

2.6. Working with data sets

Array - an ordered set of values of the same type, which are only addressed to and different from each other indices, and may have different or the same value.

When developing software arrays are used to describe vectors, matrices, lists of values and more. It also eliminates a large number of variables of the same physical meaning and ask them array.

Arrays are considered equal if the values of their elements with the same index equal to each other.

Modern Fortran indexes the elements themselves can be array elements. In Fortran level 77 is impossible. Also, in most FORTRAN 77 compiler is not allowed to perform operations on the array as a whole. This opportunity came only from Microsoft Fortran 77 v5.0 and fully supported in FORTRAN 90.

Standard Fortran allows (without additional programming effort) to form arrays of dimension to seven. Modern Fortran array elements can handle simultaneously on seven parallel streams, significantly skorochshuye time for heavy engineering calculations and in this sense it is unsurpassed.

According to the principle of memory, distinguished two types of arrays: static and dynamic.

For static arrays of memory storage elements is provided with "buy" Immediately OS as when downloading an application, with the beginning of its work in full. Its amount determined by the developer at the design stage source code. The memory is released only at the end of the program (during execution of the STOP or END). Thus, if the memory that allocated for the array, partially or fully used most of the time in the program, it still can not be freed for use by other programs.

For dynamic arrays of memory storage elements is provided with "buy" OS when it will be required algorithms and to the extent that is needed at a time (can be calculated).

While working memory can be released and given back many times as necessary. Thus, the use of dynamic arrays allows you to programmatically manage memory resources and OS can effectively use it.

Dynamic arrays should be used when desired size for significant amounts of memory or when its size is unknown at the time the design code, but can be defined settlement during its execution.