

Creating Logic Circuits using OR of ANDs

When you need a circuit for a
specific truth table,
and you have absolutely no idea
where to start.



A	B	X
0	0	0
0	1	1
1	0	1
1	1	0

1. Find all the 1s



A	B	X
0	0	0
0	1	1
1	0	1
1	1	0

$A'B$

AB'

1. Find all the 1s
2. Write an AND expression for each input or input'



A	B	X
0	0	0
0	1	1
1	0	1
1	1	0

A'B

AB'

$$X = A'B + AB'$$

1. Find all the 1s
2. Write an AND expression for each input or input'
3. OR them together



OR of ANDs

A	B	\oplus
0	0	0
0	1	1
1	0	1
1	1	0

$A'B$

AB'

$$A \oplus B = A'B + AB'$$

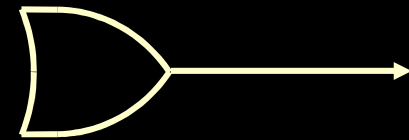
1. Find all the 1s
2. Write an AND expression for each input or input'
3. OR them together



$$A \oplus B = A'B + AB'$$

A _____

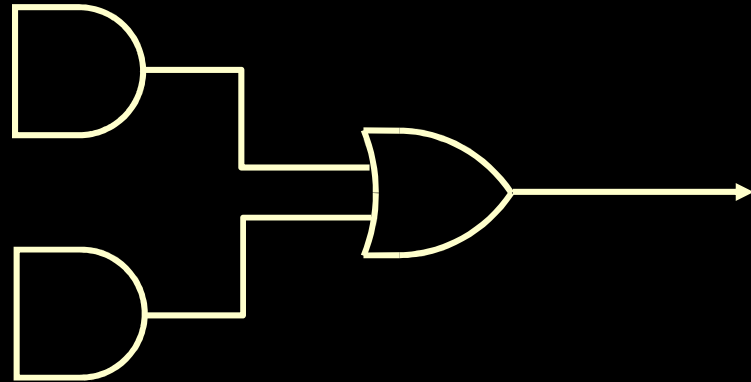
B _____



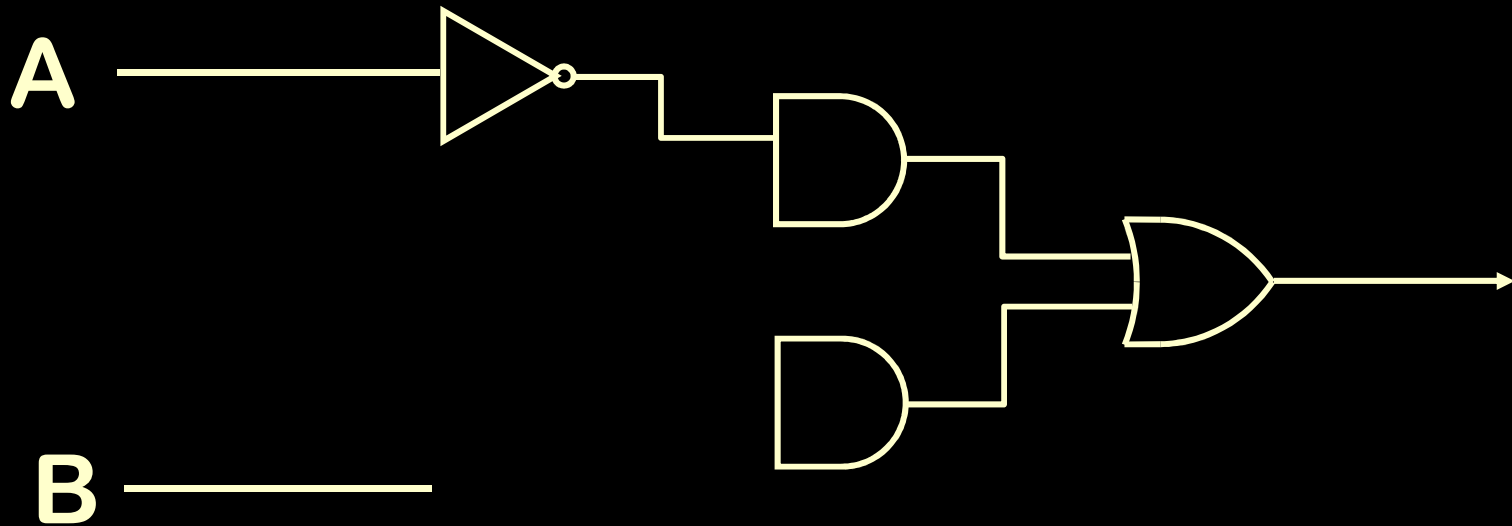
$$A \oplus B = A'B + AB'$$

A _____

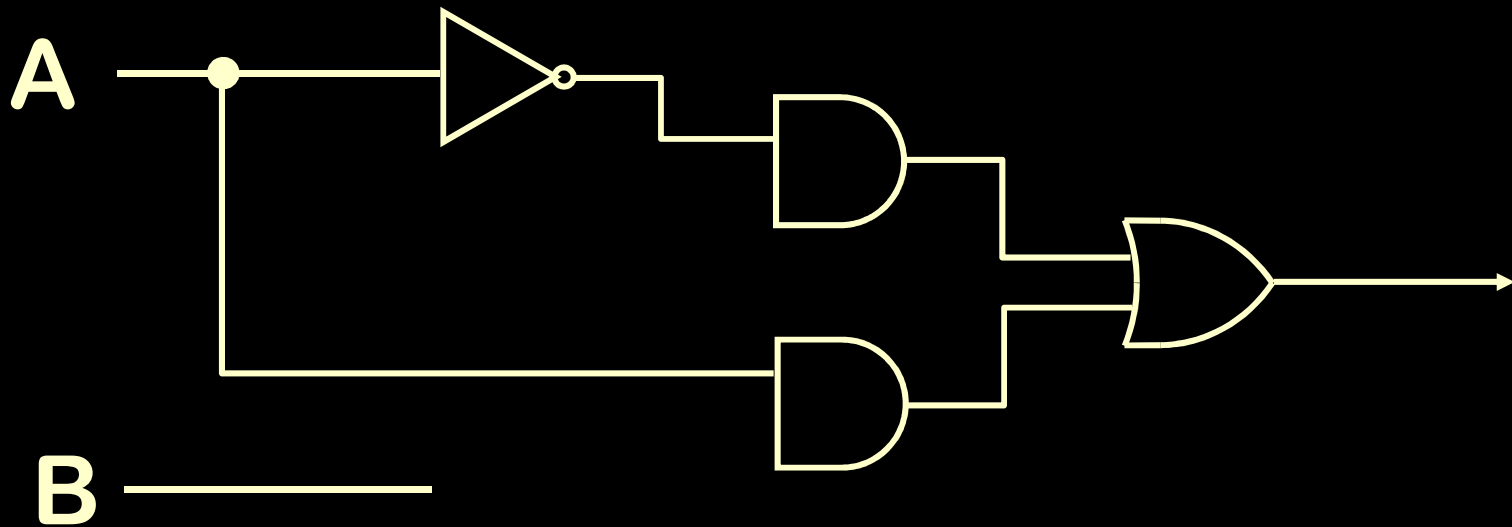
B _____



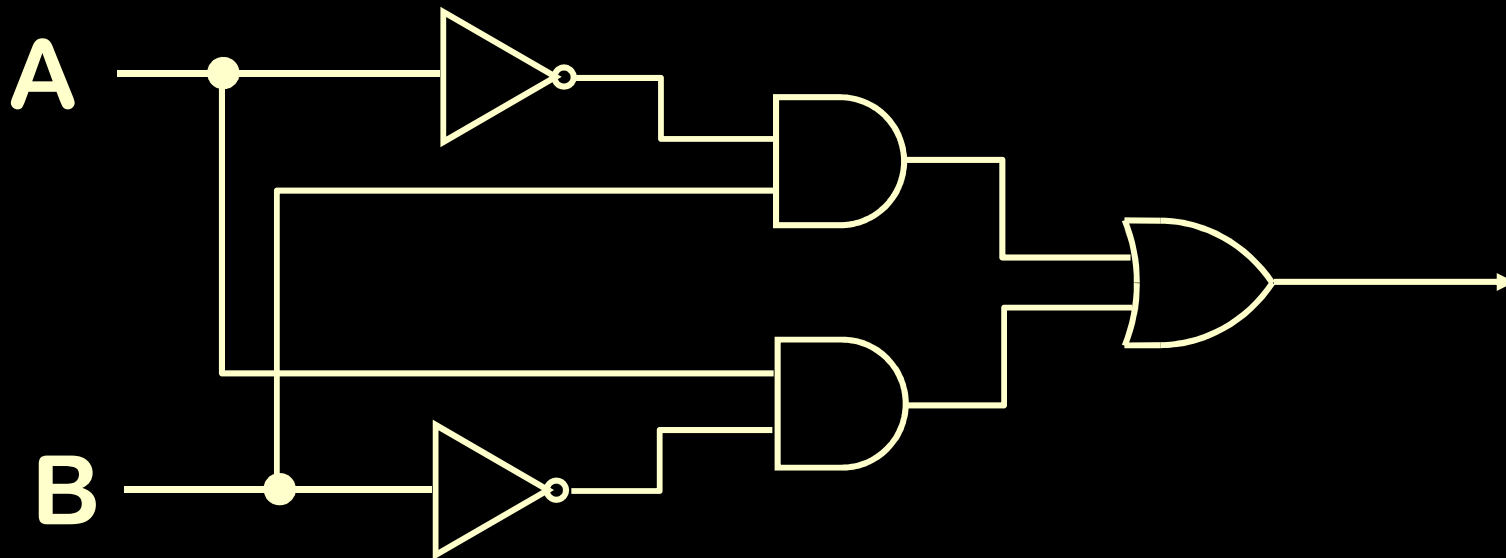
$$A \oplus B = A'B + AB'$$



$$A \oplus B = A'B + AB'$$



$$A \oplus B = A'B + AB'$$



OR of ANDs

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

$A'B'C'$

$A'BC$

$AB'C$

ABC'



OR of ANDs

$$X = A'B'C' + A'BC + AB'C + ABC'$$



OR of ANDs

$$X = A'B'C' + A'BC + AB'C + ABC'$$

