CHAPTER NO 4

Q.No.1- Define array discuss different types of array?

Array

An array is collection of variables that can store data of same type. Each memory location holds a single value which is called an *element of an array*.

Types of Array

Array can be divided into two major categories

1- One -- dimensional array

2- Two -- dimensional array

One Dimensional array

One dimensional array is also known as linear array or vector array. It consists of only one row or column. It is also called 1-D array.

The general syntax to declare one dimensional array is

Line No DIM array name / variable (n)

Where array name (variable) represents the name of array variable, n represents the size of elements.

Two Dimensional Array

The two dimensional array consists of rows and columns. It is also known as table or matrix. Two Dimensional array is also defined as array of One dimensional arrays.

The general syntax to declare two Dimensional array is

Line No DIM array variable (row , col)

Where array variable represent the name of the two dimensional array. ROW represents the total number of rows of table. It is an unsigned number. COL represents the total number of columns of the table.

Q.No2- What do you mean by subscript or index?

Each array is given a name and the elements of the array are accessed with reference to their position or location number. This position number is called index or subscript.

Q.No.3- Write syntax of array?

The syntax of an array is,

Line No DIM array name (n)

An array is referred by its name allowed by a subscript enclosed in parentheses. Where array name is the variable name of the array, n is size of array which is specified number of data items.

Q.No.4- What is meant by DIM Statement?

Dim is a Short of "Dimension". We use DIM Statements in a program to give size of any array to create the memory location. When array has more than 10 elements then DIM statement is used. It specify the Maximum value for array variable subscript and allocates storage accordingly.

SYNTAX OF DIM STATEMENT FOR ONE DIMENSIONAL ARRAY

Line no DIM variable (size) variable

SYNTAX OF DIM STATEMENT FOR TWO DIMENSIONAL ARRAY:-

Line No DIM Variable (size, size)

If we have to give two or more variable then they are separated by coma (,)

Q.No.5- Describe the use of subscript variable in array?

An array is called a subscripted variable because we use subscript with variable. All array elements in an array have the same variable name which may be numeric or string. The subscript is an integral expression enclosed in parentheses. The use of subscripted variable is to differentiate every element because every element is pointed by different subscript.

Q.No.6- How would you fill and print the array?

Data is entered into individual elements of one or two dimensional array. To enter data, the element is referenced by its index of subscript value. Similarly, data is retrieved from an array from individual elements of the array. Usually, nested loops are used to access elements of the two dimensional array.

Nested loop has been used to enter data into the elements of the table. The outer loop has been used to change the index values of rows and inner loop is used to print out data values of columns.

Q.No.7- What is meant by array manipulation?

Different operations can be performed by using array is called array manipulation. like searching a particular elements in an array, matching elements from two different arrays, sorting array, finding a largest and smallest number from an array and rearranging the array.

Q.No.8- Describe about printing two dimensional arrays with help examples of examples?

The following example inputs data into two array and then print the values of array on the computer screen in tabular form.

Nested loop has been used to enter data into the elements of the table. The outer loop has been used to change the index values of rows and inner loop has been used to change the index values of columns.

Example

```
10    DIM A (10,10)
20    FOR R = 1 TO 10
30    FOR C = 1 TO 10
40    READ A(R,C)
50    PRINT A(R,C)
60    NEXT C
80    NEXT R
90    DATA 8,4.3,5,9,7,3,4,7,8,5,4,3,9,3,10,6,4,5,5
100   END
```

Q.No.9- Differentiate between 1D-array and 2D-array?

1D-Array	2D-Array
1D-Array consist of only one row or columns.	2D-Array consist of number of rows and columns.
1D-Array is mostly used to make list	2D-Array is used to make a table
1D-Array is single subscripted array	2D-Array is double subscripted array
It is also called as linear array or Vector array	It is also called as Table or Matrix

Q.No.10- Differentiate between simple and subscript variable?

Simple Variable	Subscript Variable
Simple variable only capable of storing one value.	Subscripted variables are used to store different value in variable.
Simple variable are assign by let and read/data statement.	Dim statement is used to assign different values to a same Variable.
Simple Variable has just one value.	Subscripted variables are used to make list and tables.

Q.No.11- When an error message " script out of range" occurs?

We use the DIM Statement to specify a maximum subscript different fr subscript greater than the maximum specified is used , a " Subscript out of range" error occurs. The maximum number of dimensions for an array is 255.

Q.No.12. Write an algorithm to sum array A elements and array B elements.

Algorithm

1- Start

2- Save the location for storage of 3 arrays

3- Save elements of 1st array in table A and elements of 2nd array in table B.

4- Add the element of table A and B

5- Print table A

6- Print table B

7- Print Sum of elements Table of A and table B

8- End the program

Q.No.13- Fid out the errors in the following program segments if any

a).

```
10 DIM N$ (10)
20 FOR K = 4TO15
30 INPUT N $
40 NEXT I
```

b)

```
10 FOR J = K TO 15
20 K(J) = J
30 PRINT K (J)
40 NEXT J
```

(a) Here error is in line number 30 because variable k should be used with next statement some variable are used with for and next statements.

(b) Here error is in line number 20. When we execute the program the error message will appear "Script out of range".

Q.No.14- Write a program to print a list of odd numbers from the given numbers.

6,42,4,77,32,9,21,22,8,45,15,46

```
10    CLS
20    DIM A(12)
30    FOR B = 1 TO 12
40    READ A (B)
50    IF A (B) MOD 2 =1 THEN PRINT A (B)
60    NEXT B
70    DATA 6 , 42 , 4 ,77 , 32 , 9 , 21 , 22 ,8 , 45 , 15 , 46
80    END
```

OUTPUT

Q.No.15- Write a program in BASIC to enter integer type data into an array and then to print the values in reverse order.

```
10    CLS
20    FOR A = 1 TO 4
30    READ TEST(A)
40    NEXT A
50    FOR M = 4 to 1 STEP -1
60    PRINT Test (M)
70    NEXT M
80    DATA 10, 15, 20, 25
90    END
```

OUTPUT

```
25
20
15
10
```

Q.No.16- Write a program that read an array N with 20 numbers and find the product of the elements of array.

```
10    CLS
20    Product = 1
30    DIM Array (20)
40    FOR N= 1 TO 20
50    INPUT "Enter Number", ARRAY(N)
60    Product = Product * Array(N)
70    NEXT N
80    PRINT "The Product of the number is ;" Product
90    END
```

Q.No.17- Write a program that read an array Z having 12 numbers given by user then print the sum and average of all array elements.

```
10    CLS
20    Sum = 0
30    DIM Z (12)
40    FOR I = 1 TO 12.
50    INPUT "Enter Number", Z(I)
```

```
60      SUM = Sum + Array (I)
70      NEXT I
80      AVG = SUM / 12
90      PRINT "The Sum of number is;" Sum
100     PRINT "The Average of Number is"; AVG
110     END
```

Q.No.18- Write a program to sort the list of 20 numbers in descending order.

```
10      Dim N $(20)
20      FOR K = 1 TO 20
30      INPUT "Enter Name=", N$(K)
40      NEXT K
50      FOR I = 1 TO 19
60      FOR J = 1 TO 19 – 1
70      IF N$ (J) <N$(J+1)THEN SWAP N$(J),N$(J+1)
80      NEXT J
90      NEXT I
100     FOR K = 1 TO 20
110     PRINT N$(K)
120     NEXT K
130     END
```