

CHAPTER 4: Class X ARRAYS

4. What is meant by DIM statement?

Ans: DIM stands for Dimension. It is used to define an array, which creates memory variable. It specifies the maximum value for array with subscripted variables. Eg. **10 DIM A(15)**

5. Describe the use of subscript variable in array.

Ans: In the array, each element is given a unique storage location. To access any element in an array a subscript variable is used. Like **A(2)**, **B(3,2)** or **N\$(3)**. Etc.

6. How would you Fill and Print the array?

Ans: To fill an array READ, INPUT or LET statement is used. Data can also be assigned to the subscripted variables as **LET N\$(1)=""PIPS"**. We can print an array as **PRINT N\$(K)**.

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10 FOR K = 1 TO 4
20 READ N$(K)
30 PRINT N$(K)
40 NEXT K
50 DATA Ali, Ahmad, Shazib, Waqas
60 END
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7. What is meant by Manipulation of array?

Ans: We can perform different operations on an array, like searching, matching two arrays, sorting, rearranging and finding largest and smallest number from an array.

8. Differentiate between 1-D-Array and 2-D-Array.

ONE-DIMENSIONAL-ARRAY	TWO-DIMENSIONAL-ARRAY
1. It is consist of only one row OR column	1. It is consist of rows and columns
2. Known as Linear Array or Vector Array.	2. Known as table or matrix.
3. Its syntax is LINE NO. DIM array name(n)	3. Syntax is LINE NO. DIM array name(row,col)
4. We can declare it as 10 DIM A(10)	4. We can declare it as 10 DIM A(3,4)
5. Also called 1-D-Array.	5. Also called 2-D-Array.
6. Elements referenced by one index value as A(2)	6. Elements referenced by two index values as A(3,2)

9. Describe about printing two-dimensional array with the help of an example.

Ans: Nested loop is used to enter and print data into 2-D-array. The outer loop is used to print rows values and inner loop is used to print column values. Example is as follow.

<pre>10 CLS 20 DIM A(3, 3) 30 FOR J = 1 TO 3 40 FOR K = 1 TO 3 50 READ A(K, J)</pre>	<pre>60 PRINT A(K, J) 70 NEXT K 80 NEXT J 90 DATA 1, 2, 3, 4, 5, 6, 7, 8, 9 100 END</pre>
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10. Write a program to enter integer type data into an array then print values in reverse order.

<pre>10 CLS 20 DIM A(10) 30 FOR K = 1 TO 10 40 READ A(K) 50 NEXT K</pre>	<pre>60 FOR L = 10 TO 1 STEP -1 70 PRINT A(L) 80 NEXT L 90 DATA 4,5,6,1,2,9,8,7,6,10 100 END</pre>
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11. Differentiate between simple and subscript variable.

Simple Variable: A simple variable like **x = 5**, can store only single value

Subscript Variable: Subscripted variable like **x(5)** can store 5 values in consecutive memory.

12. Draw a flowchart for the Q.NO. 16 program.

13. Write an algorithm to sum array A elements and array B elements.

1. Define two arrays as DIM A(5), B(5)
2. Use FOR loop to access data from both arrays.
3. Do sum as $A(K) + B(K)$.
4. Display sum $A(K) + B(K)$ on the screen.
5. Repeat the step 2, 3 and 4, 5 times.
6. End the procedure.

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 K = 1 TO 12 40 READ A(K)	50 IF A(K) MOD 2 = 1 THEN PRINT A(K) 60 NEXT K 70 DATA 6,42,4,77,32,9,21,22,8,45,15,46 80 END
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15. Write a program that read an array N with 20 numbers and find the product of the elements of array.

10 CLS 20 DIM N(20) 25 PROD = 1 30 FOR K = 1 TO 20 40 READ N(K) 50 PROD = PROD * N(K)	60 NEXT K 70 PRINT PROD 80 DATA 4,5,6,1,2,9,8,7,6,10.... 90 END
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16. 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 DIM Z(12) 30 FOR K = 1 TO 12 40 READ Z(K) 50 S = S + Z(K)	60 NEXT K 70 PRINT "SUM = " S 80 PRINT "AVERAGE = " S/12 90 DATA 4,5,6,1,2,9,8,7,6,10,11,23 100 END
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17. Find out the errors in the following program segments if any?

(a). 10 DIM NS(10) 20 FOR K = 4 TO 15 30 INPUT NS 40. NEXT I	(b). 10 FOR J = K TO 15 20 K(J) = J 30 PRINT K(J) 40 NEXT J
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Ans: Error : NEXT without FOR in 40

(b). Subscript out of range in 20 (05 DIM K(16))

18. Write a program to sort the list of 20 numbers in descending order.

10 CLS 20 DIM A(20) 30 FOR K = 1 TO 20 40 READ A(K) 50 NEXT 60 DATA 1, 2, 3, 4, 5, 6,....., 15, 16, 17, 18, 19, 20 70 FOR M = 1 TO 20	80 FOR L = 1 TO 19 90 IF A(L) < A(L+1) THEN SWAP A(L), A(L + 1) 100 NEXT L 110 NEXT M 120 FOR P = 1 TO 20 130 PRINT A(P) 140 NEXT P
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General Questions Chapter 4 (Arrays)

Q.1 What is an ARRAY?

Ans: An array is a set of like variables arranged in a sequence and identified by their subscripts.

2. What is subscripted variable.

Ans: It is basic components of an array. A special variable used in BASIC. In A(5), (5) is Subscripted Variable.

3. Define one/single dimension array.

Ans: One dimension array is the list of column. It is also known as list.

4. Define Two/Double dimension array.

Ans: Two dimension array is in the form of table i.e (rows and columns). Which is also known as table.

5. What is numeric array.

Ans: An array used to work with numbers only is called numeric array.

6. What is string array.

Ans: An array used to work with string only is called string array.

7. What is the purpose of DIM statement.

Ans: It is used to define an array. It tells the computer how many items will be stored in array in the memory.

Q7 Predict the output of each of the following program.

<p>a) 10 FOR F= 1 TO 7</p> <p style="text-align: right;">OUTPUT</p> <p>20 LET NUM(F)= F-1 0</p> <p>30 NEXT F 1</p> <p>40 FOR G=1 TO 7 2</p> <p>50 PRINT NUM(G) 3</p> <p>60 NEXT G 4</p> <p>70 END 5</p> <p style="text-align: right;">6</p>	<p>b)</p> <p>10 DIM N(11)</p> <p>20 FOR P = 1 TO 11</p> <p>30 LET N(P) = P</p> <p>40 NEXT P</p> <p>50 FOR T= 1 TO 11 STEP 2</p> <p>60 PRINT N(T)</p> <p>70 NEXT T</p> <p>80 END</p> <p style="text-align: right;">OUTPUT</p> <p style="text-align: center;">1</p> <p style="text-align: center;">3</p> <p style="text-align: center;">5</p> <p style="text-align: center;">7</p> <p style="text-align: center;">9</p> <p style="text-align: center;">11</p>
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Q 8. Write a program to fill array with 16 random integer each between 25 and 60, then print the array

<p>10 DIM ARR(16)</p> <p>20 FOR I=1 TO 16</p> <p>30 READ ARR(I)</p> <p>40 NEXT</p> <p>50 FOR J=1 TO 16</p> <p>60 PRINT ARR(J)</p> <p>70 NEXT</p> <p>80 DATA 26,32,24,28,43,55,44,51,29,34,57,46,30,38,50,59</p> <p>90 END</p>	<p>OR</p> <p>10 DIM ARR(16)</p> <p>20 RANDOMIZE TIMER</p> <p>30 FOR I=1 TO 16</p> <p>40 ARR(I) = 25 + INT(35*RND)</p> <p>50 NEXT I</p> <p>60 FOR J=1 TO 16</p> <p>70 PRINT ARR(I);</p> <p>80 NEXT J 90 END</p>
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Q9. Change the program of Q6 above so that it PRINTS the sum of those array elements that are divisible by 3, also count those number.

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10 DIM P(20)
20 SUM=0
30 COUNT=0
40 FOR I=1 TO 20
50 READ P(I)
60 IF P(I) MOD 3 =0 THEN SUM=SUM+P(I) : COUNT = COUNT + 1
70 NEXT
80 PRINT "SUM = ";SUM
90 PRINT "NUMBERS DIVISIBLE BY 3 ARE "; COUNT
100 DATA 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20
110 END
111

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OBJECTIVE

1. One dimension array is also called list.
2. Two-dimension array is also called table.
3. Negative sign is not allowed in subscript.
4. Each element of an array is identified uniquely by its subscript.
5. The primary objective of an array is addressability.
6. A subscripted variable contains the variable name followed by a subscripts enclosed in parentheses.
7. Dimension statement uses the keyword DIM.
8. DIM statement tells the computer how many items will be stored in particular array in memory.
9. Dimension statement is needed, whenever we try to store more than 10 values in a single array.
10. A two dimensional array must have two subscripts.
11. DIM(100) statement will reserve 100 memory locations.
12. A dimension statement can be placed anywhere in a program but before the array manipulation.

True or False

1. DIM statement may be placed anywhere in a program. (F)
2. Negative sign is allowed in subscript. (F)
3. P4 is a subscripted variable. (F)
4. We can easily find the address of an array by incrementing or decrementing its subscripts.(T)
5. Arrays are used to make programmer's life easy. (T)
6. A subscripts can be zero. (T)
7. A subscripts can be any expression with integer positive value.(T)
8. A subscript, which yields larger value than the specified size than an error will occur.(T)
9. N(1) = "Pakistan" (F)
10. Arrays are used in many applications. (T)
11. DIM statement reserves memory locations for a particular array.(T)
12. A(3,4) will reserve 12 memory location for array A. (T)