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Question Paper Code : 50381

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017
Second Semester
Computer Science and Engineering
CS 6202 : PROGRAMMING AND DATA STRUCTURES – I
(Common to Information Technology)
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Write a C program to convert the temperature in Fahrenheit to Celcius.
2. Predict the output
main ()
{
 int a=5, b=6;
 c = a > b ? a : b;
 printf("c=%d\n", c++);
 printf("c=%d", --c);
}
3. Give the advantage of Union over Structures.
4. How will you access elements present in a file randomly ?
5. Differentiate between a linked list and an array.
6. Swap two adjacent elements by adjusting only the pointers (and not the data) using Singly Linked Lists.
7. Write the steps involved in implementing 2 stacks using a single array.



8. There are many network setups of personal computers in which the disk is attached to one machine, known as the file server. Users on other machines are given access to files on a First-Come-First-Served basis. Identify the data structure used to model the scenario and also mention the operations that can be performed on it.
9. Perform insertion sort for the following elements :
34 8 64 51 32 21
10. Consider the elements 13, 15, 24 and 6 and hash function $h(X) = X \text{ mod } 7$. Create Open Addressing hash table with linear probing.

PART - B

(5×16=80 Marks)

11. a) Give algorithm and a C program to calculate and store the CGPA of a student after completing his/her second semester of B.E. Computer Science and Engineering.
(OR)
- b) With appropriate examples write the usage of
- External Variables (4)
 - Static Variables (4)
 - Register Variables (4)
 - Header Files (4)
12. a) i) Write a C program to find the distance between two points using structures. (8)
ii) Write a C program to display N strings by passing it as command line arguments. (8)
(OR)
- b) Write a C program to copy a file contents to another file. (16)
13. a) i) Write a C program to create a Singly Linked List. (8)
ii) List down the steps involved in inserting an element into a Singly Linked List. Illustrate your answer. (8)
(OR)
- b) i) Write a C program to create a Doubly Linked List. (8)
ii) List down the steps involved in deleting an element from a Doubly Linked List. Illustrate your answer. (8)



14. a) Lazy deletion marks the element to be deleted, keeps the deleted and non-deleted elements in the list is kept as part of the data structure. If there are as many deleted elements as non-deleted elements, we traverse the entire list, performing the standard deletion algorithm on all marked nodes. Write a C program to perform Lazy deletion using Arrays. (16)
(OR)
- b) Write a C program to implement a Deque Data Structure. (16)
15. a) i) Write the steps involved in Merge Sort Algorithm. Analyse its time complexity. (8)
ii) Perform Merge Sort for the following array of elements : (8)
24, 13, 26, 1, 2, 27, 38, 15
(OR)
- b) Consider the data that consists of following six bit integers :
000100, 001000, 001010, 001011, 010100, 011000, 100000, 101000, 101100, 101110, 111000, 111001. Perform Extendible hashing. Insert the key 100100, 000000 using directory split and leaf split if needed. (16)