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Question Paper Code : 77092

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Second Semester

Computer Science and Engineering

CS 6202 — PROGRAMMING AND DATA STRUCTURES – I

(Common to Information Technology)

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give two examples of C preprocessors with syntax.
2. What are function pointers in C? Explain with example.
3. What is the difference between `getc()` and `getchar()`? Explain.
4. Explain the syntax as given below:
`fread(&my_record,sizeof(struct rec),1,ptr_myfile);`
5. Define ADT.
6. What is static linked list? State any two applications of it.
7. Write the syntax of `Calloc()` and `Realloc()` and mention its application in linked list.
8. Given the prefix for an expression, write its postfix :
`- * - + a b c / e f - g / h i`
9. What is meant by internal and external sorting? Give four examples of each type.
10. State the applications of linear and binary search techniques.

PART B — (5 × 16 = 80 marks)

11. (a) (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); (8)
- (ii) Write a C program to find all the roots of a quadratic equation. (8)
- Or
- (b) (i) Write a C Program using function to check if the given input number is palindrome or not. (8)
- (ii) Explain the C preprocessor operators, each with a neat example that is used to create macros. (8)
12. (a) (i) Write a C program that uses functions to perform the following operations using structure :
- (1) Reading a complex number
 - (2) Writing a complex number
 - (3) Addition of two complex numbers
 - (4) Multiplication of two complex numbers (12)
- (ii) State the advantages and disadvantages of structures and unions in C programming. (4)
- Or
- (b) (i) Perform the following to manipulate file handling using C.
- (1) Define an input file handle called *input_file*, which is a pointer to a type FILE.
 - (2) Using *input_file*, open the file *results.dat* for read mode.
 - (3) Write C statements which tests to see if *input_file* has opened the data file successfully. If not, print an error message and exit the program.
 - (4) Write C code which will read a line of characters (terminated by a \n) from *input_file* into a character array called buffer. NULL terminate the buffer upon reading a \n.
 - (5) Close the file associated with *input_file*. (12)
- (ii) Using C Programming, display the contents of a file on screen. (4)
13. (a) Write a C Program to perform addition, subtraction and multiplication operations on polynomial using linked list. (16)
- Or
- (b) Write C Code for Circular link list with create, insert, delete, display operations using structure pointer. (16)

14. (a) (i) Write C Program that checks if expression is correctly parenthesized using stack. (12)
- (ii) Write the function to check for stack status as Full () or Empty (). (4)

Or

- (b) Write C Program to Implement Queue Functions Using Arrays and Macros. (16)
15. (a) (i) Sort the given integers and show the intermediate results using shell sort
35, 12, 14, 9, 15, 45, 32, 95, 40, 5 (8)
- (ii) Write C code to sort an integer array using shell sort. (8)

Or

- (b) (i) Write a C Code to perform binary search. (10)
- (ii) Explain the Rehashing techniques. (6)