C# Datatype, Control Statement and Array Laboratory Exercise

1. Write a C# Sharp program that takes three letters as input and display them in reverse order.
Test Data
Enter letter: b
Enter letter: a
Enter letter: t
Expected Output :
t a b

2. Write a C# Sharp program that takes a number and a width also a number, as input and then displays a triangle of that width, using that number.
Test Data
Enter a number: 6
Enter the desired width: 6
Expected Output :
666666
66666
6666
666
66
6

3. Write a C# Sharp program that takes two numbers as input and perform an operation (+,-,*,x,/) on them and displays the result of that operation.
Test Data
Input first number: 20
Input operation: -
Input second number: 12
Expected Output :
20 - 12 = 8

4. Write a C# Sharp program that takes the radius of a circle as input and calculate the perimeter and area of the circle.
Test Data
Input the radius of the circle :
12
Expected Output :
Perimeter of Circle : 75.36

5. Write a C# Sharp program that takes distance and time as input and displays the speed in kilometers per hour and miles per hour.
Test Data:
Input distance(meters): 50000
Input timeSec(hour): 1
Input timeSec(minutes): 35

Input timeSec(seconds): 56
Expected Output:
Your speed in meters/sec is 8.686588
Your speed in km/h is 31.27172
Your speed in miles/h is 19.4355

6. Write a C# Sharp program that takes the radius of a sphere as input and calculate and display the surface and volume of the sphere.
Test Data:
Radius: 2
Expected Output:
50.26548
33.51032

7. Write a C# Sharp program that takes a character as input and check the input (lowercase) is a vowel, a digit, or any other symbol.
Test Data:
Input a symbol: a
Expected Output:
It's a lowercase vowel.

8. Write a C# Sharp program that takes two numbers as input and returns true or false when both numbers are even or odd.

9. Write a C# Sharp program that takes a decimal number as input and displays its equivalent in binary form.
Test Data:
Number to convert (or "end")? 25
Expected Output:
Binary: 11001

10. Write a C# Sharp program to accept two integers and check whether they are equal or not.
Test Data :
Input 1st number: 5
Input 2nd number: 5
Expected Output :
5 and 5 are equal

11. Write a C# Sharp program to check whether a given number is even or odd.
Test Data : 15
Expected Output :
15 is an odd integer

12. Write a C# Sharp program to check whether a given number is positive or negative.
Test Data : 14

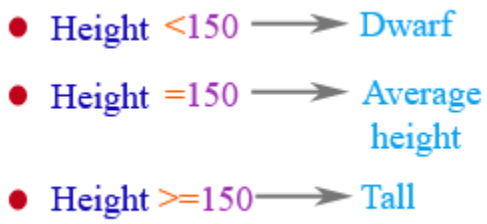
Expected Output :
14 is a positive number

13. Write a C# Sharp program to find whether a given year is a leap year or not.
Test Data : 2016
Expected Output :
2016 is a leap year.

14. Write a C# Sharp program to read the age of a candidate and determine whether it is eligible for casting his/her own vote.
Test Data : 21
Expected Output:
Congratulation! You are eligible for casting your vote.

15. Write a C# Sharp program to read the value of an integer m and display the value of n is 1 when m is larger than 0, 0 when m is 0 and -1 when m is less than 0.
Test Data : -5
Expected Output:
The value of n = -1

16. Write a C# Sharp program to accept the height of a person in centimeter and categorize the person according to their height.
Test Data : 135
Expected Output :
The person is Dwarf.



17. Write a C# Sharp program to find the largest of three numbers.
Test Data :
Input the 1st number :25
Input the 2nd number :63
Input the 3rd number :10
Expected Output :
The 2nd Number is the greatest among three

18. Write a C# Sharp program to find the eligibility of admission for a professional course based on the following criteria:
Marks in Maths >=65
Marks in Phy >=55
Marks in Chem>=50
Total in all three subject >=180
or
Total in Math and Subjects >=140
Test Data :
Input the marks obtained in Physics :65
Input the marks obtained in Chemistry :51
Input the marks obtained in Mathematics :72

Expected Output :
The candidate is eligible for admission.

19. Write a C# Sharp program to read roll no, name and marks of three subjects and calculate the total, percentage and division.
Test Data :
Input the Roll Number of the student :784
Input the Name of the Student :James
Input the marks of Physics, Chemistry and Computer Application : 70 80 90
Expected Output :
Roll No : 784
Name of Student : James
Marks in Physics : 70
Marks in Chemistry : 80
Marks in Computer Application : 90
Total Marks = 240
Percentage = 80.00
Division = First

20. Write a C# Sharp program to read temperature in centigrade and display a suitable message according to temperature state below :
Temp < 0 then Freezing weather
Temp 0-10 then Very Cold weather
Temp 10-20 then Cold weather
Temp 20-30 then Normal in Temp
Temp 30-40 then Its Hot
Temp >=40 then Its Very Hot
Test Data :
42
Expected Output :
Its very hot.

21. Write a C# Sharp program to check whether a triangle is Equilateral, Isosceles or Scalene.
Test Data :
50 50 60
Expected Output :
This is an isosceles triangle.

22. Write a C# Sharp program to check whether a triangle can be formed by the given value for the angles.
Test Data :
40 55 65
Expected Output :
The triangle is not valid.

23. Write a C# Sharp program to check whether an alphabet is a vowel or consonant.
Test Data :
k
Expected Output :
The alphabet is a consonant.

24. Write a C# Sharp program to calculate profit and loss on a transaction.
Test Data :
500 700
Expected Output :
You can book your profit amount : 200

25. Write a program in C# Sharp to calculate and print the Electricity bill of a given customer. The customer id., name and unit consumed by the user should be taken from the keyboard and display the total amount to pay to the customer. The charge are as follow :

Unit	Charge/unit
upto 199	@1.20
200 and above but less than 400	@1.50
400 and above but less than 600	@1.80
600 and above	@2.00

If bill exceeds Rs. 400 then a surcharge of 15% will be charged and the minimum bill should be of Rs. 100/-

Test Data :
1001
James
800
Expected Output :
Customer IDNO :1001
Customer Name :James
unit Consumed :800
Amount Charges @Rs. 2.00 per unit : 1600.00
Surchage Amount : 240.00
Net Amount Paid By the Customer : 1840.00

26. Write a program in C# Sharp to accept a grade and declare the equivalent description :

Grade	Description
E	Excellent
V	Very Good
G	Good
A	Average
F	Fail

Test Data :
Input the grade :a
Expected Output :
You have chosen : Average

27. Write a program in C# Sharp to read any day number in integer and display day name in the word.
Test Data :
4
Expected Output :
Thursday

28. Write a program in C# Sharp to read any digit, display in the word.
Test Data :
4
Expected Output :
Four

29. Write a program in C# Sharp to read any Month Number in integer and display Month name in the word.
Test Data :
4
Expected Output:
April

30. Write a program in C# Sharp to read any Month Number in integer and display the number of days for this month.
Test Data :
7
Expected Output:
Month have 31 days

31. Write a program in C# Sharp which is a Menu-Driven Program to perform a simple calculation.
Test Date and Expected Output
Enter the first Integer :10
Enter the second Integer :2
Here are the options :
1-Addition.
2-Substraction.
3-Multiplication.
4-Division.
5-Exit.
Input your choice :3
The Multiplication of 10 and 2 is: 20

32. Write a program in C# Sharp to store elements in an array and print it.
Test Data:
Input 10 elements in the array:
element - 0 : 1
element - 1 : 1
element - 2 : 2
...
Expected Output :
Elements in array are: 1 1 2 3 4 5 6 7 8 9

33. Write a program in C# Sharp to read n number of values in an array and display it in reverse order.
Test Data :
Input the number of elements to store in the array :3
Input 3 number of elements in the array :
element - 0 : 2
element - 1 : 5
element - 2 : 7
Expected Output:
The values store into the array are:
2 5 7
The values store into the array in reverse are :
7 5 2

34. Write a program in C# Sharp to find the sum of all elements of the array.
Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 2
element - 1 : 5
element - 2 : 8

Expected Output :
Sum of all elements stored in the array is : 15

35. Write a program in C# Sharp to copy the elements one array into another array.
Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 15
element - 1 : 10
element - 2 : 12
Expected Output:
The elements stored in the first array are :
15 10 12
The elements copied into the second array are :
15 10 12

36. Write a program in C# Sharp to count a total number of duplicate elements in an array.
Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 5
element - 1 : 1
element - 2 : 1
Expected Output :
Total number of duplicate elements found in the array is : 1

37. Write a program in C# Sharp to print all unique elements in an array.
Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 1
element - 1 : 5
element - 2 : 1
Expected Output :
The unique elements found in the array are :
5

38. Write a program in C# Sharp to merge two arrays of same size sorted in ascending order.
Test Data :
Input the number of elements to be stored in the first array :3
Input 3 elements in the array :
element - 0 : 1
element - 1 : 2
element - 2 : 3
Input the number of elements to be stored in the second array :3
Input 3 elements in the array:

element - 0 : 1
element - 1 : 2
element - 2 : 3
Expected Output:
The merged array in ascending order is :
1 1 2 2 3 3

39. Write a program in C# Sharp to count the frequency of each element of an array.
Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 25
element - 1 : 12
element - 2 : 43
Expected Output :
Frequency of all elements of array :
25 occurs 1 times
12 occurs 1 times
43 occurs 1 times

40. Write a program in C# Sharp to find maximum and minimum element in an array.
Test Data :
Input the number of elements to be stored in the array :3
Input 3 elements in the array :
element - 0 : 45
element - 1 : 25
element - 2 : 21
Expected Output :
Maximum element is : 45
Minimum element is : 21

41. Write a programin C# Sharp to separate odd and even integers in separate arrays.
Test Data :
Input the number of elements to be stored in the array :5
Input 5 elements in the array :
element - 0 : 25
element - 1 : 47
element - 2 : 42
element - 3 : 56
element - 4 : 32
Expected Output:
The Even elements are:
42 56 32
The Odd elements are :
25 47

42. Write a program in C# Sharp to sort elements of array in ascending order.
Test Data :
Input the size of array : 5
Input 5 elements in the array :
element - 0 : 2
element - 1 : 7
element - 2 : 4
element - 3 : 5
element - 4 : 9
Expected Output :
Elements of array in sorted ascending order:
2 4 5 7 9

43. Write a program in C# Sharp to sort elements of the array in descending order.
Test Data :
Input the size of array : 3
Input 3 elements in the array :
element - 0 : 5
element - 1 : 9
element - 2 : 1
Expected Output :
Elements of the array in sorted descending order:
9 5 1

44. Write a program in C# Sharp to insert New value in the array (sorted list).
Test Data :
Input the size of array : 3
Input 3 elements in the array in ascending order:
element - 0 : 5
element - 1 : 7
element - 2 : 9
Input the value to be inserted : 8
Expected Output :
The exist array list is :
5 7 9
After Insert the list is :
5 7 8 9

45. Write a program in C# Sharp to insert New value in the array (unsorted list).
Test Data :
Input the size of array : 4
Input 4 elements in the array in ascending order:
element - 0 : 1
element - 1 : 8
element - 2 : 7
element - 3 : 10

Input the value to be inserted : 5
Input the Position, where the value to be inserted :2
Expected Output :
The current list of the array :
1 8 7 10
After Insert the element the new list is :
1 5 8 7 10

46. Write a program in C# Sharp to delete an element at desired position from an array.
Test Data :
Input the size of array : 5
Input 5 elements in the array in ascending order:
element - 0 : 1
element - 1 : 2
element - 2 : 3
element - 3 : 4
element - 4 : 5
Input the position where to delete: 3
Expected Output :
The new list is : 1 2 4 5

47. Write a program in C# Sharp to find the second largest element in an array.
Test Data :
Input the size of array : 5
Input 5 elements in the array :
element - 0 : 2
element - 1 : 9
element - 2 : 1
element - 3 : 4
element - 4 : 6
Expected Output :
The Second largest element in the array is: 6

48. Write a program in C# Sharp to find the second smallest element in an array.
Test Data :
Input the size of array : 5
Input 5 elements in the array (value must be <9999) :
element - 0 : 0
element - 1 : 9
element - 2 : 4
element - 3 : 6
element - 4 : 5
Expected Output :
The Second smallest element in the array is : 4

49. Write a program in C# Sharp for a 2D array of size 3x3 and print the matrix.
Test Data :
Input elements in the matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [0],[2] : 3
element - [1],[0] : 4
element - [1],[1] : 5
element - [1],[2] : 6
element - [2],[0] : 7
element - [2],[1] : 8
element - [2],[2] : 9
Expected Output :
The matrix is :

1 2 3
4 5 6
7 8 9

50. Write a program in C# Sharp for addition of two Matrices of same size.
Test Data :
Input the size of the square matrix (less than 5): 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Input elements in the second matrix :
element - [0],[0] : 5
element - [0],[1] : 6
element - [1],[0] : 7
element - [1],[1] : 8
Expected Output:
The First matrix is:

1 2
3 4
The Second matrix is :

5 6
7 8
The Addition of two matrix is :

6 8
10 12

51. Write a program in C# Sharp for subtraction of two Matrices.
Test Data :
Input the size of the square matrix (less than 5): 2
Input elements in the first matrix :
element - [0],[0] : 5
element - [0],[1] : 6
element - [1],[0] : 7
element - [1],[1] : 8
Input elements in the second matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Expected Output :
The First matrix is :

5 6
7 8
The Second matrix is :

1 2
3 4
The Subtraction of two matrix is :

4 4
4 4

52. Write a program in C# Sharp for multiplication of two square Matrices.
Test Data :
Input the rows and columns of first matrix : 2 2
Input the rows and columns of second matrix : 2 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Input elements in the second matrix :
element - [0],[0] : 5
element - [0],[1] : 6
element - [1],[0] : 7
element - [1],[1] : 8
Expected Output :
The First matrix is :

1 2
3 4

The Second matrix is :

5 6
7 8
The multiplication of two matrix is :

19 22
43 50

53. Write a program in C# Sharp to find the sum of left diagonals of a matrix.
Test Data:
Input the size of the square matrix : 2
Input elements in the first matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Expected Output :
The matrix is :
1 2
3 4
Addition of the left Diagonal elements is :5

54. Write a program in C# Sharp to find sum of rows an columns of a Matrix.
Test Data :
Input the size of the square matrix: 2
Input elements in the first matrix:
element - [0],[0] : 5
element - [0],[1] : 6
element - [1],[0] : 7
element - [1],[1] : 8
Expected Output :
The First matrix is :
The matrix is :
5 6
7 8
The sum or rows and columns of the matrix is :
5 6 11
7 8 15
12 14

55. Write a program in C# Sharp to accept two matrices and check whether they are equal.
Test Data :
Input Rows and Columns of the 1st matrix :2 2
Input Rows and Columns of the 2nd matrix :2 2
Input elements in the first matrix :

element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Input elements in the second matrix :
element - [0],[0] : 1
element - [0],[1] : 2
element - [1],[0] : 3
element - [1],[1] : 4
Expected Output :
The first matrix is :
1 2
3 4
The second matrix is :
1 2
3 4
The Matrices can be compared :
Two matrices are equal.