**C Programming Language Tutorial**

**Lesson 01:**

**Objective:**  To introduce about the program Experti- C programming Tutorial

**Lesson 02:**

**Objective:** Problem solving, understanding problem solving methods, Algorithm and flow chart, Symbols used in algorithm to represent operations.

**Problem Solution:**

Algorithm and flowcharts to implement the concept of branching and looping

**Lesson 03:**

**Objective:** Introduction to Programming languages, Language Processors, C language Character set, Tokens – Keywords, Identifiers, Lliterals, Punctuators

**Lesson 04:**

**Objective:** Familiarizing the operators in C language

**Lesson 05:**

**Objective:** Introduction to datatypes , Input and Output functions used in C language, Concept of header files.

**Lesson 06: Time: 15 minutes**

**Objective:**  How to program in C language- introduction

**Problem solution:**

C program to add, subtract, multiply and divide two given numbers .

**Activities:**

C program to calculate area and circumference of a circle with given radius

C program to calculate simple interest

**Lesson 07: Time: 15 minutes**

**Objective:**  Introduction to control statements and branching statement- simple if

**Problem solution:**

C program to find the biggest among two given numbers using simple if.

**Activities:**

C program to check whether a given number is even or odd using simple if

**Lesson 08: Time: 15 minutes**

**Objective:**  Introduction to branching statement- if-else

**Problem solution:**

C program to find the biggest among two given numbers using if-else.

**Activities:**

C program to check whether a given number is even or odd using if-else.

**Lesson 09: Time: 15 minutes**

**Objective:**  Introduction to branching statement- if-else if -else

**Problem solution:**

C program to find the biggest among three given numbers using if-else if -else.

**Activities:**

C program to calculate net salary of an employee based on his basic salary and the slabs defined.

**Lesson 10: Time: 15 minutes**

**Objective:**  Introduction to branching statement- nested if

**Problem solution:**

C program to find the biggest among three given numbers using nested if.

**Activities:**

C program to print the grade of a student based on his percentage of marks for three subjects .

**Lesson 11: Time: 15 minutes**

**Objective:**  To teach multi branching statement in C – switch case statement

**Problem solution:**

C program to print day name according to the number given

**Activities:**

Program to generate a menu driven calculator

C program to check whether a given alphabet is vowel or consonant

**Lesson 12: Time: 15-20 minutes**

**Objective:**  To teach looping statement in C – while statement and do-while statement

**Problem solution:**

C program to find the sum of natural numbers, even numbers upto a given limit using while and do while loop

**Activities :**

Program to find the factorial of a given number, sum of odd numbers upto a given limit

**Lesson 13: Time: 15-20 minutes**

**Objective:**  More activities on while and do-while loop

**Problem solution:**

Program to extract digits from a given numbers and find the sum of digits, reverse a given number using while loop

**Activity:**

Do the same programs using do-while loop

Lesson 14: Time: 15-20 minutes

**Objective:**  To teach looping statement in C – for control statement

**Activities :**

C program to find the sum of natural numbers, factorial of a given number using for loop

**Problem solution:**

Program to find the sum of even and odd numbers upto a given limit using for loop

Lesson 15: Time: 10 minutes

**Objective:**  To teach concept of break and continue statements in for loop

**Activities :**

C program demonstrate the working of break and continue statements using for loop

**Problem solution:**

Program to check whether a given number is prime or consonant.

Lesson 16: Time: 10-15 minutes

**Objective:**  To teach looping statement in C – nested for loop

**Activities :**

Example to demonstrate the working of nested for loop

**Program Solution:**

C program to print all prime numbers between two given limits.

Lesson 17: Time: 10-15 minutes

**Objective:**  To teach pattern generation – nested for loop

**Problem solution:**

C program to print a pattern

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**Activities :**

Program to generate two or more given patterns.

Lesson 18: Time:10-15 minutes

**Objective:**  To teach concept of arrays – single dimensional arrays

**Problem solution:**

C program to read a single dimensional array and find the sum of elements.

**Activities :**

Program to find the greatest and smallest element in array.

Lesson 19: Time: 10-15 minutes

**Objective:**  To teach concept of arrays – multi dimensional arrays

**Problem solution:**

C program to read a two dimensional array and print it in matrix form.

**Activities :**

C program to print the transpose of given matrix.

Lesson 20: Time: 15 - 20 minutes

**Objective:**  To teach concept of strings, string functions – character arrays

**Problem solution:**

C program to read a string and count number of vowels in it.

**Activities :**

C program to check whether a given string palindrome or not.

Lesson 21: Time: 15 - 20 minutes

**Objective:**  To teach concept of user defined functions

**Problem solution:**

C program to calculate the area and circumference of circle using functions with and without arguments, with and without return values.

**Activities :**

C programs to reverse a given number using functions, calculate simple interest.

Lesson 22: Time: 10 minutes

**Objective:**  To teach concept of recursive functions

**Problem solution:**

C programs to find the factorial of a given number using recursive function

**Activities :**

C program to find the sum of digits of a given number using recursive function.

Lesson 23: Time: 15 - 20 minutes

**Objective:**  To teach concept of pointer

**Activities :**

C programs to find the sum of two numbers

**Problem solution:**

C program to reverse a number using pointers.

Lesson 24: Time: 15 - 20 minutes

**Objective:**  To teach concept of pointer to array

**Problem solution:**

C programs to find the sum of elements in an array using pointers

**Activities :**

C program to find the greatest and smallest number in an array using pointers.

Lesson 25: Time: 10 - 15 minutes

**Objective:**  To teach concept of call by value and call by reference

**Problem solution:**

C programs to change the value of a variable using call by value and call by reference

**Activities :**

C program to find the sum of two numbers using functions with pointers as arguments.

Lesson 26: Time: 15 - 20 minutes

**Objective:**  To teach concept of structure and concept of union

**Problem solution:**

C programs to read the details of an employee calculate his net salary

**Activities :**

C program to print the grade of a student using the concept of structure

Lesson 27: Time: 10 - 15 minutes

**Objective:**  To teach concept of structure array and structure pointers,

**Activities :**

C programs to read the details of an employee and n employee calculate his netsalary using structure array and pointers

**Problem solution:**

C program to prepare rank list of n students using the concept of structure array and pointer to structure

Lesson 28: Time: 10 - 15 minutes

**Objective:**  To teach concept of files- file opening modes, reading and writing into file

**Problem solution:**

C programs to write and read n characters and n integers and to and from a file.

**Activities :**

C program to find the sum of even numbers in a file

Lesson 29: Time: 10 - 15 minutes

**Objective:**  To teach concept of files continuation – fprintf() and fscanf() functions

**Problem solution:**

C programs to write a list of students into a file and read the same from the file

**Activities :**

C program to prepare ranklist of n students and write the contents into a file.