ASSIGNMENTS

Name of subject: Data Structure Using 'C'
Subject code:17330 **Course : CO**
Semester: III

ASSIGNMENT NO 1

CHAPTER-1 INTRODUCTION TO DATA STRUCTURE (08)

3 Marks

1. Describe big 'O' notation used in algorithm.
2. Explain different approaches to design an algorithm.
3. State different types of data types.

4 Marks

1. What is data structure? Why do we need data structure?
2. Define primitive data structure. Give 4 operations of data structure.
3. Define Data Structure? Enlist any two types of non-linear data structures along with example.
4. Explain time and space complexity of an algorithm.
5. Give classification of Data Structure.

ASSIGNMENT NO 2

CHAPTER-2 SORTING AND SEARCHING (16)

3 Marks

1. Write a program to implement linear search.
2. Differentiate between linear and binary search.

4 Marks

1. Write a program to implement bubble sort.
2. Write a program to implement selection sort.
3. Differentiate between linear and binary search.
4. Find the position of element 29 using binary search method in array.

   A={2,3,5,11,17,21,29,43}

5 Arrange the given elements in ascending order using radix sort. A=361,12,527,143,9,768,348

6 Arrange the given elements in the ascending order using merge sort.

A=15,84,62,08,41,47,33,18,51,32

7. Arrange the given elements in the ascending order in quick sort.

A=3,12,5,19,1,17

8.. Arrange the given elements in the ascending order using insertion sort.

A=77,33,44,11,88,22,66,55

ASSIGNMENT NO 3

CHAPTER-3 STACKS (18)

3 Marks

1. Define the term 'overflow' and 'underflow' with respect to stack.
2. Write an algorithm for 'push' operation.
3. What is a recursion?

4 Marks

4.State the principle of stack with basic operations

5.Translate the given infix expression to postfix expression using stack.

((A+B)*D)^(E-F)

6. Evaluate following postfix expression.

A: 6,2,3,+,-,3,8,2,/,+,*,2,^,3,+

7. Write a program to find the factorial of a given number using recursion.
8. Convert following expression into prefix expression.

(A+B)*C-D/E*(F/G)

ASSIGNMENT NO 4

CHAPTER-4 QUEUES (12)

5 Marks

1. Explain Queue as an abstract data type.
2. Define the circular queue with example.

6 Marks

1 Define any two terms with Example.
Dequeue
Priority queue
Linear queue

2 Define Consider the following queue of character ,where QUEUE is circular array which is allocated six memory cells
FRONt=2,REAR=4,QUEUE=__
__,A,C,D,__,__. Describe queue
as following operation takes
place: 1.F is added to Queue.
2.Two
letters are
deleted
3.K,L,M
are added
to queue.
4.S is
added to
queue.

3.Write a c program to implement a queue with insert operation.

ASSIGNMENT NO 5

CHAPTER-5 LINKED LIST (12)

3 Marks

1 List types of linked list.
2 Define the following terms :
3 a)Null pointer b)next pointer c)empty list d)address
4 Describe Doubly Linked list with suitable example

4 Marks

1 Write Algorithm for insertion of new node at start and End in singly linked list .

2 Describe the structure of circular linked list.

ASSIGNMENT NO 6

CHAPTER-6 TREES (18)

2 Marks

1. Explain one of the following binary search operation with example.
   Insertion of Node
   Deletion of Node
2. Draw the tree structure for the following expression. (any two)
   $(a-3b)\ (2x-y)^3$
   $(2a+5b)^3(x-7y)^4$
   $(2a+5b)^3\ (x-7y)^4$
3. Define
   1. AVL tree
   2. Weight balanced tree
4. Construct a binary search tree from the given list of letters inserted in order into all empty binary search tree .

   J , R , D , G , T , E , N , H , P , A , F , Q

1 Marks

1. Explain Binary tree with Example.
2. Define following terms related to binary tree:
   level,
   depth,
   path
   degree of node

3. Suppose Following eight numbers are added in order into empty binary search tree T. 50, 33, 44,22,77,35,60,40.
   Draw the tree T and search an item 20 in the tree.
4. Draw the tree structure of the expression given below:

$(+2+3+4+5+6)^2 * (7+4)^2$

ASSIGNMENT NO 7

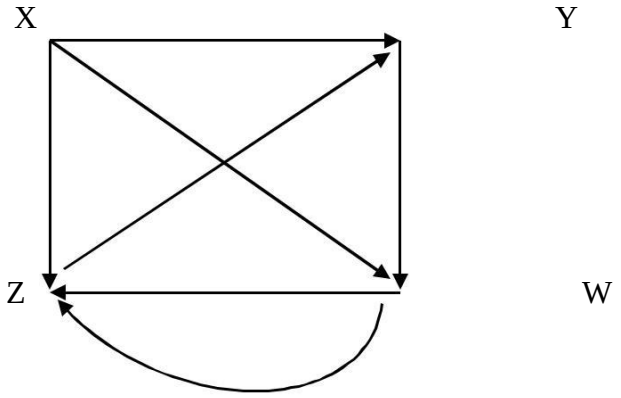
CHAPTER-7 GRAPH & HASHING (16)

3 Marks

1. Explain Linked representation of graph with suitable Example
2. Describe Hash Function. Explain Different Hash Function

4 Marks

1.Consider the following Graph .Find its adjacency Matrix & Path Matrix by using Sequential Representation of Graph.(4 Marks)



2. Describe application of graph in data structure.
3. Write the Breadth First Search algorithm.
4. Compare sequential representation of graph with linked representation method of graph.