	
CD	11	3	7	15	11	
CD'	10	2	6	14	10	



Patru variabile - Completare pe orizontala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	1	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

		CD			
		C'D'	C'D	CD	CD'
AB	00	0	1	3	2
	01	4	5	7	6
	11	12	13	15	14
	10	8	9	11	10

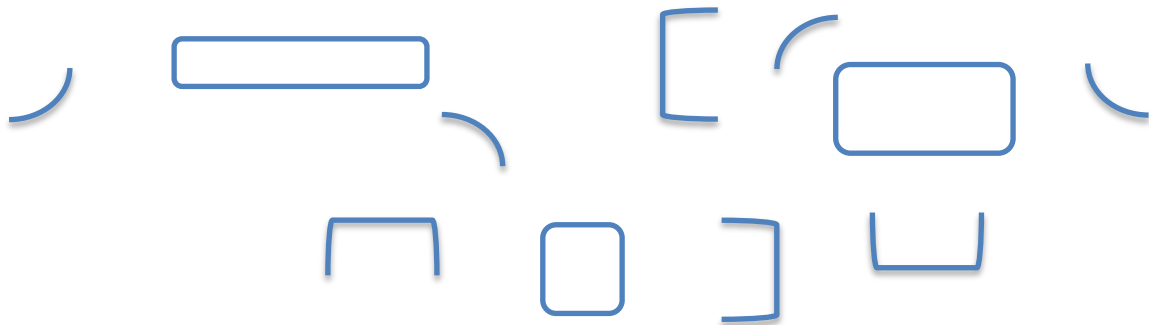


Completare pe verticala

Patru variabile - Completare pe verticala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1		0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	0	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

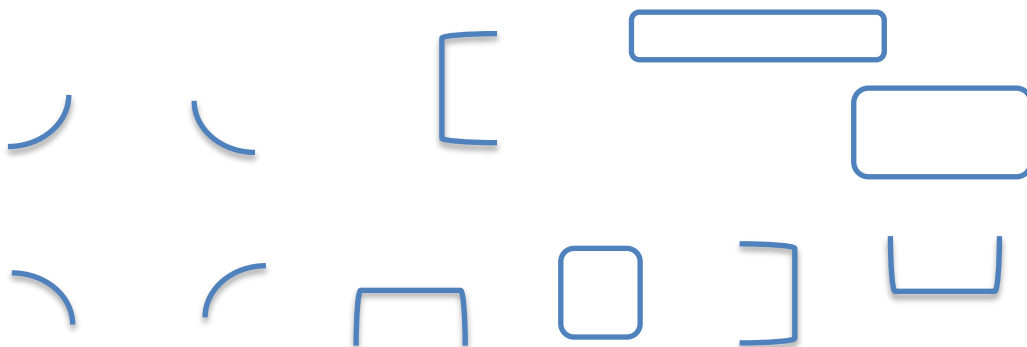
		AB	A'B'	A'B	AB	AB'
		CD	00	01	11	10
C'D'	00		0	4	12	8
C'D	01		1	5	13	9
CD	11		3	7	15	11
CD'	10		2	6	14	10



Patru variabile - Completare pe orizontala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	1	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

		CD			
		C'D'	C'D	CD	CD'
AB	00	0	1	3	2
	01	4	5	7	6
	11	12	13	15	14
	10	8	9	11	10



Completare pe verticala

Patru variabile - Completare pe verticala

Digit	A	B	C	D	F(A,B,C,D)
0	0	0	0	0	
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1		0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	0	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	

		AB	A'B'	A'B	AB	AB'
		00	01	11	10	
CD						
C'D'	00	0	4	12	8	
C'D	01	1	5	13	9	
CD	11	3	7	15	11	
CD'	10	2	6	14	10	

