Department Of Computer science and Engineering

Sections: III Sem A , B & C

Data Structures Lab: CS350

1. Define a structure called Time containing 3 integer members(hour,minute,second). Develop a menu driven program to perform the following by writing separate function for each operation. a) To read time b) To display time c)To Update time d) Add two times by writing Add(T1,T2) which returns the new Time.
   Update function increments the time by one second and returns the new time(if the increment results in 60 seconds, then the second member is set to zero and minute member is incremented by one. Then , if the result is 60 minutes, the minute member is set to zero and the hour member is incremented by one. Finally when the hour becomes 24, it is set to zero)

   Note: Illustrate the use of pointer to a structure variable and passing and returning of structure type to and from the function(both by value and reference).

2. Define a structure called Student with the members: name, reg_no, marks in 3 tests and average_ marks.
   Develop a menu driven program to perform the following by writing separate function for each operation: a)read information of N students b) display students information c) to calculate the average of best two test marks of each student.
   Note: Illustrate the use of pointer to an array of structure and allocate memory dynamically using malloc() /calloc()/realloc().

   Develop a programs for the following :

3. To implement various operations on array storage representation with static and dynamic memory allocation.
4. To implement Stack with static and dynamic memory allocation mechanism using array storage representation.(Represent Stack using structure)

5. a) To convert infix expression to postfix expression. b) To convert infix expression to prefix

   c) To convert postfix expression to prefix expression.

6. To evaluate the postfix expression.

7. Write recursive functions for the following:

   a) To find factorial of a no. b) To compute Fibonacci numbers

   c) To implement Tower of Hanoi problem

8. To implement ordinary Queue with static and dynamic memory allocation mechanism using array storage representation.(Represent Queue using structure)
9. To implement Circular Queue with static and dynamic memory allocation mechanism using array storage representation.(Represent Queue using structure)
10. To implement Double Ended Queue with static and dynamic memory allocation mechanism using array storage representation.(Represent Queue using structure)
11. To implement Priority Queue with static and dynamic memory allocation mechanism using array storage representation.(Represent Queue using structure)
12. To implement singly linked list with various operations such as a)Inserting at the front/rear end b)insertion and deletion at the specified position c)reverse a list d) to concatenate two lists. e) Insert and delete at specified position f) Search by key and position.
13. To implement queue using linked storage representation .
14. To implement an ordered linked list with the operations: a)Inserting at the front/rear end b)insertion and deletion at the specified position e) Insert and delete at specified position f) Search by key and position.
15. To implement a Circular linked list with the operations: a)Inserting at the front/rear end b)insertion and deletion at the specified position e) Insert and delete at specified position f) Search by key and position.

16. To implement doubly linked list with the operations: a)Inserting at the front/rear end b)insertion and deletion at the specified position e) Insert and delete at specified position f) Search by key and position.
17. Develop a menu driven program to implement binary search tree and traversal techniques.
18. Develop a menu driven program to implement Graph traversal techniques.