

Input and output In C Language

1. Write a program to print Hello Students on the screen.
2. Write a program to print Hello in the first line and **Students** in the second line.
3. Write a program to print "MySirG" on the screen. (Remember to print in double quotes)
4. WAP to find the area of the circle. Take radius of circle from user as input and print the result in below given format.

Expected output format – "Area of circle is A having the radius R". Replace A with area & R with radius.

5. WAP to calculate the length of String using printf function.
6. WAP to print the name of the user in double quotes.

Expected output format – "Hello , Amit Kumar"

7. WAP to print "%d" on the screen.
8. WAP to print "\n" on the screen.
9. WAP to print "\\" on the screen.
10. WAP to take date as an input in below given format and convert the date format and display the result as given below.

User Input date format – "DD/MM/YYYY" (27/11/2022)

Output format –

"Day – DD , Month – MM , Year – YYYY" (Day – 27 ,Month – 07 , Year – 2022)

11. WAP to take time as an input in below given format and convert the time format and display the result as given below.

User Input date format – "HH:MM"

Output format – "HH hour and MM Minute"

Example –

"11:25" converted to "11 Hour and 25 Minute"

12. Find output of below code:

```
int main()
{
    int x = printf("ineuron");
    printf("%d",x);
    return 0;
}
```

Operators In C Language

1. Write a program to print unit digit of a given number
2. Write a program to print a given number without its last digit.
3. Write a program to swap values of two int variables
4. Write a program to swap values of two int variables without using a third variable.
5. Write a program to input a three-digit number and display the sum of the digits.
6. Write a program which takes a character as an input and displays its ASCII code.
7. Write a program to find the position of first 1 in LSB.
8. Write a program to check whether the given number is even or odd using a bitwise operator.
9. Write a program to print size of an int, a float, a char and a double type variable
10. Write a program to make the last digit of a number stored in a variable as zero.
(Example - if x=2345 then make it x=2340)
11. Write a program to input a number from the user and also input a digit. Append a digit in the number and print the resulting number. **(Example - number=234 and digit=9 then the resulting number is 2349)**
12. Assume price of 1 USD is INR 76.23. Write a program to take the amount in INR and convert it into USD.
13. Write a program to take a three-digit number from the user and rotate its digits by one position towards the right.



Decision Control Statements

1. Write a program to check whether a given number is positive or non-positive.
2. Write a program to check whether a given number is divisible by 5 or not
3. Write a program to check whether a given number is an even number or an odd number.
4. Write a program to check whether a given number is an even number or an odd number without using % operator.
5. Write a program to check whether a given number is a three-digit number or not.
6. Write a program to print greater between two numbers. Print one number if both are the same.
7. Write a program to check whether roots of a given quadratic equation are real & distinct, real & equal or imaginary roots
8. Write a program to check whether a given year is a leap year or not.
9. Write a program to find the greatest among three given numbers. Print number once if the greatest number appears two or three times.
10. Write a program which takes the cost price and selling price of a product from the user. Now calculate and print profit or loss percentage.
11. Write a program to take marks of 5 subjects from the user. Assume marks are given out of 100 and passing marks is 33. Now display whether the candidate passed the examination or failed.
12. Write a program to check whether a given alphabet is in uppercase or lowercase.
13. Write a program to check whether a given number is divisible by 3 and divisible by 2.
14. Write a program to check whether a given number is divisible by 7 or divisible by 3.
15. Write a program to check whether a given number is positive, negative or zero.
16. Write a program to check whether a given character is an alphabet (uppercase), an alphabet (lower case), a digit or a special character.
17. Write a program which takes the length of the sides of a triangle as an input. Display whether the triangle is valid or not.
18. Write a program which takes the month number as an input and display number of days in that month

Assignment - 4 A Job Ready Bootcamp In C++, DSA and IOT MySirG

Iterative Control Statements

1. Write a program to print MySirG 5 times on the screen
2. Write a program to print the first 10 natural numbers.
3. Write a program to print the first 10 natural numbers in reverse order
4. Write a program to print the first 10 odd natural numbers
5. Write a program to print the first 10 odd natural numbers in reverse order.
6. Write a program to print the first 10 even natural numbers
7. Write a program to print the first 10 even natural numbers in reverse order
8. Write a program to print squares of the first 10 natural numbers
9. Write a program to print cubes of the first 10 natural numbers
10. Write a program to print a table of 5.

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More on Iterative Control Statements

1. Write a program to print MySirG N times on the screen
2. Write a program to print the first N natural numbers.
3. Write a program to print the first N natural numbers in reverse order
4. Write a program to print the first N odd natural numbers
5. Write a program to print the first N odd natural numbers in reverse order.
6. Write a program to print the first N even natural numbers
7. Write a program to print the first N even natural numbers in reverse order
8. Write a program to print squares of the first N natural numbers
9. Write a program to print cubes of the first N natural numbers
10. Write a program to print a table of N.

Assignment - 6 A Job Ready Bootcamp In C++, DSA and IOT MySirG

Use any loop

1. Write a program to calculate sum of first N natural numbers
2. Write a program to calculate sum of first N even natural numbers
3. Write a program to calculate sum of first N odd natural numbers
4. Write a program to calculate sum of squares of first N natural numbers
5. Write a program to calculate sum of cubes of first N natural numbers
6. Write a program to calculate factorial of a number
7. Write a program to count digits in a given number
8. Write a program to check whether a given number is a Prime number or not
9. Write a program to calculate LCM of two numbers
10. Write a program to reverse a given number

 **Assignment - 7 A Job Ready Bootcamp In C++, DSA and IOT MySirG**

Iterative Control Statements (Part - 2)

1. Write a program to find the Nth term of the Fibonacci series.
2. Write a program to print first N terms of Fibonacci series
3. Write a program to check whether a given number is there in the Fibonacci series or not.
4. Write a program to calculate HCF of two numbers
5. Write a program to check whether two given numbers are co-prime numbers or not
6. Write a program to print all Prime numbers under 100
7. Write a program to print all Prime numbers between two given numbers
8. Write a program to find next Prime number of a given number
9. Write a program to check whether a given number is an Armstrong number or not
10. Write a program to print all Armstrong numbers under 1000

Assignment-8 A Job Ready Bootcamp in C++, DSA and IoT MySIRG

Pattern Problems

1. Write a program to draw the following patterns.

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Assignment - 9 A Job Ready Bootcamp In C++, DSA and IOT MySirG

Switch Case Problems

1. Write a program which takes the month number as an input and display number of days in that month.
2. Write a menu driven program with the following options:
 - a. Addition
 - b. Subtraction
 - c. Multiplication
 - d. Division
 - e. Exit
3. Write a program which takes the day number of a week and displays a unique greeting message for the day.
4. Write a menu driven program with the following options:
 - a. Check whether a given set of three numbers are lengths of an isosceles triangle or not
 - b. Check whether a given set of three numbers are lengths of sides of a right angled triangle or not
 - c. Check whether a given set of three numbers are equilateral triangle or not
 - d. Exit
5. Convert the following if-else-if construct into switch case:

```
if(var == 1)
    System.out.println("good");
else if(var == 2)
    System.out.println("better");
else if(var == 3)
    System.out.println("best");
else
    System.out.println("invalid");
```

6. Program to check whether a year is a leap year or not. Using switch statement

7. Program to take the value from the user as input electricity unit charges and calculate total electricity bill according to the given condition . Using the switch statement.

For the first 50 units Rs. 0.50/unit
For the next 100 units Rs. 0.75/unit
For the next 100 units Rs. 1.20/unit
For units above 250 Rs. 1.50/unit
An additional surcharge of 20% is added to the bill.
8. Program to convert a positive number into a negative number and negative number into a positive number using a switch statement.
9. Program to Convert even number into its upper nearest odd number
Switch Statement.
10. C program to find all roots of a quadratic equation using switch case

Functions In C Language

1. Write a function to calculate the area of a circle. (TSRS)
2. Write a function to calculate simple interest. (TSRS)
3. Write a function to check whether a given number is even or odd. Return 1 if the number is even, otherwise return 0. (TSRS)
4. Write a function to print first N natural numbers (TSRN)
5. Write a function to print first N odd natural numbers. (TSRN)
6. Write a function to calculate the factorial of a number. (TSRS)
7. Write a function to calculate the number of combinations one can make from n items and r selected at a time. (TSRS)
8. Write a function to calculate the number of arrangements one can make from n items and r selected at a time. (TSRS)
9. Write a function to check whether a given number contains a given digit or not. (TSRS)
10. Write a function to print all prime factors of a given number. For example, if the number is 36 then your result should be 2, 2, 3, 3. (TSRN)

More on functions in C Language

1. Write a function to calculate LCM of two numbers. (TSRS)
2. Write a function to calculate HCF of two numbers. (TSRS)
3. Write a function to check whether a given number is Prime or not. (TSRS)
4. Write a function to find the next prime number of a given number. (TSRS)
5. Write a function to print first N prime numbers (TSRN)
6. Write a function to print all Prime numbers between two given numbers. (TSRN)
7. Write a function to print first N terms of Fibonacci series (TSRN)
8. Write a function to print PASCAL Triangle. (TSRN)
9. Write a program in C to find the square of any number using the function.
10. Write a program in C to find the sum of the series $1! / 1 + 2! / 2 + 3! / 3 + 4! / 4 + 5! / 5$ using the function.

Recursion In C Language

1. Write a recursive function to print first N natural numbers
2. Write a recursive function to print first N natural numbers in reverse order
3. Write a recursive function to print first N odd natural numbers
4. Write a recursive function to print first N odd natural numbers in reverse order
5. Write a recursive function to print first N even natural numbers
6. Write a recursive function to print first N even natural numbers in reverse order
7. Write a recursive function to print square's of first N natural numbers
8. Write a recursive function to print binary of a given decimal number
9. Write a recursive function to print octal of a given decimal number
10. Write a recursive function to print reverse of a given number

More on Recursion In C Language

1. Write a recursive function to calculate sum of first N natural numbers
2. Write a recursive function to calculate sum of first N odd natural numbers
3. Write a recursive function to calculate sum of first N odd natural numbers
4. Write a recursive function to calculate sum of squares of first n natural numbers
5. Write a recursive function to calculate sum of digits of a given number
6. Write a recursive function to calculate factorial of a given number
7. Write a recursive function to calculate HCF of two numbers
8. Write a recursive function to print first N terms of Fibonacci series
9. Write a program in C to count the digits of a given number using recursion.
10. Write a program in C to calculate the power of any number using recursion.

Array In C Language

1. Write a program to calculate the sum of numbers stored in an array of size 10. Take array values from the user.
2. Write a program to calculate the average of numbers stored in an array of size 10. Take array values from the user.
3. Write a program to calculate the sum of all even numbers and sum of all odd numbers, which are stored in an array of size 10. Take array values from the user.
4. Write a program to find the greatest number stored in an array of size 10. Take array values from the user.
5. Write a program to find the smallest number stored in an array of size 10. Take array values from the user.
6. Write a program to sort elements of an array of size 10. Take array values from the user.
7. Write a program to find second largest in an array. Take array values from the user.
8. Write a program to find the second smallest number in an array. Take array values from the user.
9. Write a program in C to read n number of values in an array and display it in reverse order. Take array values from the user.
10. Write a program in C to copy the elements of one array into another array. Take array values from the user.

Array and Functions in C Language

1. Write a function to find the greatest number from the given array of any size. (TSRS)
2. Write a function to find the smallest number from the given array of any size. (TSRS)
3. Write a function to sort an array of any size. (TSRS)
4. Write a function to rotate an array by n position in d direction. The d is an indicative value for left or right. (For example, if array of size 5 is [32, 29, 40, 12, 70]; n is 2 and d is left, then the resulting array after left rotation 2 times is [40, 12, 70, 32, 29])
5. Write a function to find the first occurrence of adjacent duplicate values in the array. Function has to return the value of the element.
6. Write a function in C to read n number of values in an array and display it in reverse order.
7. Write a function in C to count a total number of duplicate elements in an array.
8. Write a function in C to print all unique elements in an array.
9. Write a function in C to merge two arrays of the same size sorted in descending order.
10. Write a function in C to count the frequency of each element of an array.

Multi-Dimensional Array In C Language

1. Write a program to calculate the sum of two matrices each of order 3×3 .
2. Write a program to calculate the product of two matrices each of order 3×3 .
3. Write a program in C to find the transpose of a given matrix.
4. Write a program in C to find the sum of right diagonals of a matrix.
5. Write a program in C to find the sum of left diagonals of a matrix.
6. Write a program in C to find the sum of rows and columns of a Matrix.
7. Write a program in C to print or display the lower triangular of a given matrix.
8. Write a program in C to print or display an upper triangular matrix.
9. Write a program in C to accept a matrix and determine whether it is a sparse matrix.
10. Write a program in C to find the row with maximum number of 1s.

Handling multiple Strings in C Language

1. Write a program to find the number of vowels in each of the 5 strings stored in two dimensional arrays, taken from the user.
2. Write a program to sort 10 city names stored in two dimensional arrays, taken from the user.
3. Write a program to read and display a 2D array of strings in C language.
4. Write a program to search a string in the list of strings.
5. Suppose we have a list of email addresses, check whether all email addresses have '@' in it. Print the odd email out.
6. Write a program to print the strings which are palindrome in the list of strings.
7. From the list of IP addresses, check whether all ip addresses are valid.
8. Given a list of words followed by two words, the task is to find the minimum distance between the given two words in the list of words.
(Example : s = {"the", "quick", "brown", "fox", "quick"}
word1 = "the", word2 = "fox", OUTPUT : 1)
9. Write a program that asks the user to enter a username. If the username entered is one of the names in the list then the user is allowed to calculate the factorial of a number. Otherwise, an error message is displayed
10. Create an authentication system. It should be menu driven.

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Pointers

1. Write a function to swap values of two int variables of calling function. (TSRS)
2. Write a function to swap strings of two char arrays of calling functions. (TSRS)
3. Write a function to sort an array of int type values. [void sort(int *ptr,int size);]
4. Write a program in C to demonstrate how to handle the pointers in the program.
5. Write a program to find the maximum number between two numbers using a pointer
6. Write a program to calculate the length of the string using a pointer
7. Write a program to count the number of vowels and consonants in a string using a pointer.
8. Write a program to compute the sum of all elements in an array using pointers.
9. Write a program to print the elements of an array in reverse order.
10. Write a program to print a string in reverse using a pointer

Assignment - 21 A Job Ready Bootcamp in C++, DSA and IOT MySirG

Structure

1. Define a structure Employee with member variables id, name, salary
2. Write a function to take input employee data from the user. [Refer structure from question 1]
3. Write a function to display employee data. [Refer structure from question 1]
4. Write a function to find the highest salary employee from a given array of 10 employees. [Refer structure from question 1]
5. Write a function to sort employees according to their salaries [refer structure from question 1]
6. Write a function to sort employees according to their names [refer structure from question 1]
7. Write a program to calculate the difference between two time periods.
8. Write a program to store information of 10 students and display them using structure
9. Write a program to store information of n students and display them using structure
10. Write a program to enter the marks of 5 students in Chemistry, Mathematics and Physics (each out of 100) using a structure named Marks having elements roll no., name, chem_marks, maths_marks and phy_marks and then display the percentage of each student.

Assignment - 22 A Job Ready Bootcamp in C++, DSA and IOT MySirG

DMA

1. Define a function to input variable length string and store it in an array without memory wastage.
2. Write a program to ask the user to input a number of data values he would like to enter then create an array dynamically to accommodate the data values. Now take the input from the user and display the average of data values.
3. Write a program to calculate the sum of n numbers entered by the user using malloc and free.
4. Write a program to input and print text using dynamic memory allocation.
5. Write a program to read a one dimensional array, print sum of all elements along with inputted array elements using dynamic memory allocation.
6. Write a program in C to find the largest element using Dynamic Memory Allocation.
7. Write a program to demonstrate memory leak in C.
8. Write a program to demonstrate dangling pointers in C.
9. Write a program to allocate memory dynamically of the size in bytes entered by the user. Also handle the case when memory allocation is failed.
10. Find out the maximum and minimum from an array using dynamic memory allocation in C.