CE205 Data Structures Week-3

Stacks, Queue Structures and Related Algorithms and Problems.

Author: Asst. Prof. Dr. Uğur CORUH

Contents

List of Figures

List of Tables

1 CE205 Data Structures

2 Week-3

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

---

1. Stack ADT
2. Stack Using Array
3. Stack Using Linked List

---

1. Expressions

a. Infix

b. Postfix

c. Prefix

5. Infix to Postfix Conversion
6. Postfix Expression Evaluation

---

7. Queue ADT

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

---

1. Hanoi Tower
2. Multilevel Queue (MLQ)

Hanoi Tower

Recursive Version

Program for Tower of Hanoi - GeeksforGeeks[1]

Iterative Version

Iterative Tower of Hanoi - GeeksforGeeks[2]

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

---

S = Source

A = Aux

D = Dest

Multi Level Queue

Multilevel Queue (MLQ) CPU Scheduling - GeeksforGeeks[3]

[1] https://www.geeksforgeeks.org/c-program-for-tower-of-hanoi/
[2] https://www.geeksforgeeks.org/iterative-tower-of-hanoi/
[3] https://www.geeksforgeeks.org/multilevel-queue-mlq-cpu-scheduling/