***Contact Prashanthi (***[***prashanthi.r@alumni.edu.in***](mailto:prashanthi.r@alumni.edu.in)***; +91 9500662485) or any other instructor, should you face any difficulties with these questions. Please try to utilise the doubts clarification sessions (every Wednesday, 6:30-7:30 PM) for getting your doubts clarified as much as possible.***

## **Lecture - 1: Terminal Commands and Basics of C**

### [Source: <https://www.w3resource.com/c-programming-exercises/>. You can also access more practice problems from this link.]

Compile and run all your programs

[standard input output]

1. Write a C program to print the following characters in a reverse way. Take the characters as input from the user.

*Test Characters*: 'X', 'M', 'L'

*Expected Output*:

The reverse of XML is LMX

1. Write a C program to compute the perimeter and area of a rectangle taking the height and width of the rectangle as input.
2. Write a C program to convert specified days into years, weeks and days (take input from the user).
3. Write a C program that accepts two item’s weight (floating points' values ) and calculate the average weight of the items.
4. Write a program in C that reads a first name, surname and year of birth from the user and displays the names and the year one after another sequentially.

*Expected Output* :

Input your first name: Tom (your input)

Input your last name: Davis (your input)

Input your year of birth: 1982 (your input)

Tom Davis 1982

[If-else Conditional statements]

1. Write a C program to read the age of a candidate and determine whether it is eligible for casting his/her own vote (using if-else statements).
2. Write a C program to find the largest of three numbers. (take the three numbers as input from the user)

[Operations]

1. Write a C program to perform addition, subtraction, multiplication and division of two numbers.

*Expected Output* :

Input any two numbers separated by comma : 10,5

The sum of the given numbers : 15

The difference of the given numbers : 5

The product of the given numbers : 50

The quotient of the given numbers : 2.000000

[Loops]

1. Write a program in C to display n terms of natural numbers and their sum.

Enter input : 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

1. Write a C program to calculate the factorial of a given number.

Input the number : 5

*Expected Output* :

The Factorial of 5 is: 120

## **Lecture - 2: Signs, Strings, Structures & Arrays**

[Strings]

1. Write a program in C to separate the individual characters from a string.

Sample Output:

Input the string : hello

The characters of the string are : h e l l o

Take a look at the functions that string.h comes with here before attempting questions 2 through: <https://www.programiz.com/c-programming/string-handling-functions>

(Also, look up a function called **strrev()** in Con Google that is not mentioned here^)

1. Now, use a function from string.h to reverse an inputted string.

Sample Output:

Input the string : hello there

The reversed string is : ereht olleh

1. Write a program to check if the string taken as input from the user is a [palindrome](https://examples.yourdictionary.com/palindrome-examples.html).

[Hint: Try to use strrev and strcmp from string.h for this question]

Sample Output 1:

Input the string : madam

Yes, the word “madam” is a palindrome.

Sample Output 2:

Input the string : world

No, the word “world” is not a palindrome.

1. Write a simple program to convert any given input string to uppercase.

Sample Output:

Input the string : hello there!

The reversed string is : HELLO THERE!

[Arrays and Manipulation]

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

Sample Output:

Input 10 elements in the array :

element - 0 : 1

element - 1 : 2

element - 2 : 4

*Expected Output* :

Elements in array are: 1 2 4

1. Write a program in C to find the sum of all elements of the array.

Sample Output:

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

Sum of all elements stored in the array is : 15

1. Write a program in C to count a total number of duplicate elements in an array.

Sample Output:

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

1. Write a program in C to read n number of values in an array and display it in reverse order.

Sample Output:

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

The values store into the array are :

2 5 7

The values store into the array in reverse are :

7 5 2

[Structures]

### Write a program to store and print the roll number, name, age, and marks of a student using structures.

### 

### Write a program to add, subtract and multiply two complex numbers using structures to function.

[Hint: Think of your complex number in the form: a+bi where a and b are float values.]