

Saurabh Shukla Classes

Data Structures through C

Assignment-1

1. Define a function to find the greatest number in a given array.
 - a. int maxValue(int A[],int size);
2. Define a function to find the average of elements of a given array.
 - a. int avg(int A[], int size);
3. Define a function to calculate sum of all the elements of a given array.
 - a. int sum(int A[],int size);
4. Define a function which returns an address of dynamically created array whose size is determined as a sum of sizes of two given arrays. Also store the values of two given arrays in newly created array.
5. Define a structure Temp to store min and max temperature of a day.
 - a. Define a function to calculate average of min temperature of several days of some city.
 - i. Int minAvg(struct Temp d[],int totalDays);
 - b. Define a function to calculate average of max temperature of several days of some city.
 - i. Int maxAvg(struct Temp d[],int totalDays);

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Assignment-2

1. Implement Array Data Structure with the following services
 - a. Append an item
 - b. Insert an item
 - c. Count total items present
 - d. Get item at given index
 - e. Delete an item from a given index
 - f. Edit an item
 - g. Search an item

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Assignment-3

1. Implement Dynamic Array Data Structure with the following services
 - a. Append an item
 - b. Insert an item
 - c. Count total items present
 - d. Get item at given index
 - e. Delete an item from a given index
 - f. Edit an item
 - g. Search an item

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Assignment-4

1. Write a function that rotates A[] of size n by d elements in given direction(-1 for left and +1 for right .
 - a. void rotate(int A[],int n, int d,int dir);
2. Find second largest element in the array
 - a. int secondLargest(int A[], int size);
3. Print frequency of distinct elements in the array.
 - a. void printFrequency(int A[],int size);

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Assignment-5

1. Define linked list with following services
 - a. Insert list item as first node
 - b. Insert list item as last node
 - c. Insert list item after a given node
 - d. Delete first list item
 - e. Delete last list item
 - f. Delete a particular node
 - g. View all list elements

Assignment-6

1. Define Doubly linked list with following services
 - a. Insert list item as first node
 - b. Insert list item as last node
 - c. Insert list item after a given node
 - d. Delete first list item
 - e. Delete last list item
 - f. Delete a particular node
 - g. View all list elements

Assignment-7

1. Define Circular linked list with following services
 - a. Insert list item as first node
 - b. Insert list item as last node
 - c. Insert list item after a given node
 - d. Delete first list item
 - e. Delete last list item
 - f. Delete a particular node
 - g. View all list elements

Assignment-8

- 1. Define Circular doubly linked list with following services**
 - a. Insert list item as first node**
 - b. Insert list item as last node**
 - c. Insert list item after a given node**
 - d. Delete first list item**
 - e. Delete last list item**
 - f. Delete a particular node**
 - g. View all list elements**

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Assignment-9

1. Write a function to reverse a linked list. (start should point last node, last node should point to second last node and so on.)
2. Write a function to check whether a linked list has a loop or not.
3. Write a function to calculate length of the cycle in a linked list.

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Assignment-10

1. Implement Data Structure STACK using array
2. Implement Data Structure STACK using dynamic array
3. Implement Data Structure STACK using linked list

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Assignment-1

1. Implement Data Structure QUEUE using array
2. Implement Data Structure QUEUE using dynamic array
3. Implement Data Structure QUEUE using linked list

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Assignment-12

1. Write a recursive function to print first n natural numbers
2. Write a recursive function to print first n natural numbers in reverse order.
3. Write a recursive function to print first n even natural numbers.
4. Write a recursive function to print first n even natural numbers in reverse order
5. Write a recursive function to print first n odd natural numbers
6. Write a recursive function to print first n odd natural numbers in reverse order
7. Write a recursive function to calculate sum of first n natural numbers
8. Write a recursive function to calculate sum of first n even natural numbers
9. Write a recursive function to calculate sum of first n odd natural numbers
10. Write a recursive function to calculate sum of squares of first n natural numbers
11. Write a recursive function to calculate sum of digits of a given number
12. Write a recursive function to print binary equivalent of a given decimal number
13. Write a recursive function to print octal equivalent of a given decimal number
14. Write a recursive function to print reverse of a given number
15. Write a recursive function to find n^{th} term of a Fibonacci series
16. Write a recursive function to calculate HCF of two numbers

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Assignment-13

1. Implement two way stack
2. Implement dequeue.
3. Implement priority queue with two dimensional arrays
4. Implement priority queue with linked list