MT-127

March-2019

FY Integrated M.Sc. (CA & IT), Sem.-II

Advanced C Programming

Time : 2:30 Hours]   **[Max. Marks : 70**

Instructions :   (1) Figures on the right indicate the marks.

               (2) **All** Questions are compulsory.

               (3) Answer of each question must start on a new page.

               (4) Answer of all sub-questions of a question should be written in continuous order.

1. (a) Answer the following : (Any **two**)   **10**

    (1) What does mean by functions in C language ? Which are the two categories of functions in C ? Explain function definition, function call and function declaration each by giving syntax and example.

    (2) Explain recursive function by giving example of displaying first N natural numbers in reverse order.

    (3) What is the difference between call by value and call by reference ? Write a program that swaps values of two variables using call by reference.

  (b) Do as Directed :   **4**

    (1) What is difference between actual arguments and formal arguments ?

    (2) Write a Short note on nesting of function.

2. (a) Answer the following : (Any **two**)   **10**

    (1) What is a structure ? Explain the syntax of structure. How to declare the data members in a structure ? Also show the ways to initialize the values of structure members with a template of structure.

    (2) Discuss Array of Structure and show different ways to pass structure variable in to a function using example.

    (3) Write a C program to create a structure for employee details. Outer structure name is Employee which has following fields: (name, department, designation, city, basic_salary). Inner structure name is allowances which has two fields: (DA - 10 % of basic_salary, HRA -5% of basic_salary). Read and display employee details for 2 employees.

  (b) Do as Directed :   **4**

    (1) Differentiate structure and union with suitable example.

    (2) What is the use of. (dot) and $\rightarrow$ operator ?

3. Answer the following : (Any **two**) **14**
   (1) What is linked list ? Compare Array with Linked List. Explain singly linked list with suitable example that performs the following operations in a singly link list:
       (a) Creation of list,
       (b) Insertion of an item in-between a list,
       (c) Deletion first and last item from a list and
       (d) Searching of item from a list.
   (2) Explain the usages of malloc (), calloc (), realloc () and free() with suitable example.
   (3) Define Preprocessor directive. Discuss any three preprocessor directives giving example.

4. Answer the following : (Any **two**) **14**
   (1) What is a file ? How we declare file pointer in C language ? Explain fopen(), fclose(), fprintf() and fscanf() function with suitable example.
   (2) What do you mean by Sequential and Random Access file ? Explain fseek(), ftell() and rewind() functions with suitable example.
   (3) What is command line argument ? Explain argc and argv in command line arguments with suitable example.
   (4) Write a C program which counts number of vowels in any given text file where the name of the file is interactively given through the keyboard.

5. (a) Answer the following : (Any **two**) **10**
       (1) What is pointer ? Explain "Function Pointers" with suitable examples.
       (2) How pointer works ? Explain "Array of Pointers" and "Pointer to an Array" with examples.
       (3) Write a C program to read an array using pointer and print the array in reverse order using pointer.
   (b) Do as Directed : **4**
       (1) Explain pointer to pointer with suitable example.
       (2) Write short note on void pointer.

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