1) Representar a tabela verdade das expressões abaixo:

a. $S = \overline{A.B} + A(\overline{B+C}) + \overline{BC}$

A	B	C				
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

b. $S = \overline{A.[(\overline{B+C}) + (\overline{A+B})]}$

A	B	C				
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

c. $S = \overline{\overline{A.B}.C} + \overline{A.B.C}$

A	B	C				
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

d. $S = \overline{A+C+\overline{B}} + (\overline{A.B})$

A	B	C				
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

e. $S = (\overline{\overline{A}.C + D + \overline{A}.B})$

A	B	C	D				
0	0	0	0				
0	0	0	1				
0	0	1	0				
0	0	1	1				
0	1	0	0				
0	1	0	1				
0	1	1	0				
0	1	1	1				
1	0	0	0				
1	0	0	1				
1	0	1	0				
1	0	1	1				
1	1	0	0				
1	1	0	1				
1	1	1	0				
1	1	1	1				

f. $S = \overline{\overline{A}.B.\overline{C}D} + A.B.\overline{CD} + \overline{A}.B.\overline{C}D + \overline{A}.\overline{B}.CD$

A	B	C	D				
0	0	0	0				
0	0	0	1				
0	0	1	0				
0	0	1	1				
0	1	0	0				
0	1	0	1				
0	1	1	0				
0	1	1	1				
1	0	0	0				
1	0	0	1				
1	0	1	0				
1	0	1	1				
1	1	0	0				
1	1	0	1				
1	1	1	0				
1	1	1	1				

g. $S = (\overline{A + B).C} + \overline{D.(C + B)}$

A	B	C	D				
0	0	0	0				
0	0	0	1				
0	0	1	0				
0	0	1	1				
0	1	0	0				
0	1	0	1				
0	1	1	0				

0	1	1	1				
1	0	0	0				
1	0	0	1				
1	0	1	0				
1	0	1	1				
1	1	0	0				
1	1	0	1				
1	1	1	0				
1	1	1	1				

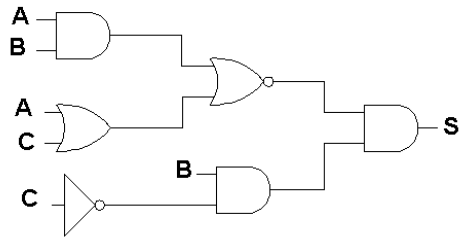
h. $S = \overline{A}.\overline{B}.\overline{C} + A.B.\overline{C}.D + A.\overline{B}.\overline{C}$

A	B	C	D				
0	0	0	0				
0	0	0	1				
0	0	1	0				
0	0	1	1				
0	1	0	0				
0	1	0	1				
0	1	1	0				
0	1	1	1				
1	0	0	0				
1	0	0	1				
1	0	1	0				
1	0	1	1				
1	1	0	0				
1	1	0	1				
1	1	1	0				
1	1	1	1				

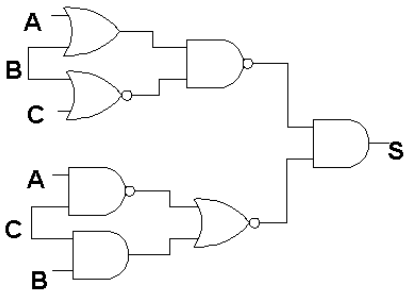
2) Desenhar o diagrama de portas lógicas para cada uma das expressões do exercícios anterior.

3) Escrever a expressão booleana correspondente aos diagramas abaixo:

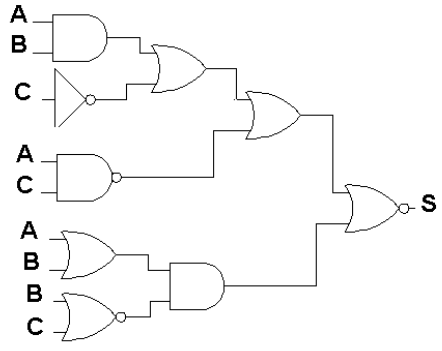
a)



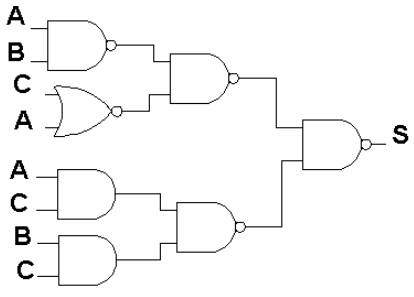
b)



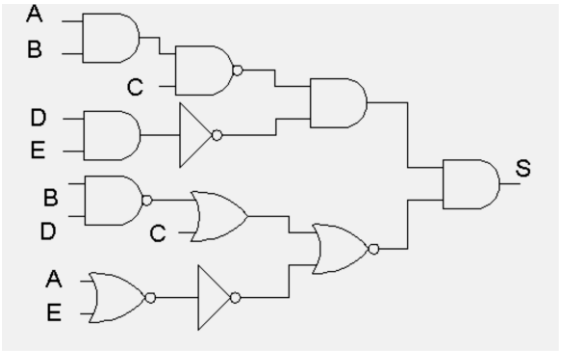
c)



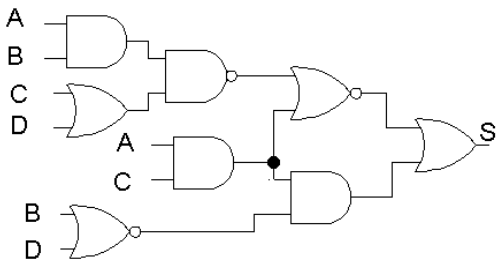
d)



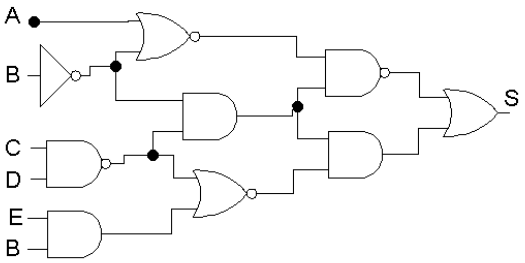
e)



f)



g)



4) Obter a tabela verdade de cada um dos circuitos da questão anterior.

5) Para cada tabela verdade abaixo, obter o circuito lógico correspondente na forma de soma de mintermos.

a)

A	B	C	S
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0

b)

A	B	C	S
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0

c)

A	B	C	S
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0

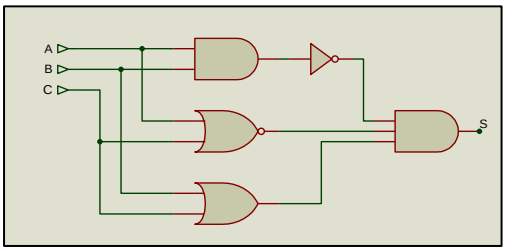
d)

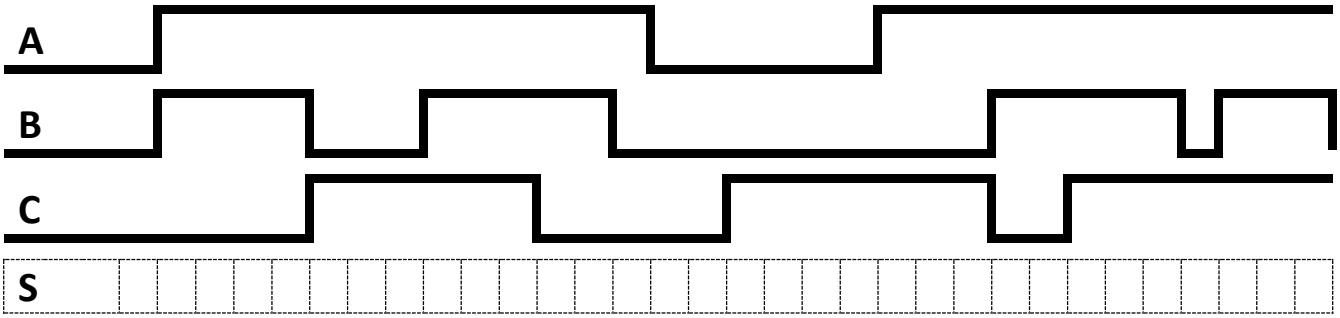
A	B	C	S
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

5) Simplificar algebricamente e também através de mapas de Karnaugh as expressões booleanas dos exercícios 1, 3 e 5.

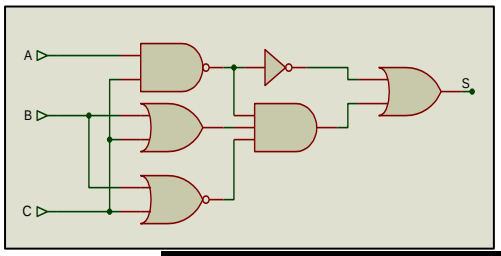
6) Desenhar o diagrama de formas de onda para os circuitos abaixo:

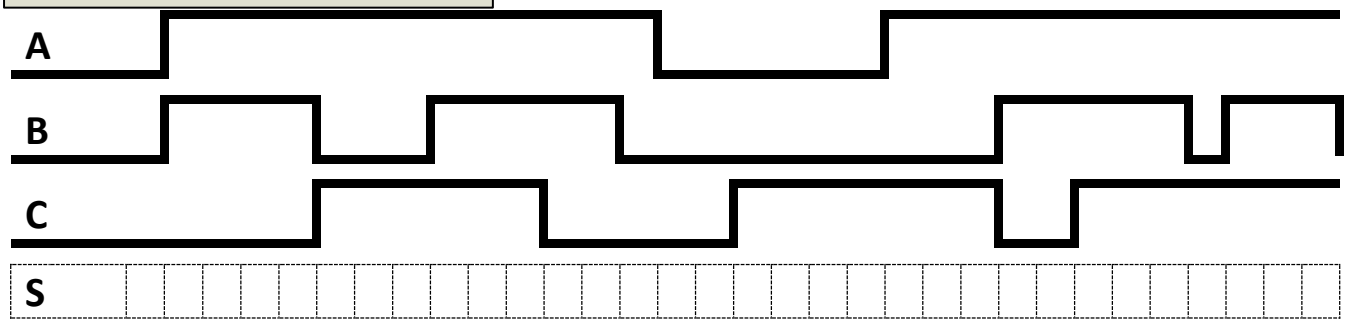
a)



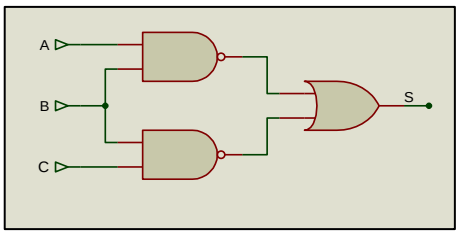


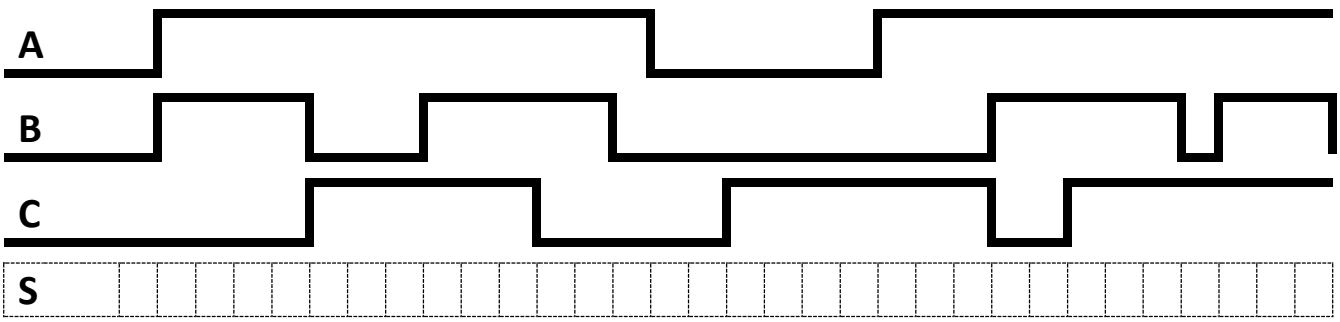
b)

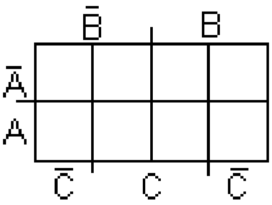
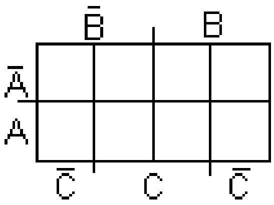
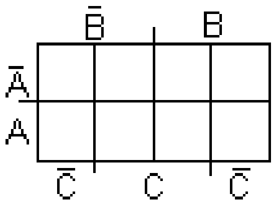
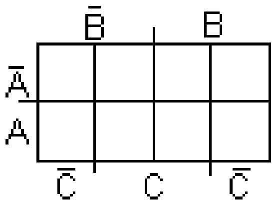




c)






$\bar{B}$ B
$\bar{A}$ A
$\bar{C}$ C $\bar{C}$

$\bar{B}$ B
$\bar{A}$ A
$\bar{C}$ C $\bar{C}$

$\bar{B}$ B
$\bar{A}$ A
$\bar{C}$ C $\bar{C}$

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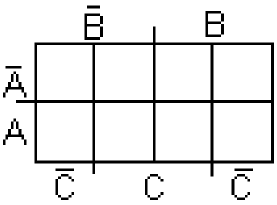
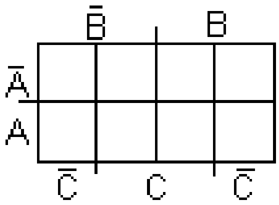
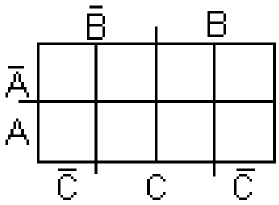
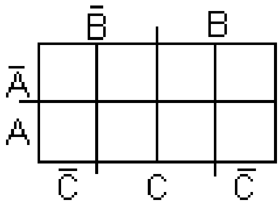
$\bar{A}$ A
$\bar{C}$ C $\bar{C}$

$\bar{B}$ B
$\bar{A}$ A
$\bar{C}$ C $\bar{C}$

$\bar{B}$ B
$\bar{A}$ A
$\bar{C}$ C $\bar{C}$

$\bar{B}$ B
$\bar{A}$ A
$\bar{C}$ C $\bar{C}$

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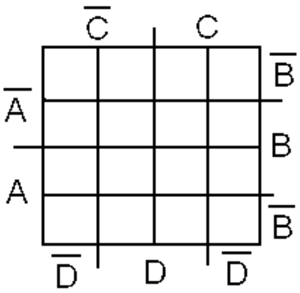
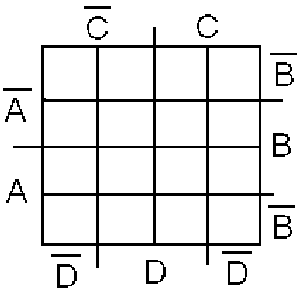
$\bar{A}$ A
$\bar{C}$ C $\bar{C}$

$\bar{C}$ C
$\bar{B}$ B $\bar{B}$
$\bar{A}$ A
$\bar{D}$ D $\bar{D}$

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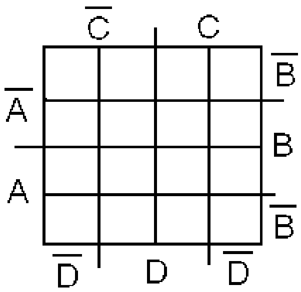
$\bar{B}$ B $\bar{B}$
$\bar{A}$ A
$\bar{D}$ D $\bar{D}$

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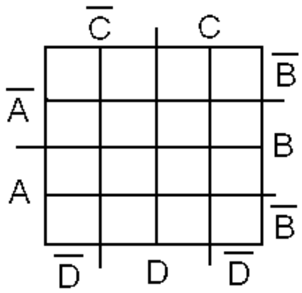
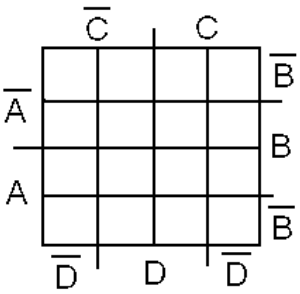
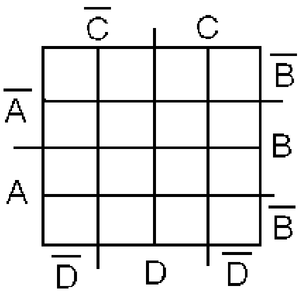
$\bar{B}$ B $\bar{B}$
$\bar{A}$ A
$\bar{D}$ D $\bar{D}$

$\bar{C}$ C
$\bar{B}$ B $\bar{B}$
$\bar{A}$ A
$\bar{D}$ D $\bar{D}$

$\bar{C}$ C
$\bar{B}$ B $\bar{B}$
$\bar{A}$ A
$\bar{D}$ D $\bar{D}$

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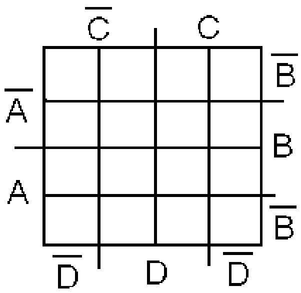
$\bar{D}$ D $\bar{D}$

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$\bar{B}$ B $\bar{B}$
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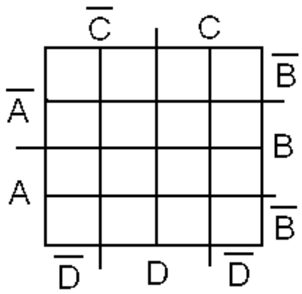
$\bar{D}$ D $\bar{D}$

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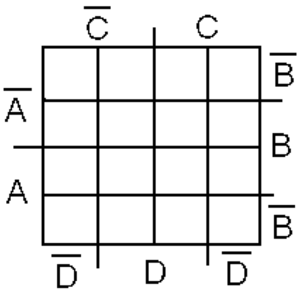
$\bar{B}$ B $\bar{B}$
$\bar{A}$ A
$\bar{D}$ D $\bar{D}$

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$\bar{B}$ B $\bar{B}$
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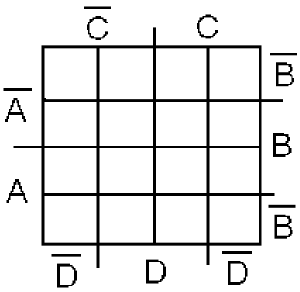
$\bar{D}$ D $\bar{D}$

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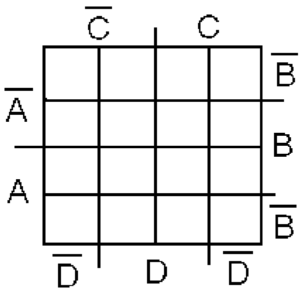
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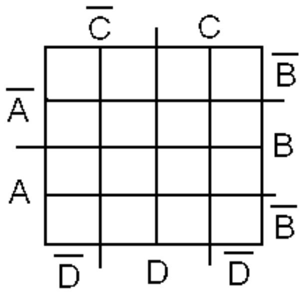
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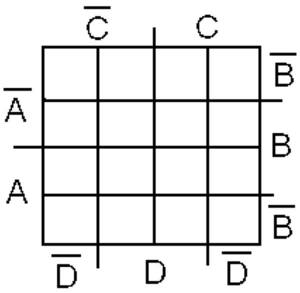
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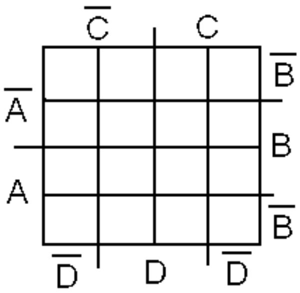
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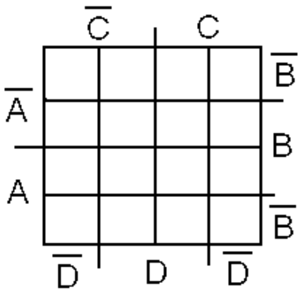
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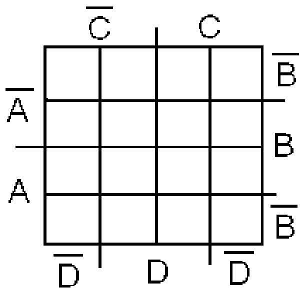
$\bar{C}$ C
$\bar{B}$ B $\bar{B}$
$\bar{A}$ A
$\bar{D}$ D $\bar{D}$

A	B	C				
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

A	B	C				
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

A	B	C				
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

A	B	C				
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

A	B	C				
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

A	B	C	D				
0	0	0	0				
0	0	0	1				
0	0	1	0				
0	0	1	1				
0	1	0	0				
0	1	0	1				
0	1	1	0				
0	1	1	1				
1	0	0	0				
1	0	0	1				
1	0	1	0				
1	0	1	1				
1	1	0	0				
1	1	0	1				
1	1	1	0				
1	1	1	1				

A	B	C	D				
0	0	0	0				
0	0	0	1				
0	0	1	0				
0	0	1	1				
0	1	0	0				
0	1	0	1				
0	1	1	0				
0	1	1	1				
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1	0	0	1				
1	0	1	0				
1	0	1	1				
1	1	0	0				
1	1	0	1				
1	1	1	0				
1	1	1	1				

A	B	C	D				
0	0	0	0				
0	0	0	1				
0	0	1	0				
0	0	1	1				
0	1	0	0				
0	1	0	1				
0	1	1	0				
0	1	1	1				
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1	0	1	0				
1	0	1	1				
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1	1	0	1				
1	1	1	0				
1	1	1	1				