

Numerical Limits Encyclopedia Article

Numerical Limits

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Numerical Limits

Numerical limits are part of **object-oriented programming** languages such as **C** and **Unix**. Numerical limits define the sizes and characteristics for numerical **data**.

There are two types of numerical data, integral (whole number) or floating-point (including decimals). The criteria for these numerical types are specified in the limits.h and float.h header files. The files contain specifications for the length, in bits, of numerical types. These specifications include signed and unsigned numbers; that is "+" and "-" values.

Some examples of numerical limits in the limits.h and float.h header files are given below:

- Each character of type "char" is represented in 8 bits.
- Each character of type "wchar_t" is represented in 32 bits.
- Open VMS system values for the "int", "signed int", and "unsigned long int" types are the same.
- Open VMS system values for 'unsigned int' and 'unsigned long int' types are the same.

The limits.h header file also defines many resources that are used in various applications, in terms of the minimum and maximum limits that pertain to their content. The following are examples of numerical limits within the limits.h file:

- maximum length of a login name
- maximum number of files that one process can have open at any one time
- size in bytes of a page
- maximum number of significant bytes in a password
- maximum number of links to a single file

The adoption and use of numerical limits is one of the steps that has standardized the writing and performance of **programming** languages such as C and Unix.