Course No. : EE207

EE207-Computer Programming

Module 3 note

Module 3: Arrays and Strings

Syllabus :-

Arrays and Strings

- Declaration
- Initialisation
- Processing arrays and strings
- Two dimensional and multidimensional arrays
- Application of arrays
- Example programs

- ✓ 7 Hours for this module(for 1st teaching)
- ✓ In semester exam 15% marks from this module
- ✓ In this module we studying Arrays and Strings in C
- ✓ Reference ANSI C- Second edition

Arrays

An array is a fixed-size sequenced collection of elements of the same data type or simply, an array is a sequenced collection of related data items that share a common name

We can use an array name 'salary' to represent a set of salaries of a group of employees in an organization. We can refer to the individual salaries by writing a number called **index** or **subscript** in brackets after the array name

Eg;:-

Salary[10] it represent the salary of 11^{th} employee

There are mainly 3 types of arrays:-

1. One-dimensional array
2. Two-dimensional array
3. Multi-dimensional array

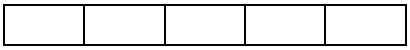
1. One-dimensional array

A list of items can be given one variable name usingonly one subscript and such a variable is called a one-dimensional array (single subscripted variable)

Eg:- **int number[5];**

By this command computer reserve 5 storage locations as shown below

Or



The values to the array elements can be assigned as follow :-

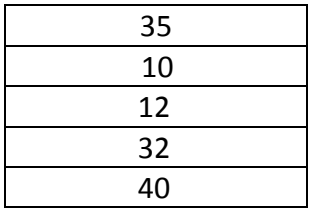
number[0]=35

number[1]=10

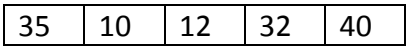
number[2]=12

number[3]=32

number[4]=40



or



Declaration of one-dimensional array

type variable-name[size]

Eg:-

Int group[10] ⟶ declares 'group' as an array to contain max 10 integer elements

char letter[26] ⟶ declares 'letter' as an array to contain max 26 character elements

Initialization of one-dimensional array

An array can be initialized at two stages

1. At compile time
2. At run time

Compile time initialization

In the compile time initialization, the values of array elements are given in the program itself

type array-name[size]={list of values};

Eg:-

int number[3]={0,1,5};

Run time initialization

In the runtime initialization, the values of array elements are given at the time of execution. We can use a read function such as scanf to initialize can array

Eg:-

```
int number[3]

scanf("%d%d%d",&number[0],&number[1],&number[2]);
```

Two-dimensional array

One-dimensional arrays variable can be used to store a list of variables. There could be situations where a table of values will have to be stored. Two-dimensional arrays can also be called as a 'matrix'

Eg:-

	0	1	2
0	2	3	4
1	12	8	5
2	35	75	44

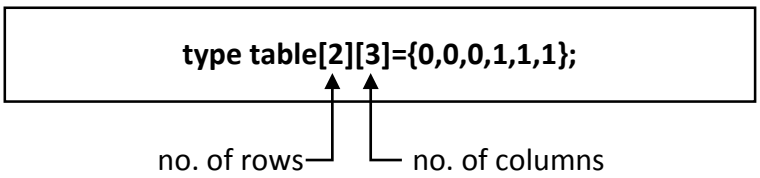
number[0][0]=2

number[0][1]=3

----------etc

Compile time initialization

In the compile time initialization, the values of array elements are given in the program itself



The elements will fill in row-wisely. So in 1st row filled by zeros and 2nd row filled by ones

Run time initialization

In the runtime initialization, the values of array elements are given at the time of execution. We can use a read function such as scanf to initialize can array

Eg:-

```
int number[2][3],i,j;
for(i=0;i<2;i++)
{
        For(j=0;j<3;j++)
        {
        scanf("%d",&number[i][j]);
        }
}
```

Multi-dimensional arrays

C allows arrays of three or more dimensions. The exact limit is determined by the compiler. The general form of multi-dimensional array

type table[S_1][S_2] [S_3].....[S_m];

Note prepared by
VISHNU CV KTU live
vishnucvd@gmail.com