CE205 Data Structures Week-3

Stacks, Queue Structures and Related Algorithms and Problems.

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# CE205 Data Structures

# Week-3

## Stacks, Queue Structures, and Related Algorithms and Problems.

1. Stack ADT
2. Stack Using Array
3. Stack Using Linked List
4. Expressions
5. Infix
6. Postfix
7. Prefix
8. Infix to Postfix Conversion
9. Postfix Expression Evaluation
10. Queue ADT
11. First Come First Serve, FCFS, FIFO
12. Queue Data structure Using Array
13. Queue Using Linked List
14. Circular Queue Data structure
15. Double Ended Queue Data structure
16. Hanoi Tower
17. Multilevel Queue (MLQ)

Hanoi Tower

Recursive Version

[Program for Tower of Hanoi - GeeksforGeeks](https://www.geeksforgeeks.org/c-program-for-tower-of-hanoi/)

Iterative Version

[Iterative Tower of Hanoi - GeeksforGeeks](https://www.geeksforgeeks.org/iterative-tower-of-hanoi/)

Iterative Algorithm:

Calculate the total number of moves required i.e.

“pow(2, n)- 1” here n is number of disks.

1. If number of disks (i.e. n) is even then interchange destination

* pole and auxiliary pole.

1. for i = 1 to total number of moves:

if i%3 == 1:

legal movement of top disk between source pole and destination pole

if i%3 == 2:

legal movement top disk between source pole and auxiliary pol

if i%3 == 0:

legal movement top disk between auxiliary pole and destination pole

S = Source

A = Aux

D = Dest

Multi Level Queue

[Multilevel Queue (MLQ) CPU Scheduling - GeeksforGeeks](https://www.geeksforgeeks.org/multilevel-queue-mlq-cpu-scheduling/)