

# Jagged Array In C

Jagged array

*In computer science, a jagged array, also known as a ragged array or irregular array is an array of arrays of which the member arrays can be of different*

In computer science, a jagged array, also known as a ragged array or irregular array is an array of arrays of which the member arrays can be of different lengths, producing rows of jagged edges when visualized as output. In contrast, two-dimensional arrays are always rectangular so jagged arrays should not be confused with multidimensional arrays, but the former is often used to emulate the latter.

Arrays of arrays in languages such as Java, PHP, Python (multidimensional lists), Ruby, C#.NET, Visual Basic.NET, Perl, JavaScript, Objective-C, Swift, and Atlas Autocode are implemented as Iliffe vectors.

Array (data structure)

*notation). This alternative structure allows jagged arrays, where each row may have a different size—or, in general, where the valid range of each index*

In computer science, an array is a data structure consisting of a collection of elements (values or variables), of same memory size, each identified by at least one array index or key, a collection of which may be a tuple, known as an index tuple. An array is stored such that the position (memory address) of each element can be computed from its index tuple by a mathematical formula. The simplest type of data structure is a linear array, also called a one-dimensional array.

For example, an array of ten 32-bit (4-byte) integer variables, with indices 0 through 9, may be stored as ten words at memory addresses 2000, 2004, 2008, ..., 2036, (in hexadecimal: 0x7D0, 0x7D4, 0x7D8, ..., 0x7F4) so that the element with index  $i$  has the address  $2000 + (i \times 4)$ .

The memory address of the first element of an array is called first address, foundation address, or base address.

Because the mathematical concept of a matrix can be represented as a two-dimensional grid, two-dimensional arrays are also sometimes called "matrices". In some cases the term "vector" is used in computing to refer to an array, although tuples rather than vectors are the more mathematically correct equivalent. Tables are often implemented in the form of arrays, especially lookup tables; the word "table" is sometimes used as a synonym of array.

Arrays are among the oldest and most important data structures, and are used by almost every program. They are also used to implement many other data structures, such as lists and strings. They effectively exploit the addressing logic of computers. In most modern computers and many external storage devices, the memory is a one-dimensional array of words, whose indices are their addresses. Processors, especially vector processors, are often optimized for array operations.

Arrays are useful mostly because the element indices can be computed at run time. Among other things, this feature allows a single iterative statement to process arbitrarily many elements of an array. For that reason, the elements of an array data structure are required to have the same size and should use the same data representation. The set of valid index tuples and the addresses of the elements (and hence the element addressing formula) are usually, but not always, fixed while the array is in use.

The term "array" may also refer to an array data type, a kind of data type provided by most high-level programming languages that consists of a collection of values or variables that can be selected by one or more indices computed at run-time. Array types are often implemented by array structures; however, in some languages they may be implemented by hash tables, linked lists, search trees, or other data structures.

The term is also used, especially in the description of algorithms, to mean associative array or "abstract array", a theoretical computer science model (an abstract data type or ADT) intended to capture the essential properties of arrays.

#### Array (data type)

*double indexing ( $A[i][j]$  in typical notation). This way of emulating multi-dimensional arrays allows the creation of jagged arrays, where each row may have*

In computer science, array is a data type that represents a collection of elements (values or variables), each selected by one or more indices (identifying keys) that can be computed at run time during program execution. Such a collection is usually called an array variable or array value. By analogy with the mathematical concepts vector and matrix, array types with one and two indices are often called vector type and matrix type, respectively. More generally, a multidimensional array type can be called a tensor type, by analogy with the mathematical concept, tensor.

Language support for array types may include certain built-in array data types, some syntactic constructions (array type constructors) that the programmer may use to define such types and declare array variables, and special notation for indexing array elements. For example, in the Pascal programming language, the declaration `type MyTable = array [1..4,1..2] of integer`, defines a new array data type called MyTable. The declaration `var A: MyTable` then defines a variable A of that type, which is an aggregate of eight elements, each being an integer variable identified by two indices. In the Pascal program, those elements are denoted `A[1,1]`, `A[1,2]`, `A[2,1]`, ..., `A[4,2]`. Special array types are often defined by the language's standard libraries.

Dynamic lists are also more common and easier to implement than dynamic arrays. Array types are distinguished from record types mainly because they allow the element indices to be computed at run time, as in the Pascal assignment `A[I,J] := A[N-I,2*J]`. Among other things, this feature allows a single iterative statement to process arbitrarily many elements of an array variable.

In more theoretical contexts, especially in type theory and in the description of abstract algorithms, the terms "array" and "array type" sometimes refer to an abstract data type (ADT) also called abstract array or may refer to an associative array, a mathematical model with the basic operations and behavior of a typical array type in most languages – basically, a collection of elements that are selected by indices computed at run-time.

Depending on the language, array types may overlap (or be identified with) other data types that describe aggregates of values, such as lists and strings. Array types are often implemented by array data structures, but sometimes by other means, such as hash tables, linked lists, or search trees.

#### Iliffe vector

*performing address calculation on an array element. They can also be used to implement jagged arrays, such as triangular arrays, triangular matrices and other*

In computer programming, an Iliffe vector, also known as a display, is a data structure used to implement multi-dimensional arrays.

#### Comparison of C Sharp and Java

*every dimension of the array, as it is the case for jagged arrays). However, since all array element access in a multidimensional array requires multiplication/shift*

This article compares two programming languages: C# with Java. While the focus of this article is mainly the languages and their features, such a comparison will necessarily also consider some features of platforms and libraries.

C# and Java are similar languages that are typed statically, strongly, and manifestly. Both are object-oriented, and designed with semi-interpretation or runtime just-in-time compilation, and both are curly brace languages, like C and C++.

Comparison of Visual Basic and Visual Basic .NET

*requires zero-based arrays for interoperability between .NET languages. Visual Basic .NET introduced the concept of a jagged array, whereby the rows can*

Visual Basic .NET was released by Microsoft in 2002 as a successor to the original Visual Basic computer programming language. It was implemented on the .NET Framework 1.0. The main new feature was managed code. Programmers familiar only with Visual Basic would probably have encountered difficulties working with the new version or adapting existing programs for it.

C Sharp syntax

*6}, {2, 4, 5} }; See also Jagged array Classes are self-describing user-defined reference types. Essentially all types in the .NET Framework are classes*

This article describes the syntax of the C# programming language. The features described are compatible with .NET Framework and Mono.

Display resolution standards

*resolution, causing objects to have jagged edges on the top and bottom when edges were not anti-aliased. Video Graphics Array (VGA) refers specifically to the*

A display resolution standard is a commonly used width and height dimension (display resolution) of an electronic visual display device, measured in pixels. This information is used for electronic devices such as a computer monitor. Certain combinations of width and height are standardized (e.g. by VESA) and typically given a name and an initialism which is descriptive of its dimensions.

The graphics display resolution is also known as the display mode or the video mode, although these terms usually include further specifications such as the image refresh rate and the color depth.

The resolution itself only indicates the number of distinct pixels that can be displayed on a screen, which affects the sharpness and clarity of the image. It can be controlled by various factors, such as the type of display device, the signal format, the aspect ratio, and the refresh rate.

Some graphics display resolutions are frequently referenced with a single number (e.g. in "1080p" or "4K"), which represents the number of horizontal or vertical pixels. More generally, any resolution can be expressed as two numbers separated by a multiplication sign (e.g. "1920×1080"), which represent the width and height in pixels. Since most screens have a landscape format to accommodate the human field of view, the first number for the width (in columns) is larger than the second for the height (in lines), and this conventionally holds true for handheld devices that are predominantly or even exclusively used in portrait orientation.

The graphics display resolution is influenced by the aspect ratio, which is the ratio of the width to the height of the display. The aspect ratio determines how the image is scaled and stretched or cropped to fit the screen. The most common aspect ratios for graphics displays are 4:3, 16:10 (equal to 8:5), 16:9, and 21:9. The aspect ratio also affects the perceived size of objects on the screen.

The native screen resolution together with the physical dimensions of the graphics display can be used to calculate its pixel density. An increase in the pixel density often correlates with a decrease in the size of individual pixels on a display.

Some graphics displays support multiple resolutions and aspect ratios, which can be changed by the user or by the software. In particular, some devices use a hardware/native resolution that is a simple multiple of the recommended software/virtual resolutions in order to show finer details; marketing terms for this include "Retina display".

List of people granted executive clemency in the second Trump presidency

*the blood, feces, and terror that the mob left in its wake. And it cannot repair the jagged breach in America's sacred tradition of peacefully transitioning*

In his role as the 47th president of the United States (January 20, 2025 – present), Donald Trump granted executive clemency to more than 1,600 individuals as of July 23, 2025, all of whom were charged or convicted of federal criminal offenses. In many cases, Trump also removed the requirement that these individuals pay restitution and fines, costing their victims an estimated \$1.3 billion.

Large language model

*compresses the datasets. Because LLMs generally require input to be an array that is not jagged, the shorter texts must be &quot; padded &quot; until they match the length*

A large language model (LLM) is a language model trained with self-supervised machine learning on a vast amount of text, designed for natural language processing tasks, especially language generation.

The largest and most capable LLMs are generative pretrained transformers (GPTs), based on a transformer architecture, which are largely used in generative chatbots such as ChatGPT, Gemini and Claude. LLMs can be fine-tuned for specific tasks or guided by prompt engineering. These models acquire predictive power regarding syntax, semantics, and ontologies inherent in human language corpora, but they also inherit inaccuracies and biases present in the data they are trained on.

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