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Logic gates are electronic components that help computers process data by performing logical operations on binary inputs (0s and 1s) to produce binary outputs. This binary processing is the foundation of digital computing, allowing computers to manipulate, store, and transfer data. ^

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தமிழ் இல்

In English

A logic gate is a device **performing a Boolean logic operation on one or more binary inputs and then outputs a single binary output.** Computers perform more than simple Boolean logic operations on input data, and they typically output more than a single binary digit.



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How are logic gates used in a computer system?

A logic gate is a device that acts as a building block for digital circuits. They perform basic logical functions that are fundamental to digital circuits. Most electronic devices we use today will have some form of logic gates in them.



TechTarget

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What is the application of logic gate in computer?

Logic gates are used in **microcontrollers, microprocessors, electronic and electrical**



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## Basic Logic Gates – Definition, Types, Application, Theorem and FAQs

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Why are logic gates important in modern computers?

Logic gates are fundamental building blocks of any digital system. They are **used to create digital circuits and perform binary computations**, which are essential in computer programming. In essence, logic gates are simple electronic circuits that take one or more binary inputs and produce a single binary output.



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## What is the importance of logic gates in programming? - TutorChase

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What are logic gates and how do they help computers make decisions?

Logic gates are **a decision part of a circuit, and convey these decisions through binary code, either as a digit 1 or digit 0**. Most logic gates will have two inputs and then one output. The logic gate receives two streams of information and makes a logical decision of true (1) or false (0).

12 Jun 2023



RS Components

<https://uk.rs-online.com> › discovery › ideas-and-advice

## Guide to Logic Gates - RS Components

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How do logic gates help a computer do calculations?

Calculators (and computers) combine inputs using electronic components called logic gates. As the name implies, a logic gate **acts as a barrier in an electronic circuit; it takes in two electric currents, compares them and sends out a new current based on what it finds**.

10 May 2011



livescience.com

<https://www.livescience.com> › 14087-calculators-calculate

## How Do Calculators Calculate? | Live Science

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How are logic gates used in real life?

To carry out logical processes, logic gates make use of Boolean algebra. Nearly every digital device we use on a daily basis contains logic gates. **In the architecture of our laptops, phones, memory devices and tablets**, logic gates are used.



unacademy.com

<https://unacademy.com> › content › computer-knowledge

## Uses of Logic Gates - Unacademy



What are the application of logic in computer science?

Indeed, logic plays an important role in areas of Computer Science as disparate as artificial intelligence (automated reasoning), architecture (logic gates), software engineering (specification and verification), programming languages (semantics, logic programming), databases (relational algebra and SQL), algorithms ( ...



rice.edu

<https://www.cs.rice.edu> › ~vardi › comp409

## COMP 409/509: Logic in Computer Science and Artificial Intelligence

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What are the advantages of logic gates?

Logic gates are **quick yet use low energy**. Logic gates don't get overworked. Logic gates can lessen the prescribed number of I/O ports needed by a microcontroller. Logic gates can bring about straightforward data encryption and decryption.



teachcomputerscience.com

<https://teachcomputerscience.com> › logic-gates

## Logic Gates | Definition, Types, Application & Table

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What is the use of logic gate in IC?

Logic gate ICs are used in digital electronics **to perform basic logic operations such as AND, OR, NOT, and XOR**. These ICs are used in digital circuits such as adders, counters, and multiplexers. They are also used in microprocessors, microcontrollers, and other digital systems. 14 Jun 2023



ebics.net

<https://ebics.net> › logic-gate-ic

## Logic Gate IC: Understanding the Basics of Integrated Circuits ... - ebics

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How is logic used in computers?

Logic is used **for databases or for creating artificial intelligence**. But logic does not only help a computer to view the world, it also offers the possibility of introspection: computer codes can check other computer codes and look for logical errors. "It is similar to the way we humans think", says Helmut Veith. 27 May 2014



phys.org

<https://phys.org> › news › 2014-05-logic-science

## Logic in computer science - Phys.org

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What is the connection between computer and logic?

Computers often chain logic gates together, by taking the output from one gate and using it as the input to another gate. We call that a logic circuit. Circuits enables





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## Logic circuits | AP CSP (article) - Khan Academy

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What is logic function in computer science?

They are the **building blocks for how computers work**. Type of logic function gates are: NOT, AND, OR, and XOR gates, these are the main gates. There are other exclusive gates NAND, NOR, and XNOR. These are also called the Boolean logic gate.



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<https://www.bartleby.com> › engineering › concepts › log...

## Logic Function - Bartleby.com

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What logic gates are used in computers?

The logic gates include: AND, OR, NOT, NAND, NOR, XOR and XNOR.



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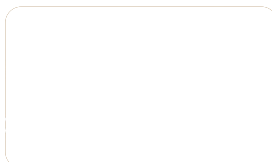
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## Logic gates | AP CSP (article) - Khan Academy

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What are the applications of logic gates?

- Logic gates are **used in various data storage devices, including registers, RAM (Random Access Memory), and ROM (Read-Only Memory)**. 5. Microprocessors and Microcontrollers: - Logic gates are integral components of microprocessors and microcontrollers, which are the brain of digital systems. 4 Dec 2023



linkedin.com

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## Logic Gates and their Applications - LinkedIn

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What is the most useful logic gate?

**NAND gates** are the most widely used because they are universal, only require two transistors, and switch quickly. However, designers don't need to think in terms of NAND gates directly. As we will see, there are tools which can take logical expressions and "compile" them into circuits which use only NAND.



ianfinlayson.net

<https://ianfinlayson.net> › class › cpsc305 › notes › 07-gates

## Logic Gates

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What is the purpose of using logic gates?

The organization of logic into gates and other logic blocks facilitates information interchange and design description. It is a common notation that may be understood by





byjus.com

<https://byjus.com/question-answer/why-logic-gates-are-used/>

## Why logic gates are used? - BYJU'S

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What is universal logic gate in computer?

A universal gate is a type of logic gate that can implement any Boolean function without the usage of any additional logic gates. The universal gates are the **NOR and NAND gates**. This means that using only NOR or NAND gates, we can build any logical Boolean expression.



byjus.com

<https://byjus.com/question-answer/when-the-temperature-is-high-the-fan-should-be-on/>

## Which are universal logic gates? - BYJU'S

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What is the use of logic gate in PLC?

It is used **to control the flow of signals in a programmable logic controller (PLC)**. A NOT gate takes a single input and produces the opposite output. It is also known as an inverter. The NOT gate is commonly used in situations where the desired signal is the opposite of the input signal.



cidos.edu.my

<https://mcpolycc.cididos.edu.my/mod/resource/view>

## Problem-solving using logic gates in PLC ladder diagrams - MC@PolyCC

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Why is it important to use logic?

Studying Logic **Develops Critical Thinking Skills**

Finally, it's important to study logic to become an effective communicator. After all, logic is also the backbone necessary for crafting compelling arguments in speech and writing that point others toward truth. 3 Feb 2022



classicalconversations.com

<https://classicalconversations.com/blog/why-study-logic>

## Why Study Logic? Learning Outcomes and Teaching Advice

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How is logic used in real life?

It allows us to think logically, reason our way through arguments, and make sound judgments in any situation. In the real world, logic can be used **to create better decision-making, build arguments, and solve complex problems**. 15 Mar 2023



medium.com

<https://pancy.medium.com/> > ...

## Logic for Everyday Life - pancy - Medium

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Is logic useful for programming?



effective coding practices are built. They shape the way great programmers must think, solve problems, and create new things. 24 Nov 2023

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## The Essence of Logic & Math in Coding & Computer Programming

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Why are logic gates called main circuit of the computer?

Logical gates are fundamental building blocks of digital electronic circuits. **They are used to perform basic logical operations on one or more binary inputs, which are either 0 or 1.** The output of a logical gate depends on the input values and the logic function implemented by the gate. 17 Aug 2016

 [quora.com](https://www.quora.com/Why-are-logic-gates-named-so)  
<https://www.quora.com/Why-are-logic-gates-named-so>

## Why are logic gates named so? - Quora

Search for: [Why are logic gates called main circuit of the computer?](#)

What is the importance of logic element to computer?

It is used in the development of algorithms, the decision-making process within a computer program, and the debugging process. **Without logic, it would be impossible to create functional, efficient, and reliable computer programs.** Achieve Top Grades in your Exams with our Free Resources.


 [tutorchase.com](https://www.tutorchase.com/a-level/computer-science)  
<https://www.tutorchase.com/a-level/computer-science>

## Explain the role of logic in computational thinking. - TutorChase

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Are computers based on logic?

English mathematician George Boole laid the foundations for the logic system that now bears his name: Boolean logic. **His system of logical operations based on simple principles is the bedrock of modern computers.**


 [computerhistory.org](https://www.computerhistory.org/digital-logic)  
<https://www.computerhistory.org/digital-logic>

## How Do Digital Computers "Think"? - CHM Revolution

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What is logic in computer science?

Logic in computer science (or computational logic) is **that branch of mathematical logic which is approximately the intersection between mathematical logic and computer science.** It contains: Those investigations into logic that are guided by applications in computer science.

 [wikipedia.org](https://en.wikipedia.org/wiki/Category:Logic_in_computer_science)  
[https://en.wikipedia.org/wiki/Category:Logic\\_in\\_computer\\_science](https://en.wikipedia.org/wiki/Category:Logic_in_computer_science)

## Category:Logic in computer science - Wikipedia

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What is the function of logical unit in a computer?



## fundamental arithmetic and logical operations on data.

These operations encompass basic calculations like addition, subtraction, multiplication, and division, along with. 15 Dec 2020



quora.com

<https://www.quora.com/What-is-a-logical-unit-in-a-co...>

### What is a logical unit in a computer? - Quora

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Why is logical thinking important in computer science?

It includes the logical and mathematical analysis of programs. With such analyses, **one can prove the correctness of procedures and estimate the number of steps required to execute a specified program.** Modern logic is used in such work, and it is incorporated into programs that help construct proofs of such results.



utexas.edu

<https://www.cs.utexas.edu/~rlc/whylog>

### Why Logic is Important for Computer Science and Mathematics

Search for: [Why is logical thinking important in computer science?](#)

What is a logic function in computer?

Logical functions are **used in spreadsheets to test whether a situation is true or false.** Depending on the result of that test, you can then elect to do one thing or another. These decisions can be used to display information, perform different calculations, or to perform further tests.



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<http://www2.westsussex.gov.uk/LearningandDevelopm...>

### Chapter 3 - Logical Functions

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What is the purpose of logic gates?

A logic gate is a device that performs a Boolean function, a logical operation performed on one or more binary inputs that produces a single binary output.



wikipedia.org

[https://en.wikipedia.org/wiki/Logic\\_gate](https://en.wikipedia.org/wiki/Logic_gate)

### Logic gate - Wikipedia

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What is a logic circuit in a computer?

A logic circuit, also called a digital logic circuit, is **an electrical circuit that executes logical operations on one or more binary inputs to produce a single binary output.** They form the backbone of computing technology, performing arithmetic and logic operations by operating on boolean algebra principles.



studysmarter.co.uk

<https://www.studysmarter.co.uk/computer-science/log...>

### Logic Circuits: Truth Table, Types & Not Gate | StudySmarter

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transistors, resistors, and more. As the name implies, a logic gate is designed to perform logical operations in digital systems like computers, communication systems, etc. 3 May 2024



geeksforgeeks.org  
<https://www.geeksforgeeks.org/logic-gates>

## Logic Gates - Definition, Types, Uses, Truth table - GeeksforGeeks

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Who uses logic gates?

Logic gates are used in **a wide range of electronic circuits, from simple calculators to advanced computer processors**. They are used to perform logical operations, such as addition, subtraction, multiplication, and division. They are also used to create more complex circuits such as adders, multiplexers, and flip-flops. 12 Jun 2023



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<https://computerengineeringforbabies.com/engineering>

## The Role of the Logic Gate | demystifying digital electronics

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Which logic gate is used more in real life applications?

Logic gates play a crucial role as the fundamental building blocks. These small electronic components operate on binary data by performing logical operations. Among these gates, the **NOR gate** holds great significance due to its versatile applications in various real-life scenarios. 9 Oct 2023



aimdynamics.com  
<https://aimdynamics.com/application-nor-gate>

## Applications of NOR Gate: Use in Real-Life - Aim Dynamics

Search for: [Which logic gate is used more in real life applications?](#)

Which gate is mostly used?

The **NAND and NOR gates** are considered universal because you can create the functions of AND, OR, and NOT gates (as well as any other possible combinations) using just NAND or just NOR gates. 14 May 2024



shiksha.com  
<https://www.shiksha.com/online-courses/articles/log...>

## Logic Gates Definition, Types, Uses and Functions - Shiksha Online

Search for: [Which gate is mostly used?](#)

Why logic gate is called so?

What is OR gate in computer?

The OR gate is **a digital logic gate that implements logical disjunction**. The OR gate outputs "true" if any of its inputs are "true"; otherwise it outputs "false". The input and output states are normally represented by different voltage levels.





## OR gate - wikipedia

Search for: [What is OR gate in computer?](#)

Why is logic important in a computer system?

Computer logic is the study of how computers can perform tasks that require reasoning, such as solving problems, making decisions, and proving theorems. Computer logic is important because **it enables computers to emulate human intelligence and perform tasks that would otherwise be difficult or impossible for humans.**



fastercapital.com

<https://fastercapital.com/topics/what-is-computer-logic...>

## What Is Computer Logic And Why Is It Important - FasterCapital

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What is the application of logic in computer science?

Logic applications for computers. There has always been a strong influence from mathematical logic on the field of artificial intelligence (AI). From the beginning of the field it was realized that technology to automate logical inferences could have great potential to solve problems and draw conclusions from facts.



wikipedia.org

[https://en.wikipedia.org/wiki/Logic\\_in\\_computer\\_sci...](https://en.wikipedia.org/wiki/Logic_in_computer_sci...)

## Logic in computer science - Wikipedia

Search for: [What is the application of logic in computer science?](#)

What is logic in computer terms?

**The sequence of operations performed by hardware or software.** It is the computer's "intelligence." Hardware logic is contained in the electronic circuits and follows the rules of Boolean logic. Software logic (program logic) is contained in the placement of instructions written by the programmer.



pcmag.com

<https://www.pcmag.com/encyclopedia/term/logic>

## Definition of logic | PCMag

Search for: [What is logic in computer terms?](#)

What is the use of logical operators in computer?

We use logical operators **to perform various logical operations on any set of given expressions.** The logical operators in C are used for combining multiple constraints/conditions or for complementing the evaluation of any original condition that is under consideration.



byjus.com

<https://byjus.com/gate/logical-operators-in-c>

## Logical Operators in C | GATE Notes - BYJU'S

Search for: [What is the use of logical operators in computer?](#)

What is the function of logic board in computer?

The logic board serves as the heart of the machine, **facilitating connections between all connected components to bring forth the complete version of the computer.**





electronicshub.org

<https://www.electronicshub.org> > logic-board-vs-mother...

## Logic Board Vs Motherboard : What's The Difference? - Electronics Hub

Search for: [What is the function of logic board in computer?](#)

What is a logic function in computer language?

Logical Function: **behavior or service provided by a Logical Component or by a Logical Actor.** From: Systems Architecture Modeling with the Arcadia Method, 2018.



sciencedirect.com

<https://www.sciencedirect.com> > topics > engineering > l...

## Logical Function - an overview | ScienceDirect Topics

Search for: [What is a logic function in computer language?](#)

What is logical thinking in computer science?

What are logic statements in computer science?

A logical statement is **a statement that returns either true or false**, i.e, 0 or 1. If it returns true, it allows us to obtain a known set of facts or acquire a new fact from them. Example: Diagonals of a rectangle are of the same length. Here, it will either return true or false based on the statement.



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## Notes on Truth Table and Logical Statements - Unacademy

Search for: [What are logic statements in computer science?](#)

What is logic symbol in computer?

Logic symbols are the **symbols used to represent logic in mathematics**. There are multiple logic symbols including quantifiers, connectives and other symbols. In this article we will explore all the logic symbols that are useful to represent logical statements in mathematical form. 5 Mar 2024



geeksforgeeks.org

<https://www.geeksforgeeks.org> > logic-symbols

## List of all Logic Symbols - GeeksforGeeks

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What is the connection between computer and logic?

Computers often chain logic gates together, by taking the output from one gate and using it as the input to another gate. We call that a logic circuit. Circuits enables computers to do more complex operations than they could accomplish with just a single gate. The smallest circuit is a chain of 2 logic gates.



khanacademy.org

<https://www.khanacademy.org> > computers-and-internet

## Logic circuits | AP CSP (article) - Khan Academy



How do computers understand logic?

Computers do not use logic. They do however, use **logic GATES**. Logic gates perform very small pieces of logic calculations like AND, OR and NOT, but this is not enough to say they use logic. Computers follow instructions. 15 May 2023



stackexchange.com  
<https://philosophy.stackexchange.com> › questions › do-c...

## Do computers use logic? - Philosophy Stack Exchange

Search for: [How do computers understand logic?](#)

Does computer perform logical operations?

The central processing unit (CPU) can perform a billion operations within a second. The computer systems consist of several processors that perform arithmetic tasks more efficiently. For example, **the arithmetic logic unit located within the processor performs mathematical and logical duties.**



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## Basic Computer Operation-Logical Operation-True Operations

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How is logic important in computer science?

How are logic gates used in computers?

How is logic used in programming?

Logic Programming is a method that computer scientists are using to try to allow machines to reason because it is useful for knowledge representation. In logic programming, logic is used **to represent knowledge** and inference is used to manipulate it.



ic.ac.uk  
<https://www.doc.ic.ac.uk> › ~cclw05 › topics1

## Logic Programming - Introduction - Imperial College London

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What are applications of logic gates?

What is a logic gate in computer fundamental?

What are the benefits of logic gates?

Logic gates are **quick yet use low energy**. Logic gates don't get overworked. Logic gates can lessen the prescribed number of I/O ports needed by a microcontroller. Logic gates can bring about straightforward data encryption and decryption.



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## Logic Gates | Definition, Types, Application & Table

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Why do we need logic?



Is logic important in AI?

What is a good example of logic?

What is the application of logic?

How can logic be used?

How is logic used in real life?

What is the importance of logic in your daily life activities?

Where are logic gates used in computer?

What is logic function in PLC?

What are the advantages of universal gates?

Universal logic gates are important because **they can be used to simplify the design of digital circuits**. By using universal logic gates, engineers can reduce the number of different types of gates that need to be used in a circuit. This can make the circuit more efficient and easier to design. 7 Sept 2023



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## Universal Logic Gates – NAND Gate and NOR Gate - Shiksha Online

Search for: **What are the advantages of universal gates?**

What are special gates in digital electronics?

The XNOR gate is another type of special purpose logic gate used to implement exclusive operation in digital circuits. It is used to implement the Exclusive NOR operation in digital circuits. It is also called the Ex-NOR or Exclusive NOR gate. 3 May 2024



geeksforgeeks.org

<https://www.geeksforgeeks.org> › logic-gates

## Logic Gates - Definition, Types, Uses, Truth table - GeeksforGeeks

Search for: **What are special gates in digital electronics?**

What are the real life uses of logic gates?

The application of logic gate is numerous, but they are primarily defined by the mode of operations or the truth table of the logic gate. Safe thermostats, the push-button locks, the automatic water system and a number of other electronic gadgets all use basic logic gates.



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## Detailed Study on the Application of Logic Gates - Unacademy

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How is logic used in computers?

Logic is used **for databases or for creating artificial intelligence**. But logic does not only help a computer to view the world, it also offers the possibility of introspection: computer codes can check other computer codes and look for logical errors. "It is similar to the way we humans think", says Helmut Veith. 27 May 2014



phys.org

<https://phys.org/news/2014-05-logic-science>

### Logic in computer science - Phys.org

Search for: [How is logic used in computers?](#)

What is the function of logical unit in a computer?

Within the CPU, the Arithmetic Logic Unit (ALU) is often referred to as the logical unit. The ALU **performs fundamental arithmetic and logical operations on data**.

These operations encompass basic calculations like addition, subtraction, multiplication, and division, along with. 15 Dec 2020



quora.com

<https://www.quora.com/What-is-a-logical-unit-in-a-co...>

### What is a logical unit in a computer? - Quora

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Are logic gates important in computer science?

A-Level Computer Science Tutor Summary: **Logic gates are crucial in digital systems and programming**, acting as the basic elements that enable computers and other devices to process and compute data. They perform binary operations and control data flow, vital for creating circuits and the CPU's operation.



tutorchase.com

<https://www.tutorchase.com/a-level/computer-science>

### What is the importance of logic gates in programming? - TutorChase

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What is a logic circuit in a computer?

What is a logic function in computer?

Why are logic gates called main circuit of the computer?

What is the purpose of logic gates?

What are the logic gates of computer memory?

What is universal logic gate in computer?

Why are digital logic gates important in digital computers?

What is the most useful logic gate?



What are the everyday uses of logic gates?

How do logic gates work in the real world?

What is a logic gate in computer architecture?

Which gate is used in computers?

What are applications of logic gates?

Where is gate useful?

What are the benefits of logic gates?

What is the purpose of the or logic gate?

What are logic circuits used for?

What is the use of gate computer science?

What is the main purpose of gate?

What is the full form of gate in computer science?

Why are logic gates used in computers?

How is logic used in computer programming?

Why is logical thinking important in computer science?

Why is logic important in computer system?

What is logic function in computer science?

What are the application of digital logic in computer?

What is the application of logic in computer science?

What does "logical" mean in computers?

What type of logic is used by computers and scientists?

What is a real life example of a logical operator?

For example: If statement a is "There are clouds in the sky when it rains" (a true statement), and statement b is "A cat usually has three legs" (a false statement), then the statement a or b, "There are clouds in the sky when it rains or a cat usually has three legs" is a true statement.



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Logic operators - FutureLearn

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What is logical operation in computer architecture?

What is the function of logical unit in a computer?

How does computer logic work?

Logic gates take one or more inputs and have one or more outputs. The inputs and outputs typically are binary signals; they're either an electric signal with a low voltage (e.g. 0 volts) or a high voltage (e.g. 3.3 volts). Binary means that there are two possible values, often called 0 (false) and 1 (true).



progbook.org  
<https://progbook.org> › cpu

### 1.1.3. How does a computer work? - Learn Programming

Search for: [How does computer logic work?](#)

Is logic important for computer science?

What is the logic language in computer?

What is a logic function in computer language?

What is logic circuit in computer studies?

What are logic gates in computer science?

What are the real life applications of logic gates?

Why is logic design important in computer science?

Are computers based on logic?

What is the importance of logic element to computer?

Why are logic gates and logic circuits important in computing?

What is the use of logical operators in computer?

How do computers understand logic?

Why is logic useful in computing?

What is the application of logic in computing?

What is the most useful logic gate?

What is the purpose of the OR logic gate?

The OR gate is a digital logic gate that **implements logical disjunction**. The OR gate outputs "true" if any of its inputs is "true"; otherwise it outputs "false". The input and output states are normally represented by different voltage levels.



wikipedia.org  
<https://en.wikipedia.org> › wiki › OR\_gate

### OR gate - Wikipedia



What are the advantages of logic gates?

What are the applications of logic gates?

How are logic gates used in electronics?

What is a logic gate in computer architecture?

What is the real world application of logic?

Which are the special purpose logic gates?

What is the connection between computer and logic?

What is logic function in computer science?

How is logic important in computer science?

Why digital logic is important in computer science?

Why do computers use logic?

We send information through computers using wires that represent 1s and 0s. Computers need a way to manipulate those 1s and 0s, so that they can eventually do more complicated operations like calculating the 50th digit of  $\pi$ . Computers use logic gates to transform the 1s and 0s from input wires.



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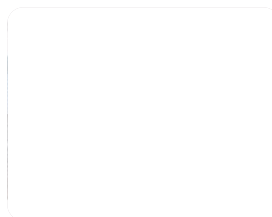
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What is the function of logic board in computer?

The logic board serves as the heart of the machine, **facilitating connections between all connected components to bring forth the complete version of the computer.**



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What is the function of logical unit in CPU?

What is the main task of logic?

The primary purpose of logic is to **demonstrate how to make valid inferences**. Logic provides a systematic way of showing how we can arrive at a conclusion through applying inferential rules to premises (premise = a proposition that is believed to be known).

3 Mar 2016





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What is the function of logic device?

Where are logic gates used in computers?

How are logic gates used in software?

They are used to **perform logical operations, such as addition, subtraction, multiplication, and division**. They are also used to create more complex circuits such as adders, multiplexers, and flip-flops. One of the most common applications of logic gates is in digital clock circuits. 12 Jun 2023



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What is logic on a computer?

What is the main purpose of logic?

Why is logic used?

Logic is systematic thinking that **allows you to analyze and evaluate information and make well-founded decision**. Let's look at the simplest example of the use of logic, that is chess. This is a strategy game where every move affects the outcome. 8 May 2023



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What is a logic circuit in a computer?

Why logic gate is called so?

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What are the advantages of or logic gate?

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these gates can feed each other, or string along to get the desired output. Inputs can be keys on a keyboard, mouse clicks, programs, etc. any ...

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