**If-Else Related Problem:**

1. [Write a C program to find maximum between two numbers.](https://codeforwin.org/2015/05/c-program-to-find-maximum-between-two-numbers.html)
2. [Write a C program to find maximum between three numbers.](https://codeforwin.org/2015/05/c-program-to-find-maximum.html)
3. [Write a C program to check whether a number is negative, positive or zero.](https://codeforwin.org/2015/05/c-program-to-check-negative-positive-zero.html)
4. [Write a C program to check whether a number is divisible by 5 and 11 or not.](https://codeforwin.org/2015/05/c-program-to-check-whether-number-is-divisible-by-5-and-11.html)
5. [Write a C program to check whether a number is even or odd.](https://codeforwin.org/2015/05/c-program-to-check-even-odd.html)
6. [Write a C program to check whether a year is leap year or not.](https://codeforwin.org/2015/05/c-program-to-check-leap-year.html)
7. [Write a C program to check whether a character is alphabet or not.](https://codeforwin.org/2015/05/c-program-to-check-alphabet.html)
8. [Write a C program to input any alphabet and check whether it is vowel or consonant.](https://codeforwin.org/2015/05/c-program-to-check-vowel-or-consonant.html)
9. [Write a C program to input any character and check whether it is alphabet, digit or special character.](https://codeforwin.org/2015/05/c-program-to-check-alphabet-digit-special-character.html)
10. [Write a C program to check whether a character is uppercase or lowercase alphabet](https://codeforwin.org/2015/09/c-program-to-check-whether-character-is-uppercase-or-lowercase.html).
11. [Write a C program to input week number and print week day](https://codeforwin.org/2015/05/c-program-to-print-week-name.html).
12. [Write a C program to input month number and print number of days in that month.](https://codeforwin.org/2015/05/c-program-to-print-number-of-days-in-month.html)
13. [Write a C program to count total number of notes in given amount](https://codeforwin.org/2015/07/c-program-to-count-total-number-of-notes.html).
14. [Write a C program to input angles of a triangle and check whether triangle is valid or not.](https://codeforwin.org/2015/05/c-program-to-check-whether-triangle-is-valid-or-not.html)
15. [Write a C program to input all sides of a triangle and check whether triangle is valid or not.](https://codeforwin.org/2015/05/c-program-to-check-whether-triangle-side-is-valid-or-not.html)
16. [Write a C program to check whether the triangle is equilateral, isosceles or scalene triangle.](https://codeforwin.org/2015/05/c-program-to-check-whether-triangle-is-equilateral-isosceles-scalene.html)
17. [Write a C program to find all roots of a quadratic equation](https://codeforwin.org/2016/04/c-program-to-find-all-roots-of-quadratic-equation.html).
18. [Write a C program to calculate profit or loss.](https://codeforwin.org/2015/05/c-program-to-check-profit-or-loss.html)
19. [Write a C program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following:](https://codeforwin.org/2015/05/c-program-to-enter-student-marks-and-calculate-percentage-and-grade.html)  
    Percentage >= 90% : Grade A  
    Percentage >= 80% : Grade B  
    Percentage >= 70% : Grade C  
    Percentage >= 60% : Grade D  
    Percentage >= 40% : Grade E  
    Percentage < 40% : Grade F
20. [Write a C program to input basic salary of an employee and calculate its Gross salary according to following:](https://codeforwin.org/2015/05/c-program-to-calculate-gross-salary-of-employee.html)  
    Basic Salary <= 10000 : HRA = 20%, DA = 80%  
    Basic Salary <= 20000 : HRA = 25%, DA = 90%  
    Basic Salary > 20000 : HRA = 30%, DA = 95%
21. [Write a C program to input electricity unit charges and calculate total electricity bill according to the given condition:](https://codeforwin.org/2015/05/c-program-to-calculate-electricity-bill.html)  
    For first 50 units Rs. 0.50/unit  
    For next 100 units Rs. 0.75/unit  
    For next 100 units Rs. 1.20/unit  
    For unit above 250 Rs. 1.50/unit  
    An additional surcharge of 20% is added to the bill

**Switch Related Problem:**

1. [Write a C program to print day of week name using switch case.](https://codeforwin.org/2015/06/c-program-to-print-week-day-name-using-switch-case.html" \t "_blank)
2. [Write a C program print total number of days in a month using switch case.](https://codeforwin.org/2015/06/c-program-to-print-number-of-days-in-month-using-switch-case.html)
3. [Write a C program to check whether an alphabet is vowel or consonant using switch case.](https://codeforwin.org/2015/06/c-program-to-check-vowel-or-consonant-using-switch-case.html)
4. [Write a C program to find maximum between two numbers using switch case.](https://codeforwin.org/2015/06/c-program-to-find-maximum-using-switch-case.html)
5. [Write a C program to check whether a number is even or odd using switch case.](https://codeforwin.org/2015/06/c-program-to-check-even-or-odd-using-switch-case.html)
6. [Write a C program to check whether a number is positive, negative or zero using switch case.](https://codeforwin.org/2018/05/check-positive-negative-or-zero-using-switch-case.html)
7. [Write a C program to find roots of a quadratic equation using switch case](https://codeforwin.org/2016/04/c-program-to-find-all-roots-of-quadratic-equation-using-switch.html).
8. [Write a C program to create Simple Calculator using switch case](https://codeforwin.org/2015/06/c-program-to-create-simple-calculator-using-switch-case.html)

**Loop Related Problem:**

1. Write a program in C to display the first 10 natural numbers.  
Expected Output :  
1 2 3 4 5 6 7 8 9 10

2. Write a C program to compute the sum of the first 10 natural numbers.  
Expected Output :  
The first 10 natural number is :  
1 2 3 4 5 6 7 8 9 10  
The Sum is : 55

3. Write a program in C to display n terms of natural numbers and their sum.  
Test Data : 7  
Expected Output :  
The first 7 natural number is :  
1 2 3 4 5 6 7  
The Sum of Natural Number upto 7 terms : 28

4. Write a program in C to read 10 numbers from the keyboard and find their sum and average.  
Test Data :  
Input the 10 numbers :  
Number-1 :2  
...  
Number-10 :2  
Expected Output :  
The sum of 10 no is : 55  
The Average is : 5.500000

5. Write a program in C to display the cube of the number up to an integer.  
Test Data :  
Input number of terms : 5  
Expected Output :  
Number is : 1 and cube of the 1 is :1  
Number is : 2 and cube of the 2 is :8  
Number is : 3 and cube of the 3 is :27  
Number is : 4 and cube of the 4 is :64  
Number is : 5 and cube of the 5 is :125

6. Write a program in C to display the multiplication table for a given integer.  
Test Data :  
Input the number (Table to be calculated) : 15  
Expected Output :  
15 X 1 = 15  
...  
...  
15 X 10 = 150

7. Write a program in C to display the multiplier table vertically from 1 to n.  
Test Data :  
Input upto the table number starting from 1 : 8  
Expected Output :  
Multiplication table from 1 to 8  
1x1 = 1, 2x1 = 2, 3x1 = 3, 4x1 = 4, 5x1 = 5, 6x1 = 6, 7x1 = 7, 8x1 = 8  
...  
1x10 = 10, 2x10 = 20, 3x10 = 30, 4x10 = 40, 5x10 = 50, 6x10 = 60, 7x10 = 70, 8x10 = 80

8. Write a C program to display the n terms of odd natural numbers and their sum.  
Test Data  
Input number of terms : 10  
Expected Output :  
The odd numbers are :1 3 5 7 9 11 13 15 17 19  
The Sum of odd Natural Number upto 10 terms : 100

9. Write a program in C to display a pattern like a right angle triangle using an asterisk.

The pattern like :

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10. Write a C program to display a pattern like a right angle triangle with a number.

The pattern like :

1

12

123

1234

11. Write a program in C to make such a pattern like a right angle triangle with a number which will repeat a number in a row.

The pattern like :

1

22

333

4444

12. Write a program in C to make such a pattern like a right angle triangle with the number increased by 1.

The pattern like :

1

2 3

4 5 6

7 8 9 10

13. Write a program in C to make a pyramid pattern with numbers increased by 1.

1

2 3

4 5 6

7 8 9 10

14. Write a C program to make such a pattern as a pyramid with an asterisk.

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15. Write a C program to calculate the factorial of a given number.  
Test Data :  
Input the number : 5  
Expected Output :  
The Factorial of 5 is: 120

16. Write a C program to display the sum of n terms of even natural numbers.  
Test Data :  
Input number of terms : 5  
Expected Output :  
The even numbers are :2 4 6 8 10  
The Sum of even Natural Number upto 5 terms : 30

17. Write a C program to make such a pattern like a pyramid with a number which will repeat the number in the same row.

1

2 2

3 3 3

4 4 4 4

18. Write a program in C to find the sum of the series [ 1-X^2/2!+X^4/4!- .........].  
Test Data :  
Input the Value of x :2  
Input the number of terms : 5  
Expected Output :  
the sum = -0.415873  
Number of terms = 5  
value of x = 2.000000

19. Write a program in C to display the n terms of a harmonic series and their sum.  
1 + 1/2 + 1/3 + 1/4 + 1/5 ... 1/n terms  
Test Data :  
Input the number of terms : 5  
Expected Output :  
1/1 + 1/2 + 1/3 + 1/4 + 1/5 +  
Sum of Series upto 5 terms : 2.283334

20. Write a C program to display the pattern as a pyramid using asterisks, with each row containing an odd number of asterisks.

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21. Write a program in C to display the sum of the series [ 9 + 99 + 999 + 9999 ...].  
Test Data :  
Input the number or terms :5  
Expected Output :  
9 99 999 9999 99999  
The sum of the saries = 111105

22. Write a program in C to print Floyd's Triangle.

1

01

101

0101

10101

23. Write a program in C to find the sum of the series [x - x^3 + x^5 + ......].  
Test Data :  
Input the value of x :3  
Input number of terms : 5  
Expected Output :  
The sum is : 16.375000

24. Write a program in C to find the sum of the series [ x - x^3 + x^5 + ......].  
Test Data :  
Input the value of x :2  
Input number of terms : 5  
Expected Output :  
The values of the series:  
2  
-8  
32  
-128  
512  
The sum = 410

25. Write a C program that displays the n terms of square natural numbers and their sum.  
1 4 9 16 ... n Terms  
Test Data :  
Input the number of terms : 5  
Expected Output :  
The square natural upto 5 terms are :1 4 9 16 25  
The Sum of Square Natural Number upto 5 terms = 55

26. Write a program in C to find the sum of the series 1 +11 + 111 + 1111 + .. n terms.  
Test Data :  
Input the number of terms : 5  
Expected Output :  
1 + 11 + 111 + 1111 + 11111  
The Sum is : 12345

27. Write a C program to check whether a given number is a 'Perfect' number or not.  
Test Data :  
Input the number : 56  
Expected Output :  
The positive divisor : 1 2 4 7 8 14 28  
The sum of the divisor is : 64  
So, the number is not perfect.

28. Write a C program to find the 'Perfect' numbers within a given number of ranges.  
Test Data :  
Input the starting range or number : 1  
Input the ending range of number : 50  
Expected Output :  
The Perfect numbers within the given range : 6 28

29. Write a C program to check whether a given number is an Armstrong number or not.  
Test Data :  
Input a number: 153  
Expected Output :  
153 is an Armstrong number.

30. Write a C program to find the Armstrong number for a given range of number.  
Test Data :  
Input starting number of range: 1  
Input ending number of range : 1000  
Expected Output :  
Armstrong numbers in given range are: 1 153 370 371 407

31. Write a program in C to display a pattern like a diamond.

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32. Write a C program to determine whether a given number is prime or not.  
 Test Data :  
Input a number: 13  
Expected Output :  
13 is a prime number.

33. Write a C program to display Pascal's triangle.  
 Test Data :  
Input number of rows: 5  
Expected Output :

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

34. Write a program in C to find the prime numbers within a range of numbers.  
Test Data :  
Input starting number of range: 1  
Input ending number of range : 50  
Expected Output :  
The prime number between 1 and 50 are :  
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47

35. Write a program in C to display the first n terms of the Fibonacci series.  
Fibonacci series 0 1 2 3 5 8 13 .....  
Test Data :  
Input number of terms to display : 10  
Expected Output :  
Here is the Fibonacci series upto to 10 terms :  
0 1 1 2 3 5 8 13 21 34

36. Write a C program to display a such a pattern for n rows using a number that starts with 1 and each row will have a 1 as the first and last number.

1

121

12321

37. Write a program in C to display the number in reverse order.  
Test Data :  
Input a number: 12345  
Expected Output :  
The number in reverse order is : 54321

38. Write a C program to check whether a number is a palindrome or not.  
Test Data :  
Input a number: 121  
Expected Output :  
121 is a palindrome number.

39. Write a program in C to find the number and sum of all integers between 100 and 200 which are divisible by 9.  
Expected Output :  
Numbers between 100 and 200, divisible by 9 :  
108 117 126 135 144 153 162 171 180 189 198  
The sum : 1683

40. Write a C program to display the pyramid pattern using the alphabet.

A

A B A

A B C B A

A B C D C B A

41. Write a program in C to convert a decimal number into binary without using an array.  
Test Data :  
Input a decimal number: 25  
Binary number equivalent to said decimal number is: 0000000000000000000000000001 1001

42. Write a C program to convert a binary number into a decimal number without using array, function and while loop.  
Test Data :  
Input a binary number :1010101  
Expected Output :  
The Binary Number : 1010101  
The equivalent Decimal Number : 85

43. Write a C program to find the HCF (Highest Common Factor) of two numbers.  
Test Data :  
Input 1st number for HCF: 24  
Input 2nd number for HCF: 28  
Expected Output :  
HCF of 24 and 28 is : 4

44. Write a C program to find the LCM of any two numbers using HCF.  
Test Data :  
Input 1st number for LCM: 15  
Input 2nd number for LCM: 20  
Expected Output :  
The LCM of 15 and 20 is : 60

45. Write a program in C to find the LCM of any two numbers.  
Test Data :  
Input 1st number for LCM: 15  
Input 2nd number for LCM: 20  
Expected Output :  
The LCM of 15 and 20 is : 60

46. Write a C program to convert a binary number into a decimal number using the math function.  
Test Data :  
Input the binary number :1010100  
Expected Output :  
The Binary Number : 1010100  
The equivalent Decimal Number is : 84

47. Write a C program to check whether a number is a Strong Number or not.  
Test Data :  
Input a number to check whether it is Strong number: 15  
Expected Output :  
15 is not a Strong number.

48. Write a C program to find Strong Numbers within a range of numbers.  
Test Data :  
Input starting range of number : 1  
Input ending range of number: 200  
Expected Output :  
The Strong numbers are :  
1 2 145

49. Write a C program to find the sum of an A.P. series.  
Test Data :  
Input the starting number of the A.P. series: 1  
Input the number of items for the A.P. series: 10  
Input the common difference of A.P. series: 4  
Expected Output :  
The Sum of the A.P. series are :  
1 + 5 + 9 + 13 + 17 + 21 + 25 + 29 + 33 + 37 = 190

50. Write a program in C to convert a decimal number into octal without using an array.  
Test Data :  
Enter a number to convert : 79  
Expected Output :  
The Octal of 79 is 117.

51. Write a C program to convert an octal number to a decimal without using an array.  
Test Data :  
Input an octal number (using digit 0 - 7) :745  
Expected Output :  
The Octal Number : 745  
The equivalent Decimal Number : 485

52. Write a C program to find the sum of the G.P. series.  
Test Data :  
Input the first number of the G.P. series: 3  
Input the number or terms in the G.P. series: 5  
Input the common ratio of G.P. series: 2  
Expected Output :  
The numbers for the G.P. series:  
3.000000 6.000000 12.000000 24.000000 48.000000  
The Sum of the G.P. series : 93.000000

53. Write a C program to convert a binary number to octal.  
Test Data :  
Input a binary number :1001  
Expected Output :  
The Binary Number : 1001  
The equivalent Octal Number : 11

54. Write a program in C to convert an octal number into binary.  
Test Data :  
Input an octal number (using digit 0 - 7) :57  
Expected Output :  
The Octal Number : 57  
The equivalent Binary Number : 101111

55. Write a C program to convert a decimal number to hexadecimal.  
Test Data :  
Input any Decimal number: 79  
Expected Output :  
The equivalent Hexadecimal Number : 4F

56. Write a program in C to check whether a number can be expressed as the sum of two prime.  
Test Data :  
Input a positive integer: 16  
Expected Output :  
16 = 3 + 13  
16 = 5 + 11

57. Write a C program to print a string in reverse order.  
Test Data :  
Input a string to reverse : Welcome  
Expected Output :  
Reversed string is: emocleW

58. Write a C program to find the length of a string without using the library function.  
Test Data :  
Input a string : welcome  
Expected Output :  
The string contains 7 number of characters.  
So, the length of the string welcome is : 7

59. Write a C program to check the Armstrong number of n digits.  
Test Data :  
Input an integer : 1634  
Expected Output :  
1634 is an Armstrong number

60. Write a C program that takes user input and counts the number of characters until the end of the file.  
Test Data :  
Input characters : w3resource  
Expected Output :  
Input characters: On Linux systems and OS X EOF is CTRL+D. For Windows EOF is CTRL+Z. Number of Characters: 10

61. Write a C program that takes input from the user and counts the number of uppercase and lowercase letters, as well as the number of other characters.  
Test Data :  
Input characters : w3resource  
Expected Output :  
Input characters: On Linux systems and OS X EOF is CTRL+D. For Windows EOF is CTRL+Z. Uppercase letters: 0 Lowercase letters: 9 Other characters: 1

**Array Related Problem:**

**1.** Write a program in C to store elements in an array and print them.  
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

**2.** Write a program in C to read n number of values in an array and display them 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

**3.** Write a program in C 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

**4.** Write a program in C to copy the elements of 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

**5.** Write a program in C to count the 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

**6.** Write a program in C to print all unique elements in an array.  
Test Data :  
Print all unique elements of an array:  
------------------------------------------  
Input the number of elements to be stored in the array: 4  
Input 4 elements in the array :  
element - 0 : 3  
element - 1 : 2  
element - 2 : 2  
element - 3 : 5  
*Expected Output* :  
The unique elements found in the array are:  
3 5

**7.** Write a program in C to merge two arrays of the same size sorted in descending 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 decending order is :  
3 3 2 2 1 1

**8.** Write a program in C 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* :  
The frequency of all elements of an array :  
25 occurs 1 times  
12 occurs 1 times  
43 occurs 1 times

**9.** Write a program in C to find the maximum and minimum 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 : 45  
element - 1 : 25  
element - 2 : 21  
*Expected Output* :  
Maximum element is : 45  
Minimum element is : 21

**10.** Write a program in C to separate odd and even integers into 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

**11.** Write a program in C to sort elements of an 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

**12.** Write a program in C to sort the 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

**13.** Write a program in C to insert the values in the array (sorted list).  
Test Data :  
Insert New value in the sorted array :  
-----------------------------------------  
Input the size of array : 5  
Input 5 elements in the array in ascending order:  
element - 0 : 2  
element - 1 : 5  
element - 2 : 7  
element - 3 : 9  
element - 4 : 11  
Input the value to be inserted : 8  
The exist array list is :  
2 5 7 9 11  
After Insert the list is :  
2 5 7 8 9 11  
--------------------------------  
Process exited after 39.33 seconds with return value 10  
Press any key to continue . . .

**14.** Write a program in C to insert values 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

**15.** Write a program in C to delete an element at a 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

**16.** Write a program in C 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

**17.** Write a program in C 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

**18.** Write a program in C 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

**19.** Write a program in C for adding two matrices of the 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

**20.** Write a program in C for the 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

**21.** Write a program in C for the 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

**22.** Write a program in C to find the transpose of a given matrix.  
Test Data :  
Input the rows and columns of the 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  
Expected Output :  
The matrix is :  
  
1 2  
3 4  
  
The transpose of a matrix is :  
1 3  
2 4

**23.** Write a program in C to find the sum of the right 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 right Diagonal elements is :5  
Elements in array are:

**24.** Write a program in C to find the sum of the 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

**25.** Write a program in C to find the sum of rows and 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

**26.** Write a program in C to print or display the lower triangular of a given matrix.  
Test Data :  
Input the size of the square matrix : 3  
Input elements in the first 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  
  
Setting zero in lower triangular matrix  
  
1 2 3  
0 5 6  
0 0 9

**27.** Write a program in C to print or display an upper triangular matrix.  
Test Data :  
Input the size of the square matrix : 3  
Input elements in the first 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  
  
Setting zero in upper triangular matrix  
  
1 0 0  
4 5 0  
7 8 9

**28.** Write a program in C to calculate the determinant of a 3 x 3 matrix.  
Test Data :  
Input elements in the first matrix :  
element - [0],[0] : 1  
element - [0],[1] : 0  
element - [0],[2] : -1  
element - [1],[0] : 0  
element - [1],[1] : 0  
element - [1],[2] : 1  
element - [2],[0] : -1  
element - [2],[1] : -1  
element - [2],[2] : 0  
Expected Output :  
The matrix is :  
1 0 -1  
0 0 1  
-1 -1 0  
  
The Determinant of the matrix is: 1

**29.** Write a program in C to accept a matrix and determine whether it is a sparse matrix.  
Test Data :  
Input the number of rows of the matrix : 2  
Input the number of columns of the matrix : 2  
Input elements in the first matrix :  
element - [0],[0] : 0  
element - [0],[1] : 0  
element - [1],[0] : 1  
element - [1],[1] : 0  
Expected Output :  
The given matrix is sparse matrix.  
There are 3 number of zeros in the matrix

**30.** Write a program in C 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.

**31.** Write a program in C to check whether a given matrix is an identity matrix.  
Test Data :  
Input number of Rows for the matrix :3  
Input number of Columns for the matrix :3  
Input elements in the first matrix :  
element - [0],[0] : 1  
element - [0],[1] : 0  
element - [0],[2] : 0  
element - [1],[0] : 0  
element - [1],[1] : 1  
element - [1],[2] : 0  
element - [2],[0] : 0  
element - [2],[1] : 0  
element - [2],[2] : 1  
Expected Output :  
The matrix is :  
1 0 0  
0 1 0  
0 0 1  
The matrix is an identity matrix.

**32.** Write a program in C to find a pair with given sum in the array.  
*Expected Output* :  
The given array : 6 8 4 -5 7 9  
The given sum : 15  
Pair of elements can make the given sum by the value of index 0 and 5

**33.** Write a program in C to find the majority element of an array.  
A majority element in an array A[] of size n is an element that appears more than n/2 times (and hence there is at most one such element).  
*Expected Output* :  
The given array is : 4 8 4 6 7 4 4 8  
There are no Majority Elements in the given array.

**34.** Write a program in C to find the number occurring odd number of times in an array.  
All numbers occur even number of times except one number which occurs odd number of times.  
*Expected Output* :  
The given array is : 8 3 8 5 4 3 4 3 5  
The element odd number of times is : 3

**35.** Write a program in C to find the largest sum of contiguous subarrays in an array.  
*Expected Output* :  
The given array is : 8 3 8 -5 4 3 -4 3 5  
The largest sum of contiguous subarray is : 21

**36.** Write a program in C to find the missing number in a given array. There are no duplicates in the list.  
*Expected Output* :  
The given array is : 1 3 4 2 5 6 9 8  
The missing number is : 7

**37.** Write a program in C to find the pivot element of a sorted and rotated array using binary search.  
Pivot element is the only element in input array which is smaller than it's previous element.  
A pivot element divided a sorted rotated array into two monotonically increasing array.  
Expected Output :  
The given array is : 14 23 7 9 3 6 18 22 16 36  
The Pivot Element in the array is : 3

**38.** Write a program in C to merge one sorted array into another sorted array.  
Pivot element is the only element in input array which is smaller than it's previous element.  
A pivot element divided a sorted rotated array into two monotonically increasing array.  
*Expected Output* :  
The given Large Array is : 10 12 14 16 18 20 22  
The given Small Array is : 11 13 15 17 19 21  
After merged the new Array is :  
10 11 12 13 14 15 16 17 18 19 20 21 22

**39.** Write a program in C to rotate an array by N positions.  
*Expected Output* :  
The given array is : 0 3 6 9 12 14 18 20 22 25 27  
From 4th position the values of the array are : 12 14 18 20 22 25 27  
Before 4th position the values of the array are : 0 3 6 9  
After rotating from 4th position the array is:  
12 14 18 20 22 25 27 0 3 6 9

**40.** Write a program in C to find the ceiling in a sorted array.  
N.B.: Given a sorted array in ascending order and a value x, the ceiling of x is the smallest element in array greater than or equal to x, and the floor is the greatest element smaller than or equal to x.  
*Expected Output* :  
The given array is : 1 3 4 7 8 9 9 10  
The ceiling of 5 is: 7

**41.** Write a program in C to find the Floor and Ceiling of the number 0 to 10 from a sroted array.  
*Expected Output* :  
The given array is : 1 3 5 7 8 9  
Number: 0 ceiling is: 1 floor is: -1  
Number: 1 ceiling is: 1 floor is: 1  
Number: 2 ceiling is: 3 floor is: 1  
Number: 3 ceiling is: 3 floor is: 3  
Number: 4 ceiling is: 5 floor is: 3  
Number: 5 ceiling is: 5 floor is: 5  
Number: 6 ceiling is: 7 floor is: 5  
Number: 7 ceiling is: 7 floor is: 7  
Number: 8 ceiling is: 8 floor is: 8  
Number: 9 ceiling is: 9 floor is: 9  
Number: 10 ceiling is: -1 floor is: 9

**42.** Write a program in C to find the smallest missing element in a sorted array.  
*Expected Output* :  
The given array is : 0 1 3 4 5 6 7 9  
The missing smallest element is: 2

**43.** Write a program in C to print the next greatest elements in a given unsorted array. Elements for which no superior element exists, consider the next greatest element as -1.  
*Expected Output* :  
The given array is : 5 3 10 9 6 13  
Next Bigger Elements are:  
Next bigger element of 5 in the array is: 10  
Next bigger element of 3 in the array is: 10  
Next bigger element of 10 in the array is: 13  
Next bigger element of 9 in the array is: 13  
Next bigger element of 6 in the array is: 13  
Next bigger element of 13 in the array is: -1  
Next Bigger Elements Array:  
10 10 13 13 13 -1

**44.** Write a program in C to find the two repeating elements in a given array.  
*Expected Output* :  
The given array is : 2 7 4 7 8 3 4  
The repeating elements are: 7 4

**45.** Write a program in C to find two elements whose sum is closest to zero.  
*Expected Output* :  
The given array is : 38 44 63 -51 -35 19 84 -69 4 -46  
The Pair of elements whose sum is minimum are:  
[44, -46]

**46.** Write a program in C to find the smallest positive number missing from an unsorted array.  
*Expected Output* :  
The given array is : 3 1 4 10 -5 15 2 -10 -20  
The smallest positive number missed is: 5

**47.** Write a program in C to find a subarray with a given sum from the given array.  
Expected Output :  
The given array is : 3 4 -7 1 3 3 1 -4  
[0..1] -- { 3 4 }  
[0..5] -- { 3 4 -7 1 3 3 }  
[3..5] -- { 1 3 3 }  
[4..6] -- { 3 3 1 }

48. Write a program in C to find out if a given integer x appears more than n/2 times in a sorted array of n integers.  
Expected Output :  
The given array is : 1 3 3 5 4 3 2 3 3  
The given value is : 3  
3 appears more than 4 times in the given array[]

49. Write a program in C to find the majority element of an array.  
Expected Output :  
The given array is : 1 3 3 7 4 3 2 3 3  
The majority of the Element : 3

**50.** Write a program in C to print a matrix in spiral form.  
Expected Output :  
The given array in matrix form is :  
1 2 3 4 5  
6 7 8 9 10  
11 12 13 14 15  
16 17 18 19 20  
The spiral form of above matrix is:  
1 2 3 4 5 10 15 20 19 18 17 16 11 6 7 8 9 14 13 12

**51.** Write a program in C to find the maximum circular subarray sum of a given array.  
Expected Output :  
The given array is : 10 8 -20 5 -3 -5 10 -13 11  
The maximum circular sum in the above array is: 29

**52.** Write a program in C to count the number of triangles that can be formed from a given array.  
Expected Output :  
The given array is : 6 18 9 7 10  
Number of possible triangles can be formed from the array is: 5

**53.** Write a program in C to find the number of times a given number appears in an array.  
Expected Output :  
The given array is : 2 3 4 4 4 4 5 5 5 6 7 7  
The number of times the number 4 occurs in the given array is: 4

**54.** Write a program in C to sort an array of 0s, 1s and 2s.  
Expected Output :  
The given array is : 0 1 2 2 1 0 0 2 0 1 1 0  
After sortig the elements in the array are:  
0 0 0 0 0 1 1 1 1 2 2 2

**55.** Write a program in C to check whether an array is a subset of another array.  
Expected Output :  
The given first array is : 4 8 7 11 6 9 5 0 2  
The given second array is : 5 4 2 0 6  
The second array is the subset of first array.

**56.** Write a program in C to return the minimum number of jumps to reach the end of the array.  
Expected Output :  
The given array is : 1 3 5 8 9 2 6 7 6 8 9 1 1 1  
The minimum of number of jumps is required to reach the end is: 3

**57.** Write a program in C to find the minimum element in a sorted and rotated array.  
Expected Output :  
The given array is : 3 4 5 6 7 9 2  
The minimum element in the above array is: 2

**58.** Write a program in C to move all zeroes to the end of a given array.  
Expected Output :  
The given array is : 2 5 7 0 4 0 7 -5 8 0  
The new array is:  
2 5 7 8 4 -5 7 0 0 0

**59.** Write a program in C to return the counting sort of an array.  
Expected Output :  
The given array is : 4 14 8 0 2 5 2 1 0 17 9 0 5  
After sorting the elements in the array are: 0 0 0 1 2 2 4 5 5 8 9 14 17

**60.** Write a program in C to find the row with the maximum number of 1s.  
Expected Output :  
The given 2D array is :  
0 1 0 1 1  
1 1 1 1 1  
1 0 0 1 0  
0 0 0 0 0  
1 0 0 0 1  
The index of row with maximum 1s is: 1

**61.** Write a program in C to find the maximum product subarray in a given array.  
Expected Output :  
The given array is : -4 9 -7 0 -15 6 2 -3  
The maximum product of a sub-array in the given array is: 540

**62.** Write a program in C to find the largest subarray with an equal number of 0s and 1s.  
Expected Output :  
The given array is : 0 1 0 0 1 1 0 1 1 1  
Subarray found from the index 0 to 7

**63.** Write a program in C to replace every element with the greatest element on its right side.  
Expected Output :  
The given array is : 7 5 8 9 6 8 5 7 4 6  
After replace the modified array is: 9 9 9 8 8 7 7 6 6 0

**64.** Write a program in C to find the median of two sorted arrays of the same size.  
Expected Output :  
The given array - 1 is : 1 5 13 24 35  
The given array - 2 is : 3 8 15 17 32  
The Median of the 2 sorted arrays is: 14

**65.** Write a program in C to find the product of an array such that product is equal to the product of all the elements of arr[] except arr[i].  
Expected Output :  
The given array is : 1 2 3 4 5 6  
The product array is: 720 360 240 180 144 120

**66.** Write a program in C to count the number of inversions in a given array.  
Expected Output :  
The given array is : 1 9 6 4 5  
The inversions are: (9, 6) (9, 4) (9, 5) (6, 4) (6, 5)  
The number of inversion can be formed from the array is: 5

**67.** Write a program in C to search for an element in a row wise and column wise sorted matrix.  
Expected Output :  
The given array in matrix form is :  
15 23 31 39  
18 26 36 43  
25 28 37 48  
30 34 39 50  
The given value for searching is: 37  
The element Found at the position in the matrix is: 2, 2

**68.** Write a program in C to return the maximum sum such that no two elements are adjacent.  
Expected Output :  
The given array is : 1 3 5 9 7 10 1 10 100  
The maximum sum from the array such that no two elements are adjacent is: 122

**69.** Write a program in C to find the maximum difference between any two elements such that the larger element appears after the smaller number.  
Expected Output :  
The given array is : 7 9 5 6 13 2  
The elements which provide maximum difference is: 5, 13  
The Maximum difference between two elements in the array is: 8

**70.** Write a program in C to find two numbers that occur an odd number of times in an array.  
Expected Output:  
The given array is: 6 7 3 6 8 7 6 8 3 3  
The two numbers occuring odd number of times are: 3 & 6

**71.** Write a program in C to find the median of two sorted arrays of different sizes.  
Expected Output:  
The given first array is : 90 240 300  
The given second array is : 10 13 14 20 25  
The median of two different size arrays are : 22.500000

**72.** Write a program in C to return only the unique rows from a given binary matrix.  
Expected Output:  
The given array is :  
0 1 0 0 1  
1 0 1 1 0  
0 1 0 0 1  
1 0 1 0 0  
The unique rows of the given array are :  
0 1 0 0 1  
1 0 1 1 0  
1 0 1 0 0

**73.** Write a program in C to print all unique elements of an unsorted array.  
Expected Output:  
The given array is : 1 5 8 5 7 3 2 4 1 6 2  
Unique Elements in the given array are:  
1 5 8 7 3 2 4 6

**74.** Write a program in C to find the sum of the upper triangular elements of a matrix.  
Expected Output:  
The given array is :  
1 2 3  
4 5 6  
7 8 9  
The elements being summed of the upper triangular matrix are: 2 3 6  
The Sum of the upper triangular Matrix Elements are: 11

**75.** Write a program in C to find the sum of the lower triangular elements of a matrix.  
Expected Output:  
The given array is :  
1 2 3  
4 5 6  
7 8 9  
The elements being summed of the lower triangular matrix are: 4 7 8  
The Sum of the lower triangular Matrix Elements are: 19

**76.** Write a program in C to find the largest number possible from the set of given numbers.  
Expected Output:  
The given numbers are :  
15 628 971 9 2143 12  
The largest possible number by the given numbers are: 997162821431512

**77.** Write a program in C to generate random permutations of array elements.  
Expected Output:  
The given array is:  
1 2 3 4 5 6 7 8  
The shuffled elements in the array are:  
2 8 7 3 4 5 1 6

**78.** Write a program in C to find four array elements whose sum is equal to a given number.  
Expected Output:  
The given array is:  
3 7 1 9 15 14 6 2 5 7  
The elements are:  
3, 15, 14, 5

**79.** Write a program in C to sort n numbers in the range from 0 to n^2.  
Expected Output:  
The given array is: 37 62 52 7 48 3 15 61  
Sorted array is: 3 7 15 37 48 52 61 62

**80.** Write a program in C to count all distinct pairs for a specific difference.  
Expected Output:  
The given array is:  
5 2 3 7 6 4 9 8  
The distinct pairs for difference 5 are: [7, 2] [8, 3] [9, 4]  
Number of distinct pairs for difference 5 are: 3

**81.** Write a program in C to find the maximum repeating number in a given array.  
The array range is [0..n-1] and the elements are in the range [0..k-1] and k<=n..  
Expected Output:  
The given array is:  
2 3 3 5 3 4 1 7 7 7 7  
The maximum repeating number is: 7

**82.** Write a program in C to print all possible combinations of r elements in a given array.  
Expected Output:  
The given array is:  
1 5 4 6 8 The combination from by the number of elements are: 4  
The combinations are:  
1 5 4 6  
1 5 4 8  
1 5 6 8  
1 4 6 8  
5 4 6 8

**83.** Write a program in C to find a pair with the given difference.  
Expected Output:  
The given array is:  
1 15 39 75 92  
The given difference is: 53  
The pair are: (39, 92)

**84.** Write a program in C to find the minimum distance between two numbers in a given array.  
Expected Output:  
The given array is:  
7 9 5 11 7 4 12 6 2 11  
The minimum distance between 7 and 11 is: 1

**85.** Write a program in C to count all possible paths from top left to bottom right of a m X n matrix.  
Expected Output:  
The size of matrix is : 4 x 4  
The all possible paths from top left to bottom right is: 20

**86.** Write a program in C to find the equilibrium index of an array.  
Expected Output:  
The given array is:  
0 -4 7 -4 -2 6 -3 0  
The equilibrium index found at : 7 5 0

**87.** Write a program in C to find the maximum element in an array that is first increasing and then decreasing.  
Expected Output:  
The given array is:  
2 7 12 25 4 57 27 44  
The maximum element which is increasing then decreasing is: 57

**88.** Write a program in C to find the maximum n – m such that array[n] > array[m] from a given array[].  
Given an array arr[], find the maximum j – i such that arr[j] > arr[i]  
Expected Output:  
The given array is:  
7 5 8 2 3 2 4 2 1 0  
m = 0, n = 2, arr1[m] = 7 arr1[n] = 8 difference = 2  
m = 3, n = 6, arr1[m] = 2 arr1[n] = 4 difference = 3  
The maximum differcences between two position of array index is: 3

**89.** Write a program in C to find the largest square sub-matrix with all 1s.  
Expected Output:  
The given array in matrix form is :  
0 1 0 1 1  
1 1 1 1 0  
1 1 1 1 0  
1 1 1 1 0  
1 1 1 1 1  
0 1 0 1 0  
The maximum size sub-matrix is:  
1 1 1 1  
1 1 1 1  
1 1 1 1  
1 1 1 1

**90.** Given an array of size n such that every element is in the range from 0 to n-1. Write a program in C to rearrange the given array so that arr[i] becomes arr[arr[i]].  
Expected Output:  
The Original array is  
2 1 4 3 0 The modified array is:  
4 1 0 3 2

**91.** An unsorted array of a specific size is given. Write a program in C to find the minimum length of a subarray such that sorting this subarray makes the whole array sorted.  
Expected Output:  
The given array is:  
10 12 15 17 28 32 42 18 56 59 67  
The minimum length of unsorted subarray which makes the given array sorted  
lies between the indeces 4 and 7

**92.** Write a program in C that checks whether the elements in an unsorted array appear consecutively or not.  
Expected Output:  
The given array is:  
7 4 3 5 6 2  
The appearence of elements in the array are consecutive.  
The given array is:  
7 4 4 5 6 2  
The appearence of elements in the array are not consecutive.  
The given array is:  
7 4 9 5 6 3  
The appearence of elements in the array are not consecutive.

**93.** Write a program in C to rearrange positive and negative numbers alternatively in a given array.  
N.B.: If positive numbers are more they appear at the end and for also negative numbers, they too appear in the end of the array.  
Expected Output:  
The given array is:  
-4 8 -5 -6 5 -9 7 1 -21 -11 19  
The rearranged array is:  
-4 7 -5 1 -21 5 -11 8 -9 19 -6

**94.** Write a program in C to find the largest element of each and every contiguous subarray of size k from a given array.  
Expected Output:  
The given array is:  
1 3 6 21 4 9 12 3 16 10  
The length of each subarray is: 4  
The contigious subarray of length 4 and their maximum value are:  
1 3 6 21 ----> 21  
3 6 21 4 ----> 21  
6 21 4 9 ----> 21  
21 4 9 12 ----> 21  
4 9 12 3 ----> 12  
9 12 3 16 ----> 16  
12 3 16 10 ----> 16

**95.** Write a program in C to segregate 0s and 1s in an array.  
Expected Output:  
The given array is:  
1 0 1 0 0 1 0 1 1  
The array after segregation is: 0 0 0 0 1 1 1 1 1

**96.** Write a program in C to segregate even and odd elements in an array.  
Expected Output:  
The given array is:  
17 42 19 7 27 24 30 54 73  
The array after segregation is: 54 42 30 24 27 7 19 17 73

**97.** Write a program in C to find the index of the first peak element in a given array.  
Expected Output:  
The given array is:  
5 12 13 20 16 19 11 7 25  
The index of first peak element in the array is: 3

**98.** Write a program in C to return the largest span found in the leftmost and rightmost appearances of the same value (values are inclusive) in a given array.  
Expected Output:  
The given array is:  
17 42 19 7 27 24 17 54 73  
The span between the same values in the array is: 7

**99.** Write a program in C to return true if an array can be split in such a way that the left side of the splitting is equal to the sum of the right side.  
Expected Output:  
The given array is : 1 3 3 8 4 3 2 3 3  
The array can be split in a position where the sum of both side are equal.

**100.** Write a program in C to return the number of clumps (a series of 2 or more adjacent elements of the same value) in a given array.  
Expected Output:  
The given array is:  
17 42 42 7 24 24 17 54 17  
The number of clumps in the array is: 2

**101.** Write a program in C to rearrange an array such that arr[i]=i.

N.B.: Given array contains N elements, from 0 to N – 1. All elements within the range may not be present in the array. There will be -1 if an element within the range is not present in the array.

Expected Output:  
The given array is:  
2 5 -1 6 -1 8 7 -1 9 1  
The new array is: -1 1 2 -1 -1 5 6 7 8 9

**102.** Write a program in C to rearrange an array in such an order that– small, large, second smallest, second largest, etc.  
Expected Output:  
The given array is:  
5 8 1 4 2 9 3 7 6  
The new array is:  
1 9 2 8 3 7 4 6 5

**103.** Write a program in C to update every array element with multiplication of previous and next numbers in array.  
Expected Output:  
The given array is:  
1 2 3 4 5 6  
The new array is:  
2 3 8 15 24 30

**104.** Write a program in C to rearrange an array such that even index elements are smaller and odd index elements are greater than their next.  
Expected Output:  
The array given is:  
6 4 2 1 8 3  
The new array after rearranging:  
4 6 1 8 2 3

**105.** Write a program in C to find the minimum number of swaps required to gather all elements less than or equal to k.  
Expected Output:  
The given array is:  
2 7 9 5 8 7 4  
The minimum swap required is: 2

**106.** Write a C program to convert an array in such a way that it doubles its value. This will replace the next element with 0 if the current and next elements are the same. This program will rearrange the array so that all 0's are moved to the end.  
Expected Output:  
The given array is: 0 3 3 3 0 0 7 7 0 9  
The new array is: 6 3 14 9 0 0 0 0 0 0

**107.** Write a program in C to concatenate two given arrays of integers.  
**Sample Data:**  
({ 10, 20, 30, 40, 50, 60 }, { 70, 80, 90, 100, 110, 120 }) -> "10 20 30 40 50 60 70 80 90 100 110 120"