

Sardar Vallabhbhai Patel Institute of Technology, Vasad

Computer Engineering Department

Data Structures [BE03000081]

Self-Learning- Assignments

Assignment -1

1. What is DS? Explain data structure and its types.
2. List all asymptotic notations and explain any one of it.
3. Define time complexity? Explain worst case and best case complexity with examples.
4. Explain linear and Non-linear data structure with example.
5. Compare primitive and non primitive ,data type and Data structures

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Assignment -2

1. Convert the following infix expression into postfix expression using stack.
 $(A-B)/C*D^{(E/F)^{(G+H)}}$
2. What is Sparse matrix? Write efficient vector representation of following Sparse matrix.
1 0 0
0 2 0
0 0 3
3. Write algorithm to delete from circular queue and mention the advantage of circular queue over simple queue?
4. Write user defined 'C' function to insert node at a specific location in singly linked list.
5. Explain Dequeue and Priority queue in detail.

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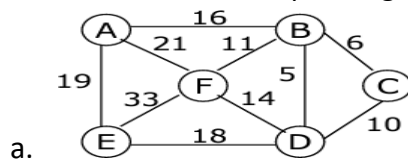
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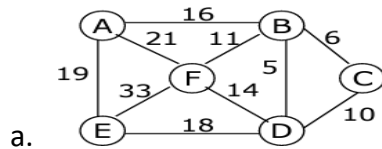
Self-Learning- Assignments

Assignment -3

1. Differentiate: BFS and DFS.
2. Construct the minimum spanning tree using prim's algorithm for the following graph.



3. Construct the minimum spanning tree using krushkal's algorithm for the following graph.



4. Explain AVL tree in detail with suitable example.
5. Construct Binary Tree where the preorder traversal is 1,2,4,5,3,6,8,9,7 & postorder is 4,5,2,8,9,6,7,3,1.
6. Explain B+ tree with example.

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Self-Learning- Assignments

Assignment -4

1. Define hash function. Explain it with suitable example.
2. Define file organization. Explain different file organizations.
3. Enlist and explain collision resolution techniques in hashing.
4. Explain indexed file organization and random file organization.
5. Build a chained hash table of 10 memory locations. Insert the keys 131, 3, 4, 21, 61, 24, 7, 97, 8, 9 in hash table using chaining. Use $h(k) = k \text{ mod } m$. ($m=10$)
6. Consider the hash table of size 10. Using quadratic probing, insert the keys 72, 27, 36, 24, 63, 81, and 101 into hash table. Take $c_1=1$ and $c_2=3$.

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Assignment -5

1. Explain binary search technique.
2. Compare sequential and binary search methods.
3. Examine the algorithm for Insertion sort and sort the following array: 77, 33, 44, 11, 88, 22, 66, 55
4. What do you mean by internal and external sorting?
5. Write algorithm for Bubble sort method.
6. Write algorithm for Merge sort method.