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Question Paper Code: 52209

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2019

Second Semester

Computer Science and Engineering

15UCS209 - PROGRAMMING AND DATA STRUCTURES

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

- Which of the following cannot be a structure member? CO1- U
(a) Another structure (b) Function (c) Array (d) None of the above
- What is (void*)0? CO2- U
(a) Representation of NULL pointer (b) Representation of void pointer
(c) Error (d) None of above
- When fopen() is not able to open a file, it returns CO3- U
(a) EOF (b) NULL (c) Runtime Error (d) Compiler Dependent
- Which of the following operations is performed more efficiently by doubly linked list than by singly linked list? CO4- U
(a) Deleting a node whose location is given
(b) Searching of an unsorted list for a given item
(c) Inverting a node after the node with given location
(d) Traversing a list to process each node
- Identify the data structure which allows deletion at both ends of the list but insertion at only one end. CO5- R
(a) Stack (b) Priority Queue
(c) Output restricted queue (d) Input restricted dequeue

PART – B (5 x 3= 15 Marks)

6. Write down the syntax for nested structure? CO1- R
7. What is pointer of pointer? Give an example. CO2- U
8. Write a simple program to read the numbers from the file and display numbers. CO3-App
9. What is static linked list? State any two applications of it. CO4- R
10. Given the prefix for an expression, write its postfix: $- * - + a b c / e f - g / h i$ CO5-App

PART – C (5 x 16= 80 Marks)

11. (a) (i) Create a structure complex (data members – real and img). Write a function to add two complex numbers, which will take 2 complex numbers as arguments and return the complex number. CO1- App (8)
- (ii) Create a structure employee (data members – name and salary). Write a function, using array of objects get 5 employees details and display them. CO1- App (8)

Or

- (b) Explain in detail about Union with suitable example. CO1- U (16)
12. (a) What is pointer as function arguments to Write a C program to add two structure objects using pointer as arguments to function. CO2- U (16)

Or

- (b) (i) Write a function that returns a pointer to the maximum value of an array of double's. if the array is empty, return NULL.
`double * maximum(double *a, int size);` CO2- App (8)
 - (ii) Write a C program to print the characters in a word one per line on the output screen. CO2- App (8)
13. (a) (i) Write a C program to read the contents of a file “input.txt” and write the contents to “output.txt” CO3- App (8)
 - (ii) Explain in detail about random access file concepts with an example. CO3- U (8)

Or

- (b) (i) Write a program to read a file and count the number of characters and lines in it. CO3- App (8)
- (ii) Explain the file Input Output functions in detail. CO3- U (8)

14. (a) Write a C program to perform addition, subtraction and multiplication operations on polynomial using linked list. CO4- App (16)
- Or
- (b) Write a C code for singly linked list with create, inset, delete, display operations using pointer. CO4- App (16)
15. (a) Develop an algorithm to implement Queue ADT. Give relevant examples and diagrammatic representations. CO5- U (16)
- Or
- (b) (i) Write an algorithm to convert the infix expression to postfix expression. CO5- U (10)
- (ii) Show the simulation using stack for the following expression to convert infix to postfix: $p*q+(r-s/t)$. CO5- App (6)

