CE205 Data Structures Week-3

Stacks, Queue Structures and Related Algorithms and Problems.

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

Download DOC[1], SLIDE[2], PPTX[3]

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1. Stack ADT

2. Stack Using Array

3. Stack Using Linked List

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1. Expressions

a. Infix

b. Postfix

c. Prefix

5. Infix to Postfix Conversion

6. Postfix Expression Evaluation

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7. Queue ADT

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[1] ce205-week-3-stack.md_doc.pdf
[2] ce205-week-3-stack.md_slide.pdf
[3] ce205-week-3-stack.md_slide.pptx

a. First Come First Serve, FCFS, FIFO

8. Queue Data structure Using Array

9. Queue Using Linked List

10. Circular Queue Data structure

11. Double Ended Queue Data structure

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1. Hanoi Tower

2. Multilevel Queue (MLQ)

Hanoi Tower

Recursive Version

Program for Tower of Hanoi - GeeksforGeeks[4]

Iterative Version

Iterative Tower of Hanoi - GeeksforGeeks[5]

Iterative Algorithm:

Calculate the total number of moves required i.e.

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

2. If number of disks (i.e. n) is even then interchange destination pole and auxiliary pole.

3. 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

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S = Source

A = Aux

D = Dest

Multi Level Queue

Multilevel Queue (MLQ) CPU Scheduling - GeeksforGeeks[6]

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[4]https://www.geeksforgeeks.org/c-program-for-tower-of-hanoi/
[5]https://www.geeksforgeeks.org/iterative-tower-of-hanoi/
[6]https://www.geeksforgeeks.org/multilevel-queue-mlq-cpu-scheduling/