What is a hierarchy?

1

Define digital.

2

Define analogue.

3

How many values can be represented by a binary number containing n bits?

4

Arrange `AND`, `OR` *and* `NOT` *in order of operator precedence.*

5

What is the symbol for `AND`*?*

6

What is the symbol for `OR`*?*

7

What is the symbol for `NOT`

8

A hierarchy is a group of objects arranged in tiers of descending magnitude, importance or complexity.

1

An entity that can reside in one of two states at any one time.

2

An entity that can reside in an infinite number of possible states.

3

2^n

4

`NOT`, `AND`, `OR`

5

$\cdot$

E.g. $A \cdot B$

6

$+$

E.g. $A + B$

7

$\overline{}$

E.g. $\overline{A}$

8

What is the symbol for `XOR`

9

What is De Morgan's theorem commonly used for when designing digital circuits?

10

What is the symbol for an `AND` *gate?*

11

What is the symbol for an `OR` *gate?*

12

What is the symbol for an `XOR` *gate?*

13

What is the symbol for an `NOT` *gate?*

14

What is the symbol for an `NAND` *gate?*

15

What is the symbol for an `NOR` *gate?*

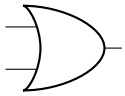
16

Converting gates such as `AND`, `OR`, `XOR` *etc into* `NAND` *and* `NOR` *since they are cheap and fast.*

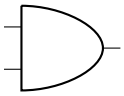
10

$\oplus$
E.g. $A \oplus B$

9



12



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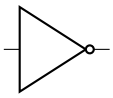

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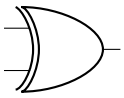

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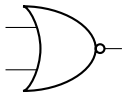
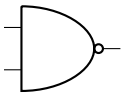


16



15

What's the symbol for a n:1 multiplexer?

17

What is the truth table for binary addition?

A	B	c_{in}	S	c_{out}
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

18

How do you negate a binary number?

19

Convert binary 6 *to* -6

20

Which bit is the signed bit when using 2's complement?

21

How do you subtract two binary numbers?

22

What is the sum-of-products?

23

What is the product-of-sums?

24

What is the truth table for binary addition?

A	B	c_{in}	S	c_{out}
0	*0*	*0*	*0*	*0*
0	*0*	*1*	*1*	*0*
0	*1*	*0*	*1*	*0*
0	*1*	*1*	*0*	*1*
1	*0*	*0*	*1*	*0*
1	*0*	*1*	*0*	*1*
1	*1*	*0*	*0*	*1*
1	*1*	*1*	*1*	*1*

18

17

1. Start with `0110`
2. Invert the bits - `1001`
3. Add 1 - `1010`

20

1. Invert the bits
2. Add 1

19

1. Invert the number you're subtracting
2. Add 1 to the inverted number
3. Add the number you're subtracting from with the inverted number.
Basically, add the original number to the 2's complement negative of what you're taking away.

22

The left most bit.

21

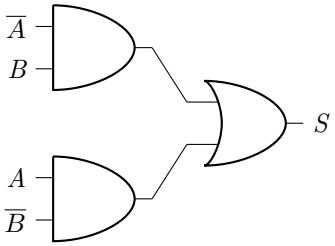
When a number of `OR` *gates are* `AND`*'ed together.*

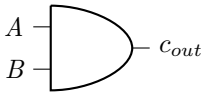
24

When a number of `AND` *gates are* `OR`*'ed together.*

23

What is the structure of a half adder (in terms of gates)?


$\overline{A}$
B
A
$\overline{B}$
S


A
B
c_{out}