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SARDAR PATEL UNIVERSITY

B.Sc. (CA & IT) Semester – II (Regular) /
M.Sc. INFORMATION TECHNOLOGY (Integrated) NC
Tuesday, Date: 18th April 2017
Session: Morning Time : 10:00 A.M. to 1:00 P.M.

Subject Code: PS02CIIT03

Subject Title : Advanced 'C' Programming and Introduction to Data Structures

Total Marks: 70

Q1. Multiple Choice Questions. (Attempt all) [10]

1. _____ operator is used to access structure member .
   A. Indirection(*) C. Assignment (=)
   B. Address (&) D. Dot (.)

2. Given a pointer ptr to a structure stud containing a field called name which of the following statements correctly fetch value of name?
   A. ptr->name C. ptr.stud
   B. ptr->stud D. name

3. _____ keyword is used in structure tag definition along name of structure.
   A. FILE C. struct
   B. union D. ptr

4. f = fopen(filename, "r");
   Referring to the code above, what does "r" indicate?
   A. Read mode C. Read and write mode
   B. Write mode D. Append mode

5. Which of the following data structure store all the elements of same data type only?
   A. Linked List C. Union
   B. File D. Array

6. PUSH and POP are operations of _____.
   A. Linked list C. Stack
   B. Queue D. Union

7. TOP & Bottom pointers are related to _____.
   A. Stack C. Queue
   B. Linked List D. Array

8. A linked list in which last node pointing to the first node is known as _____.
   A. Singly linked list C. Doubly Linked list
   B. Circular linked list D. None of the above

9. Data structure in which insertion and deletion of an elements based on specific criteria is known as _____ Queue.
   A. Doubly C. Circular
   B. Priority D. Simple

10. Nature of Queue is _____.
   A. FIFO C. Both A and B.
   B. LIFO D. None of these.

Q2. Answer the following short questions (Attempt any TEN) [20]

1. Define a structure called "student" consisting of integers called stud_id and age, character string called name and address. Declare structure variable called stud along with definition.
2. List different pointer declaration styles. Which one is preferable and why?
3. List different dynamic memory allocation functions with its use.
4. Explain the fclose() function with example.
5. State the use of getc and putc functions.
6. List the functions used to read and write the integer number from the file.
7. Draw the Hierarchical Structure of Data Structure.
8. List the examples of Primitive Data Structures.
9. State various applications of Stack data structure.
10. State various types of linked list.
11. State various applications of Queue data structure.
12. Give representation of simple Queue.

Q3. a. Define pointer variable. Explain how to declare and initialize a pointer variable? Also Differentiate between '*' and '&' operators in pointers. [05]

b. Explain pointer arithmetic in detail. [05]

OR

Q3. a. Explain the concept of pointer-to-pointer with example. [05]

b. Differentiate between: Structure and Union. [05]

Q4.a. What is union? Explain its definition, declaration and assigning values to members of union. [05]

b. What is a file data structure? How to access a file? Explain the all the modes of file management with example. [05]

OR

Q4.a. Explain storage representation of union and also explain with example how to assign initial value to member of union. [05]

b. Explain typedef in detail with example. [05]

Q5.a. Write an algorithm to insert and delete an element from a stack. [06]

b. What do you mean by Data Structure? Explain various operations that can be performed on data structures. [04]

OR

Q5.a. What is stack? Write an algorithm for PEEP and CHANGE operations of stack. [06]

b. Explain advantages of data structures in brief. [04]

Q6. What is Linked list ? Write an algorithm to insert an element at the beginning into a Singly linked list. [10]

OR

Q6. Write an algorithm to insert an element in a Queue. [10]

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