

Basic Logical Operations (Fascinating)



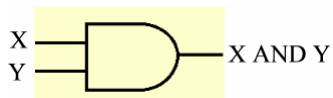
In this section you will learn what are the basic logical operations and how to evaluate different logical expressions

Logical AND

Truth table		
X	Y	X AND Y
False	False	False
False	True	False
True	False	False
True	True	True

Truth table		
X	Y	X AND Y
0	0	0
0	1	0
1	0	0
1	1	1

Logic gate



Logical AND: An Example

	T	T	F	F	T	F
AND	F	T	F	T	T	F
<hr/>						
	F	T	F	F	T	F

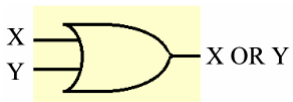
James Tam

Logical OR

Truth table		
X	Y	X OR Y
False	False	False
False	True	True
True	False	True
True	True	True

Truth table		
X	Y	X OR Y
0	0	0
0	1	1
1	0	1
1	1	1

Logic gate



James Tam

Logical OR: An Example

	T	T	F	F	T	F
OR	F	T	F	T	T	F
<hr/>						
	T	T	F	T	T	F

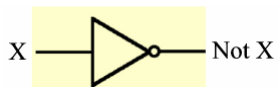
James Tam

Logical NOT

Truth table	
X	Not X
False	True
True	False

Truth table	
X	Not X
0	1
1	0

Logic gate



James Tam

Logical NOT: An Example

	T	T	F	F	T	F
NOT	F	F	T	T	F	T

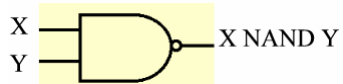
James Tam

Logical NAND

Truth table			
X	Y	X AND Y	X NAND Y
False	False	False	True
False	True	False	True
True	False	False	True
True	True	True	False

Truth table			
X	Y	X AND Y	X NAND Y
0	0	0	1
0	1	0	1
1	0	0	1
1	1	1	0

Logic gate



James Tam

Logical NAND: An Example

	T	T	F	F	T	F
AND	F	T	F	T	T	F
<hr/>						
	F	T	F	F	T	F
NAND	T	F	T	T	F	T

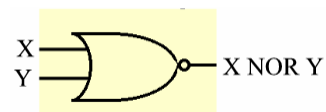
James Tam

Logical NOR

Truth table			
X	Y	X OR Y	X NOR Y
False	False	False	True
False	True	True	False
True	False	True	False
True	True	True	False

Truth table			
X	Y	X OR Y	X NOR Y
0	0	0	1
0	1	1	0
1	0	1	0
1	1	1	0

Logic gate



James Tam

Logical NOR: An Example

	T	T	F	F	T	F
OR	F	T	F	T	T	F
<hr/>						
	T	T	F	T	T	F
NOR	F	F	T	F	F	T

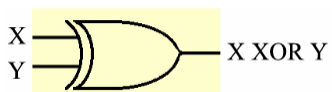
James Tam

Logical Exclusive OR (XOR)

Truth table		
X	Y	X XOR Y
False	False	False
False	True	True
True	False	True
True	True	False

Truth table		
X	Y	X XOR Y
0	0	0
0	1	1
1	0	1
1	1	0

Logic gate



James Tam

Logical XOR: An Example

	T	T	F	F	T	F
XOR	F	T	F	T	T	F
	T	F	F	T	F	F

James Tam

Why Bother With Logic (Gates And Computers)?



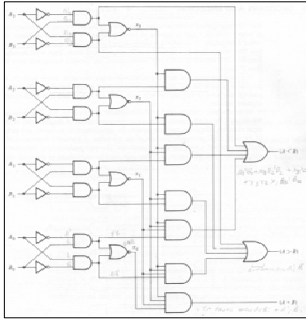
Bill Gates, Chairman and Chief Software Architect of Microsoft™

James Tam

Reasons For Learning About Logic

Hardware perspective

The computer is built using logic circuits



James Tam

Reasons For Learning About Logic (2)

Software perspective

Logic is common-place in computer programs

Web Images Groups News more »

Google

james +tam Search

Search: the web pages from Canada

Web

[Computer Science Homepage for James Tam](#)
Computer Science Homepage for James Tam. Contact Information. Office number: ICT 707. Office phone: (403) 210-9455. Email: tamj@cpsc.ucalgary.ca. ...
[pages.cpsc.ucalgary.ca/~tamj/](#) - 4k - 8 Jan 2005 - [Cached](#) - [Similar pages](#)

[Visual Basic Examples](#)
... Mike Rounding James Tam # 2, Introduction to Visual Basic Part 2. Database using the Data control. ... Mike Rounding James Tam Saul Greenberg ...
[pages.cpsc.ucalgary.ca/~saul/vb_examples/](#) - 27k - [Cached](#) - [Similar pages](#)
[[More results from pages.cpsc.ucalgary.ca](#)]

[James Tam](#)
... James Tam arrived in Toronto in 1972 and soon after took up martial arts in Karate under Sensei T. Masuko, who was 3rd dan and head of the Genwakai school in ...
[www.chenzhonghua.com/People/DiscipleResumes/TamResume.htm](#) - 6k - [Cached](#) - [Sim](#)

[DBLP: James Tam](#)
dblp.uni-trier.de James Tam. ... 2004. 1. EE, James Tam, Saul Greenberg: A Framework for Asynchronous Change Awareness in Collaboratively-Constructed Documents. ...
[www.informatik.uni-trier.de/~ley/db/indices/a-tree/t/Tam.James.html](#) - 3k - [Cached](#) - [Sim](#)

James Tam

Summary

The different types of logical operations that a computer may perform

- AND
- OR
- NOT
- NAND
- NOR
- XOR

How logic gates form an important part of computers