Data Structures Check List

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- Stack operations
  - implementation using arrays
  - implementation using linked lists
  - Evaluation of postfix expression
  - Evaluation of prefix expression
  - conversion from infix to postfix
  - conversion from infix to prefix
  - validation of given expression w.r.t parenthesis (), {} , []
  - Implementation of two stacks in a single array,one can grow from beginning of array and the other can grow from end of the array.
- Solution to the Towers of Hanoi problem.
- Queues
  - Implementation of normal queue operations
  - Implementation of circular queue operations
- Implement the following sorting techniques
  - Bubble sort
  - Selection sort
  - Insertion sort
  - Quick sort
  - Merge sort
- Implement the following searching techniques(iterative and recursive solutions).
  - Linear search
  - Binary search

- Implement the following operations for

  (a) single linked lists (b) circular linked list (c) double linked lists

  - Insertion at beginning
  - Deletion at beginning
  - Insertion at end
  - Deletion at end
  - Insertion in middle (based on position before/after, before a node with particular value)
  - Deletion in middle (based on position or key)
  - Display in forward direction
  - Display in reverse direction in case of DLL
  - Reverse the nodes in the list
  - Search for a key
- Formation of ordered Linked list
- Implement merging of two ordered linked list
- Form the logic to find the n^{th} last node from the end using one loop only
- How can you identify loops in a linked list
- Stacks/Linked lists with structures

  eg:-
```
struct student_node
{
    int rollno;
    char name[20];
    double marks;
    struct student_node* next;
};
```