e.g., Boolean Layre. E.g., Boolean Layre. Ui'll ne variables like X, Y etc to represent impub and outputs (of our layre circuit) Each variable can take on values of "i or b" Basic Operations. AND, OR, and NOT Convier a switch Clike a light switch! I will say X-0 3 switch is open. If switch is short the leght is a will say X-0 3 switch is open. If switch is open light is on. If switch switch is open light is on. A switch can be "normally open" - think doorbell or normally closed Coensor on burglar alarm. Some switches are arranged with two outputs such Mut if one is open. A closed A light a complement of A We vie a "NOT" gale or inverter "a ale" is a circuit what does a one lagic. NOT gale: Y=X' or Y=NOT X Truth table X Y Y Descript perform any logic - vied to amplify current or something. But this simplest logic gale. Supplies X = latitude A light weam of your performance of the bulb ble means "NOT" That's the simplest logic gale. Supplies X = latitude A light to a closed B closed A closed B closed There are far possible conditions: A is open, B open and a closed B closed Truth table A B C O O I I I I I I I I I I I I I I I I I
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Basic Operations AND, OR, and NOT Contrier a suntit Clike a legat suntach If switch is done the electricity get through to the It switch is done the light is on If switch is open legate is off A switch con be "normally open" - think doorbell or normally closed (sensor on busplandarm) Some switches are arranged with two outputs, sud, And if one is open the other is closed A We use a "NOT" gale or inverter "gale" is a circuit that does some legic NOT gale: X Y Truth table X Y Despit perform any logic - und to amplify current or something. But this is the circuit symbol for a buffer X Y Y That's the simplest logic gale. Suppose you had a finished to be be means "NOT" There are four persible conditions: A is open, B open A closed B spea A cl
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A switch can be "normally open" - think doorbell or normally closed (sensor on buspleralarm) Some switches are arranged with two outputs, such that if one is open the other is closed. A A' is the "conferment" of A or A' = NOT A We vie a "NOT" gate or inverter "gate" is a circuit that does some logic. NOT gate: Y = X' or Y=NOT X Touth table X Y
or normally closed (sensor on burgler daem) Some switches are arranged with two outputs, such A A' is the "conferment" of A or A' = NOT A We vie a "NOT" gate or inverter "gate" is a circuit that does rome legic NOT gate: Y=x' or Y=NOT x Touth table X Y Doesn't perform any logic - vied to amplify everant or something. But this is a NOT gate That's the simplest logic gate. Suppose yer had x imput is x - aler't be 1 other or C There are four pissible conditions: A is open B op A closed B open A closed B gate Touth Table A B C O O O I O O I I C is only "true" (equal tell) if both A and B are C = A · B C a true output Lagic gate for that: B C O C A true output
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We use a "NOT" gate or inverter "gate" is a circuit that does some logic NOT gate: Y=x' or Y=NOT x Truth table X Y O 1 O 1 O 2 A side: this is the circuit symbol for a buffer X Y Y Y=x' or Y=NOT x Touch table X Y O 1 O 1 O 2 A side: this is the circuit symbol for a buffer X Y Y=x' or Y=NOT x The x Does at perform any logic - used to amplify current or something. But this X O 1 O 2 I A NOT gate That's the simplest logic gate. Suppose you had x O 3 O 4 I O 4 O 4 O 6 O 7 I Compute you had x A open B close A closed B spen A close
We vise a "NOT" gake or inverter "gake" is a circuit that does some legic NOT gale: Y=x' or Y=NOT x Truth table X Y O O Aside: that is the circuit symbol for a buffer X Y=x Does int perform any logic - used to amplify current or something. But this That's the simplest logic gale. Suppose you had x Input is X -> let tibe 1 output is C There are four pissible conditions: A is open, B op A closed B open C = A · B C "AND" - bith here to be true to get a true output Logic gale for that: B — C
Not gale: Not gale: Yex' or t=Not x Touth table X Y O 1 O 1 A side: this is the circuit symbol for a buffer X Y Ex Doesn't perform any logic - used to amplify current or something. But this X O 1 the bubble means "Not" That's the simplest logic gale. Suppose you had X O 2 Imput is X o let it be 1 output is C There are four possible conditions: A is open, B op A closed B open A closed B open A closed B open Truth Table A B C O O O I I O I I C is only "true" (equal tol) if both A and B are C = A B A AND" - bath here table true to get Logic gate for that: B C
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Suppose you had x - B - C input is X -> let it be 1 output is C There are four possible conditions: A is open, B open A open B close A closed B open A cl
input is x - sterified to output is C. So open possible conditions: A is open B clos A open B clos A closed B open A closed B open A closed B open A closed B close Truth Table A B C O O O I I O I O I O
There are four possible conditions: A is open, 18 of A open B clos A elosed B open A elosed B open A elosed B open A elosed B clos. Truth Table A B C O O O I I O I I O I I O C is only "true" (equal tol) if both A and B are C = A · B There are four possible conditions: A is open, 18 of a close A elosed B open B closed B open A elosed B ope
A=0 means switch is open A closed B grown A B C O O O I I O I I I O I I I O I I I O I I I O I I I I O I I I O I I I O I I I O I O I O I I I O I O I I I O
A B C O O O I ! O ! C is only "true" (equal to1) if both A and B are C = A · B The "AND" - both have to be true to get a true output Logic gate for that: B C
C: C:s only "trve" (equal to1) if both A and B are C= A: B "AND" - both have to be true to get a true output Logic gate for that: B C
Cis only "true" (equal to1) if both A and B are C = A · B "AND" - both have to be true to get a true output Logic gate for that: A D C
C = A · B "AND" - both have to be true to get a true output Logic gate for that: B C
Logic gate for that:
Logic gate for that:
3
The ast means 1100 of over 1
input= 1 O By closed, C=1
A B C This function is called "OR"
if AORB is closed
(or both) the otpot
OR gate: A Compare te AND A C Compare te AND A D C
ave 't" and "." the same as "add "or "multip
Λ . Co.
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
In lab, one of the early luhs has you use a
"NOR" gate -> this is "NOT OR" or complement
x Y OR NOR X Y OR NOR
yate look like? Think Or + complement
Thereis also a NAND gate. NOT AND
X Y X KNO Y NAND
These variables X, Y, A, B, C etc are Bodlean vario