

## Saurabh Shukla Classes

### C Language

#### Assignment-1 | printf and scanf

1. Write a program to print welcome 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.
4. Write a program to print %d on the screen
5. Write a program to print \n on the screen
6. Write a program to calculate area of a circle. Take radius as an input from user.
7. Write a program to calculate area of a rectangle. Take length and breadth from user
8. Write a program to calculate volume of a cuboid. Take user input.
9. Write a program to calculate simple interest. Take user input.
10. Write a program to calculate average of three numbers.

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### Assignment-2 | operators

1. Write a program to swap values of two int variables.
2. Write a program to swap values of two int variables without using third variable.
3. Write a program to print last digit of a given number
4. Write a program to print a given number but without last digit.
5. Write a program to input a character from keyboard and print its ASCII code



## Assignment-3 | Decision Control

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 even or odd
4. Write a program to check whether a given number is even or odd without using % operator
5. Write a program to check whether an year is a leap year or not
6. Write a program to check nature of roots of a given quadratic equation
7. Write a program to check whether a given number is positive, negative or zero
8. Write a program to find greater between two numbers
9. Write a program to find greater among three numbers
10. Write a program which takes marks of 5 subjects (assume maximum marks for each subject is 100). Display result as pass or fail. Also print division obtained if candidate has passed the exam.

**C Language**

**Assignment-4 | Iterative Control**

1. Write a program to print first 10 natural numbers
2. Write a program to print first 10 natural numbers in reverse order
3. Write a program to print first N natural numbers
4. Write a program to print first N natural numbers in reverse order
5. Write a program to print first 10 even natural numbers
6. Write a program to print first 10 even natural numbers in reverse order
7. Write a program to print first N even natural numbers
8. Write a program to print first N even natural numbers in reverse order
9. Write a program to print first 10 odd natural numbers
10. Write a program to print first 10 odd natural numbers in reverse order
11. Write a program to print first N odd natural numbers
12. Write a program to print first N odd natural numbers in reverse order
13. Write a program to print squares of first N natural numbers
14. Write a program to calculate sum of first N natural numbers

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#### Assignment-5 | Loops

1. Write a program to calculate sum of squares of first N natural numbers
2. Write a program to calculate sum of cubes of first N natural numbers
3. Write a program to calculate sum of first N odd natural numbers
4. Write a program to calculate factorial of a number
5. Write a program to count digits in a given number
6. Write a program to calculate sum of digits of a given number
7. Write a program to reverse a number
8. Write a program to print table of user's choice
9. Write a program to print first N terms of a Fibonacci series
10. Write a program to find  $N^{\text{th}}$  term of a Fibonacci series
11. Write a program to check whether a given number is a term in Fibonacci series or not.



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Assignment-6 | Loop

1. Write a program to check whether a given number is Prime or not
2. Write a program to print all Prime numbers under 100
3. Write a program to print all Prime numbers between two given numbers
4. Write a program to print next Prime number of a given number
5. Write a program to check whether two given numbers are co-Prime or not
6. Write a program to print first N prime numbers
7. Write a program to calculate LCM of two numbers
8. Write a program to calculate HCF of two numbers
9. Write a program to print all factors of a given number
10. Write a program to print all prime factors of a given number



C Language

Assignment-7 | Star Pattern Problems

1  
\*\*\*\*  
\*\*\*  
\*\*  
\*

4  
\*\*\*\*\*  
\*\*\*\*\*  
\*\*\*  
\*\*  
\*

7  
ABCDCBA  
ABC CBA  
AB BA  
A A

9  
\*  
\* \*  
\* \* \*  
\* \* \* \*  
\* \* \* \* \*

2  
\*\*\*\*  
\*\*\*  
\*\*  
\*

5  
\*  
\*\*\*  
\*\*\*\*\*  
\*\*\*\*\*

8  
1  
121  
12321  
1234321

3  
\*  
\*\*  
\*\*\*  
\*\*\*\*

6  
1  
12  
123  
1234

Write C programs to draw all 9 patterns.

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#### **Assignment-8 | switch**

1. Write a program which takes month number as an input and display number of days in that month.
2. Write a menu driven program with following options:
  - a. Addition
  - b. Subtraction
  - c. Multiplication
  - d. Division
  - e. Exit
3. Write a program which takes day number of a week and display unique greeting message for the day.
4. Write a menu driven program with 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

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Assignment-9 | Functions

1. Write a function to calculate area of circle. (TSRS)
2. Write a function to calculate circumference of a circle. (TSRS)
3. Write a function to print first n natural numbers. (TSRN)
4. Write a function to print first n even natural numbers. (TSRN)
5. Write a function to calculate sum of first n natural numbers. (TSRS)
6. Write a function to calculate sum of squares of first n natural numbers. (TSRS)
7. Write a function to check whether a given number is even or odd. (TSRS). (Return 1 if even otherwise return 0)
8. Write a function to calculate factorial of a number (TSRS)
9. Write a function to calculate number of permutations which can be made from n items, selected r at a time. (TSRS)
10. Write a function to calculate number of combinations which can be made from n items, selected r at a time. (TSRS)
11. Write a function to check whether a given number is Prime or not. (TSRS). (Return 1,if prime, otherwise return 0)
12. Write a function to find next prime number of a given number. (TSRS)
13. Write a function to print all prime numbers between two given numbers. (TSRN)
14. Write a function to check whether a given number is an Armstrong number or not.
15. Write a function to print all Armstrong numbers in the given range.
16. Write a function to remove all occurrence of a given digit from a give number.

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#### Assignment-10 | Recursion

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 even natural numbers.
4. Write a recursive function to print first n even natural numbers in reverse order
5. Write a recursive function to print first n odd natural numbers
6. Write a recursive function to print first n odd natural numbers in reverse order
7. Write a recursive function to calculate sum of first n natural numbers
8. Write a recursive function to calculate sum of first n even natural numbers
9. Write a recursive function to calculate sum of first n odd natural numbers
10. Write a recursive function to calculate sum of squares of first n natural numbers
11. Write a recursive function to calculate sum of digits of a given number
12. Write a recursive function to print binary equivalent of a given decimal number
13. Write a recursive function to print octal equivalent of a given decimal number
14. Write a recursive function to print reverse of a given number
15. Write a recursive function to find  $n^{\text{th}}$  term of a Fibonacci series
16. Write a recursive function to calculate HCF of two numbers

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#### Assignment-11 | Arrays

1. Write a program to calculate average of 10 numbers. Use arrays to store 10 numbers.
2. Write a program to calculate sum of 10 numbers stored in an array
3. Write a program to calculate sum of all even and sum of all odd numbers stored in an array of size 10
4. Write a program to find the greatest element in an array of size 10.
5. Write a program to find the smallest element in an array of size 10.
6. Write a program to sort an array of size 10.

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#### Assignment-12 | Arrays and function

1. Write a function to rotate an array towards right by one position
2. Write a function to reverse an array
3. Write a function to sort an array of size n.
4. Write a function to find the index of the smallest element of an array of size n
5. Write a function to print distinct elements of a given array.
6. Write a function to print frequency of each element of the array
7. Write a function to calculate mean deviation of given elements.
8. Write a function to calculate standard deviation of given elements.

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#### Assignment-13 | Two dimensional Arrays

1. Write a program to calculate sum of two matrices each of order  $3 \times 3$
2. Write a program to calculate product of two matrices each of order  $3 \times 3$
3. Write a program to calculate inverse of a  $3 \times 3$  matrix.

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#### **Assignment-14 | Strings**

1. Write a program to count occurrence of a given character in a given string.
2. Write a program to calculate length of the string without using strlen function
3. Write a program to calculate length of the string using strlen function
4. Write a program to convert a string into uppercase
5. Write a program to convert a string into lowercase
6. Write a program to reverse a string without using strrev function
7. Write a program to reverse a string using strrev function

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#### **Assignment-15 | Strings and functions**

1. Write a function to compare two strings
2. Write a function to count vowels in a given string
3. Write a function to capitalize a string
4. Write a function to reverse a string word wise
5. Write a function to count words in a given string
6. Write a function to check whether a given string is palindrome or not
7. Write a function to check whether a given string is alphanumeric or not
8. Write a function to count occurrence of a given character in a given string
9. Write a function to find index of first occurrence of a given character in a given string
10. Write a function to find a given pattern in a given string
11. Write a function to perform case insensitive comparison between two strings

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#### **Assignment-16 | Multiple Strings**

1. Write a program to count vowels in each of the string, when 8 strings are stored in a two dimensional char array. Also print the total number of vowels.
2. Write a program to sort a set of 10 city names



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#### Assignment-17 | Pointer, structure and DMA

1. Write a function to swap two numbers.
2. Define a structure book with bookid, title and price as member variables
3. Define a structure employee with empid, name and salary as member variables
4. Define a structure to represent date.
5. Define a structure coordinate with two variables x and y. Write a function which takes a coordinate as an argument and return quadrant number in which coordinate lies. Return 0 if coordinate lies on axes.
6. Write a function to sort an array of employees according to their salaries. (Use structure of Que 3)
7. Write a function to add two complex numbers. Define structure to handle a complex number.
8. Write a function to accept variable length string from keyboard
9. Write a program of linked list
10. Write a function which takes an array of integer values as an argument. Create two arrays (use DMA) and store all the non-negative values of given array in first newly created array and store all negative values in the second newly created array.