UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: B.Tech CSE - CSF/IoT/CCvT/G&G/MT/MC/BAO/OSOS/Devops/CS+LLB/IFM/ECRA/BFSI/BD/OG

Semester –
Ist

Subject (Course): Programming and Data Structures   **Max. Marks   : 100**
Course Code   : CSEG1002   **Duration   : 3 Hrs**
No. of page/s: 02

Section A

Attempt all questions. Each carries equal marks.   **[5x4=20 Marks]**

1. What are translators? Explain the difference between compiler and an interpreter.

2. Write a program to input an array and pass the array into a function named "array_func" as a parameter and print the elements of an array on the screen in function definition of "array_func".

3. Write a program of factorial using recursion.

4. Explain step by step procedure of bubble sort method with the help of example.

Section B

Attempt all questions. Each carries equal marks.   **[5x8=40 Marks]**

5. Explain the functionality of bitwise AND, bitwise OR and bitwise NOT operator. Write the program to count number of 1s in binary equivalent of an integer number entered by the user at run time.

6. Write a single program to write "hello dear how are you ?" on a file named "file1.txt" and then replace the "dear" with "jini" and print the updated content of the file named "file1.txt" that is "hello jini how are you?" on the output screen.

7. What is the difference between call by value and call by reference method? Write a program of swapping two integers using call by value and call by reference method.

8. Explain step by step procedure of binary search method with the help of example. Write the program to input an integer array in sorted order by the user at run time and search a number using binary search method.

9. Write a note on the following: -
   i) Continue
   ii) Break
   iii) Static
   iv) Extern

Section C

Attempt all questions. Each carries equal marks   **[2x20=40 Marks]**

10. What is dynamic memory allocation? Write a program to create a structure for maintaining the student record with data as roll number, name and percentage of marks of the student. Now dynamically allocate the memory to the structure for entering 'n' records where 'n' is any user defined number. And display the records on the screen. What will be the size of the following structure on 32-bit machine and why?
    struct abc{
          int a;
          char b[21];
          int c;
          };

                                                                   (4+8+8)

11. Write the program (including main function) to implement the singly linked list with the data field as character array, integer and double type representing the name, roll number and percentage of marks of the student with the following operations (separate function for each operation): -
    i) Insertion from the end
    ii) Deletion from the beginning
    iii) Traversing

OR

Write the program (including main function) to implement the doubly linked list with the data field as integer type with the following operations (separate function for each operation): -
i) Insertion
ii) Deletion
iii) Traversing

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Section A

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1. Write an algorithm for finding greatest among three integer numbers. Draw the flow chart for the same.

2. Write a program to input an array at runtime and print the array on the screen using pointer.

3. Write a program of Fibonacci series using recursion up till 'n' numbers where 'n' is entered by the user at run time.

4. Explain step by step procedure of selection sort method with the help of example.

Section B

Attempt all questions. Each carries equal marks. **[5x8=40 Marks]**

5. Explain the functionality of left shift and right shift operator. Write the program to count number of 0s in binary equivalent of an integer number input by the user.

6. Explain fseek() function with syntax. Assume that there is already existing file named "file1.txt" containing the string "my name is ABC". Now write a program replace "ABC" with "Anthony" and print the updated content of the file on the output screen.

7. What do you understand by pointer to pointer variable? Write a program to create an array of strings using dynamic memory allocation and input 'n' names in an array where 'n' is entered by the user. And display all the names on the output screen.

8. What do you understand by the term searching and sorting of data? Explain step by step procedure of bubble sort method. Write the program to input an integer array by the user at run time and search a number using binary search method.   (2+2+4)

9. Write a note on the following: -
 i)   while Vs do while loop
 ii) Switch statement
 iii) Command line argument
 iv) Static

Section C

Attempt all questions. Each carries equal marks   [2x20=40 Marks]

10. What is the difference between static and dynamic memory allocation? Write a program to input two matrices of size 3x3 and store the multiplication of these two matrices into third matrix. And display the content of third matrix on the output screen. List and define any four string library functions with the help of example.   (4+8+8)

11. Write the program (including main function) to implement the queue using singly linked list with the data field as character array and integer type representing the name and the roll number of the student with the following operations (separate function for each operation): -
 i)   Enqueue
 ii) Dequeue
 iii) Traversing

OR

Write the program (including main function) to implement the singly linked list with the data field as integer type with the following operations (separate function for each operation): -
 i)   Insertion at the beginning
 ii) Deletion from the end
 iii) Traversing