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Programming in C (Tutorials)

Chapter 1

a) Explain the different generations of programming languages.
b) Explain the block diagram of the computer in detail.
c) What are programming languages? Explain their types in brief.
d) What are the different types of computer software? Explain.
e) What is a structural programming language? Explain.
f) Differentiate between primary and secondary memory.
g) What is computer software? Explain different types of software.
h) What is SDLC? Explain the different methods involved in SDLC.
i) What do you mean by instructions?
j) Write the significance of algorithm and flowchart in programming.
k) Why is feasibility analysis required for a program?
l) Why is testing and debugging necessary while writing a program?
m) Write an algorithm and flowchart to find the even numbers in the program.
n) Write an algorithm and flowchart to check whether a number is prime or not.
o) Write an algorithm and flowchart to find if the number is palindrome or not.
p) Write an algorithm and flowchart to find the average of two numbers.
q) Write an algorithm and flowchart to swap two numbers.
r) Write algorithm and flow chart to find the sum of n natural numbers.
s) Why is C called a structural programming language?
t) What are the differences between evaluation and maintenance.

Chapter 2

a) Why is C called a middle level language?
b) Why is C called a system programming language?
c) What are unary, binary and ternary operators in C?
d) Why is the header file in C included in a program? List out the different header files you know.
e) What is operator? List out the different types of operators in C.
f) List out the different data types used in C programming.
g) What is operand? What are identifiers? List the rules for naming identifiers.
h) Write a program to display addition, subtraction, multiplication and division using inputs from the user.
i) Write a program to declare two integer and one float variables then initialize them to 10, 15, and 12.6. Also print the variable values in the screen.

j) Write a C program to prompt the user to input 3 integer values and print these values in forward and reversed order.
k) Write a program to calculate simple and compound interest.
l) WAP to find the average of two numbers.
m) WAP to find remainder and quotient.
n) WAP to find the area and circumference of a circle
o) WAP to find the area of equilateral triangle
p) WAP to swap two numbers using temporary variable and without using temporary variable
q) WAP to find ASCII value of character entered by user.

Chapter 3

a) What are control statements? Explain all looping statements in C with examples
b) What is an entry controlled and exit controlled loop?
c) Why do you use continue and break statement? Explain with example
d) Differentiate between switch and nested if else with a suitable example
e) Write a program to check whether input alphabet is vowel or not using if-else and switch statement.
f) WAP to check whether two numbers are equal, greater or lesser than each other.
g) WAP to display whether the roots of a quadratic equation have equal, different or imaginary roots.
h) WAP to display whether the year is a leap year or not.
i) WAP to display the greater of two numbers.
j) WAP to check whether a person is eligible to vote or not
k) WAP to check whether a number is odd or even.
l) WAP to print n natural numbers and calculate the sum of n natural numbers.
m) WAP to display the fibonacci series.

0 1 1 2 3 5 8 13 21 34………

n) WAP to find the reverse of a number.
o) WAP to find HCF and LCM of two numbers.
p) WAP to check if a number is prime or not.
q) WAP to check the palindrome number.
r) WAP to check the armstrong number. 153= 1^3+5^3+3^3 =153

Chapter 4

a) WAP to sort the n elements of the array in decreasing order and display the second largest element.
b) WAP to find the largest and smallest element of the n sized array.
c) WAP to read a matrix and find the sum of all digits in the main diagonal.

d) Define string. Explain the string landing function with suitable examples.
e) Define array. How can you initialize a one dimensional array at compile time and run time? Explain with suitable examples.
f) WAP to search an element in a one dimensional array.
g) WAP to find the largest and smallest number from a list of 100 numbers.
h) Explain string handling function with examples.
i) WAP to add two 3x3 matrices. Display the result in the third 3x3 matrix.
j) Explain some functions that are related to string.
k) WAP to find the average of n numbers using an array.
l) Write a C program to count the total number of even and odd elements in an array.
m) Write a C program to find the reverse of an array.
n) WAP to check whether a string is palindrome or not.
o) WAP to find the frequency of a character in a string
p) WAP to find the frequency of a vowels and consonants in a string

q) WAP to sort the given string in alphabetical order.

r) WAP to sort n strings in alphabetical order

Chapter 5

a) Define function, function calling and function declaration with examples
b) Why are functions used? Explain function call by value and call by reference with example
c) What is a recursive function? Explain the major advantages of recursive function.
d) What is pre-processor directives? Explain macros with example
e) Define local and global variables? Explain different storages class with examples
f) Does a function return multiple values? When and how a function will return single or multiple values.
g) WAP to find the sum of n natural numbers using recursive function
h) WAP to generate Fibonacci series with recursive function
i) WAP to check whether a number is prime or not using a user defined function.
j) WAP to swap two numbers using a user defined function.
k) WAP to find the GCD of a number using recursion.
l) Explain all the types of storage class with examples.

Chapter 6

a) How does a function return multiple values using pointer?
b) What is pointer? Explain about calloc(), malloc() and realloc() function with suitable example.
c) Differentiate between static and dynamic memory allocation.

d) What is a pointer variable? How can memory of a variable be initialized dynamically.
e) Explain the relationship between array and pointer.
f) Write a program to enter 10 floating numbers in an array and display it.
g) WAP to define an array, input some elements and find their sum using pointer.
h) Write a program to display largest and smallest element of an array
i) Write a program to initialize one dimensional array of size 8 and display the sum and average of array elements
j) Write a program to read two matrices of order 3 * 2, add them and display the resultant matrix in matrix form
k) Write a program to multiply two 3*3 matrix.
l) Write a program to find biggest among three numbers using pointer.
m) Write a program to swap value of two variables using pointer.
n) WAP to convert upper case letter into lower and vice versa using passing pointer to a function

Chapter 7

a) Define structure and union. Explain way of declaring and accessing member of them with suitable example
b) What do you mean by nested structure? Explain with examples
c) How do you declare and initialize an array of structure variables?
d) Create a structure named Employee with structure members name,eid,address,and gender. Structure needs to read information for 50 employees.
e) Why do we need structure? WAP to input name, address, phone number, address, salary, department of 500 employees of a company.
f) Create a structure named company which has name, address, phone and noOfEmployee as member variables. Read name of company, its address, phone and noOfEmployee. Finally display these members' value
g) write a function which accepts structure as argument and returns structure to the calling program.
h) Differentiate between union and structures.

Chapter 8

a) What are the different file opening modes in C? Explain
b) What is the significance of file pointer in file file handling.
c) Create a structure for a cricket game that includes members (country name, player name, playing type (eg: batting, bowling or both), number of matches played by player and salary). Save the information in a file named "cricket.txt" and display the information of those players who had played more than 10 matches.
d) Write name, age and height of a person into a data file "person.txt" and read it (use fprintf() and fscanf() function)

e) WAP to add n natural numbers into a file. And display odd numbers and even numbers read from the file.

Write Short notes on:

a) Program testing and debugging
b) Software development life cycle
c) Operator precedence
d) String handling function
e) Dynamic memory management
f) Self referential structure
g) Storage class in C
h) Structure and union
i) Pointer arithmetic
j) Void pointer
k) Escape sequence
l) Goto statement
m) Pseudo code
n) Macro
o) Switch cases
p) Binary and Unary operator
q) File opening in C
r) Documentation
s) Generation of Computers
t) Union in C
u) Pre-processor Directives
v) Break and continue statement
w) Call by value and call by reference
x) Basic Data type in C