
Data Structure & Algorithms Semester Project Ideas

The projects should use the following data structures in their implementation. You can come up with your own ideas based on the following data structures:

Following guidelines should be considered when submitting your projects:

- 1) Each student has to submit his **INDIVIDUAL** Project.
- 2) 70% marks will depend upon complexity and depth of each project.
- 3) Detailed time complexity analysis (Upper, lower & tight bounds) of respective project will be submitted.
- 4) 50% marks in this course will be assigned to viva. Explaining your project will take a major portion of the viva.

1. Linked-List-Based Data Structures

1. Cyclic_double_list
2. Cyclic_double_sentinel_list
3. Cyclic_list
4. Cyclic_sentinel_list
5. Double_list
6. Double_sentinel_list
7. Sentinel_list
8. Single_list
9. Sorted_double_list
10. Sorted_double_sentinel_list
11. Sorted_sentinel_list
12. Sorted_single_list

2. Tree-Based Data Structure

1. AVL tree
2. B tree
3. Expression tree
4. File system
5. Lazy deletion tree
6. Quad-tree

3. Hash- Table-Based Data Structure

1. Binary heap
2. Cuckoo hash table
3. Double hash table
4. Dynamic double hash table

5. Dynamic linear hash table
6. Dynamic min heap
7. Heapify
8. Linear replacement hash table
9. Quadratic hash table
10. Quaternary heap
11. Stable binary heap
12. Ternary heap

4. Graph-Based Data Structure

1. Dijkstra's algorithm
2. Prim's algorithm
3. Topological sort
4. Kruskal algorithm

5. Miscellaneous

1. Self Balancing Trees
 2. Polynomial Addition
 3. Depth First Traversal
 4. Breadth First Traversal
 5. Huffman Algorithm
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