"Each day is a new beginning, new strength, new hope and new thoughts take a deep breath and start over"

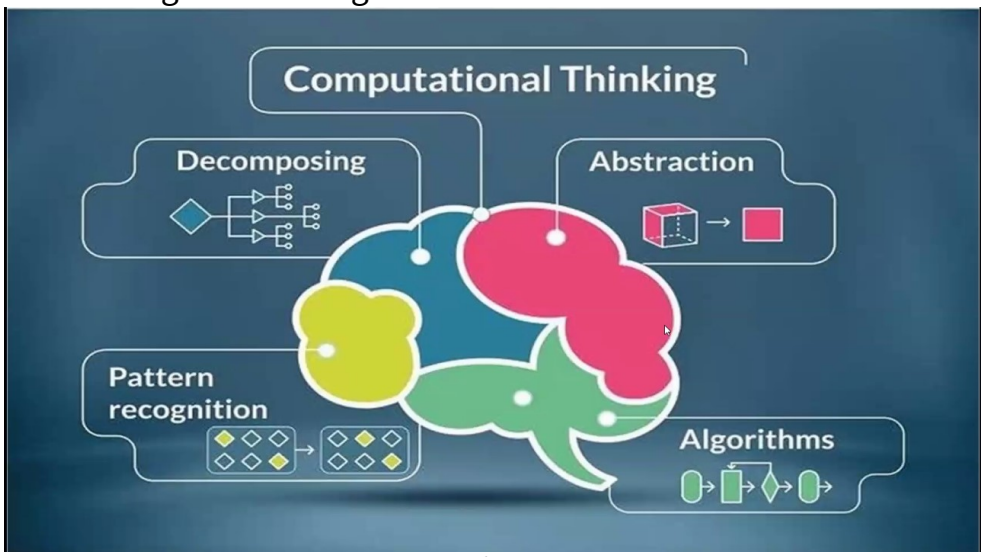
Algorithms and Data Structure

*****Practice**Practice**Practice*****

Date: 19/10/2023

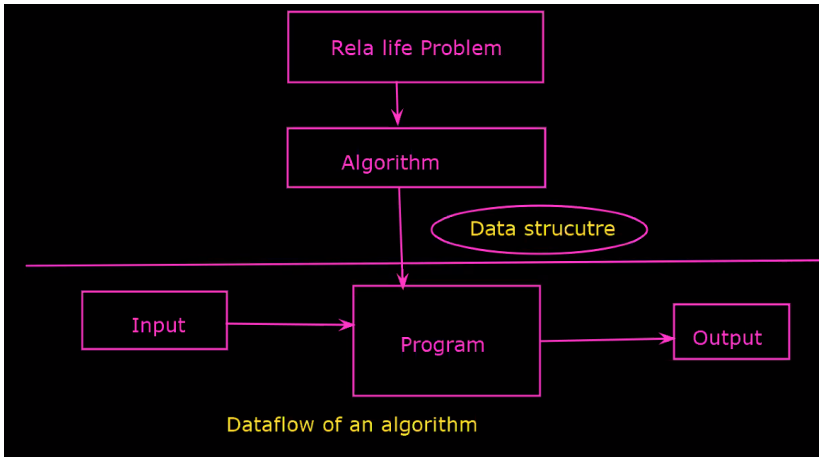
1. Problem Solving and Computational Thinking : -

- **Algorithm + Data Structure = Program**
- **Computational Thinking**
  - Decomposition
  - Pattern Recognition
  - Abstraction
  - Algorithm Design

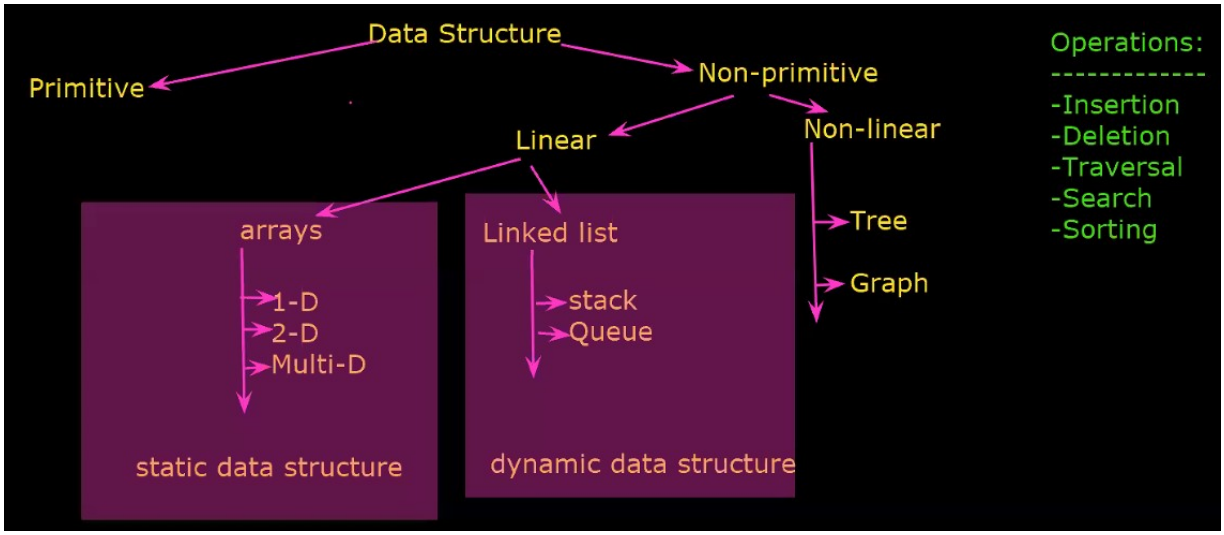


2. Data Structure and Algorithms :

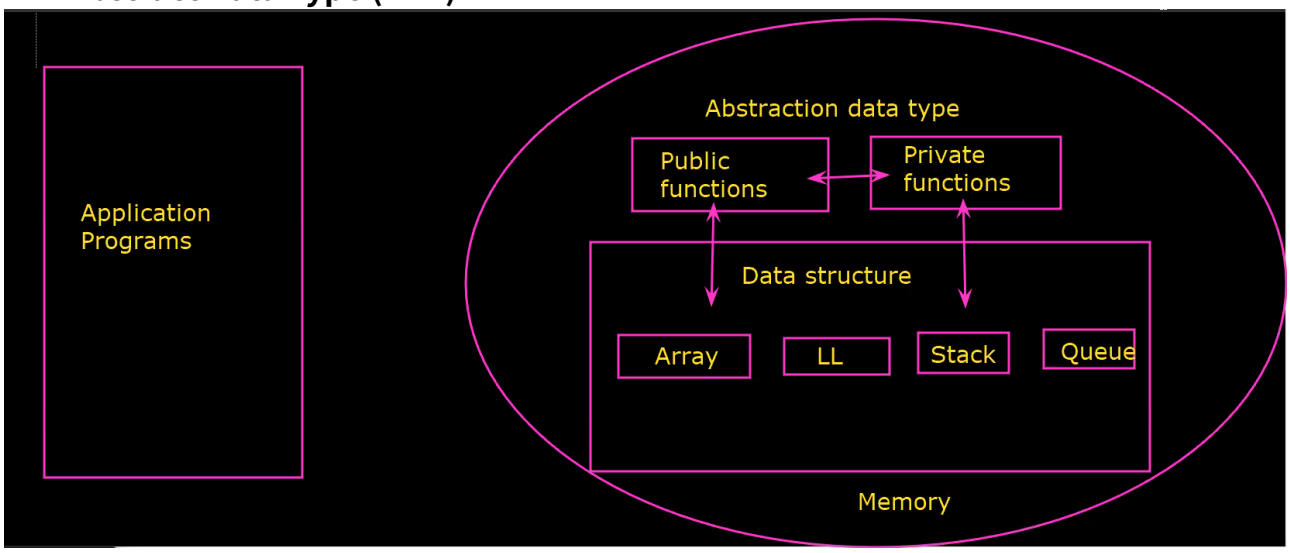
- **Algorithm :**
  - Defination
  - Characteristics
  - Need Of Algorithm
  - Algorithm Strategies



- **Data Structure :**
  - **Defination**
  - **Types of Data Structure**
    - Linear DS
      - Arrays (static DS)
        - 1D array
        - 2D array
        - Multi D array
    - Linked list (dynamic DS)
      - stack
      - Queue
    - Non Linear DS
      - Tree
      - Graph
  - **Operations**
    - Insertion
    - Deletion
    - Traversal
    - Search
    - Sorting

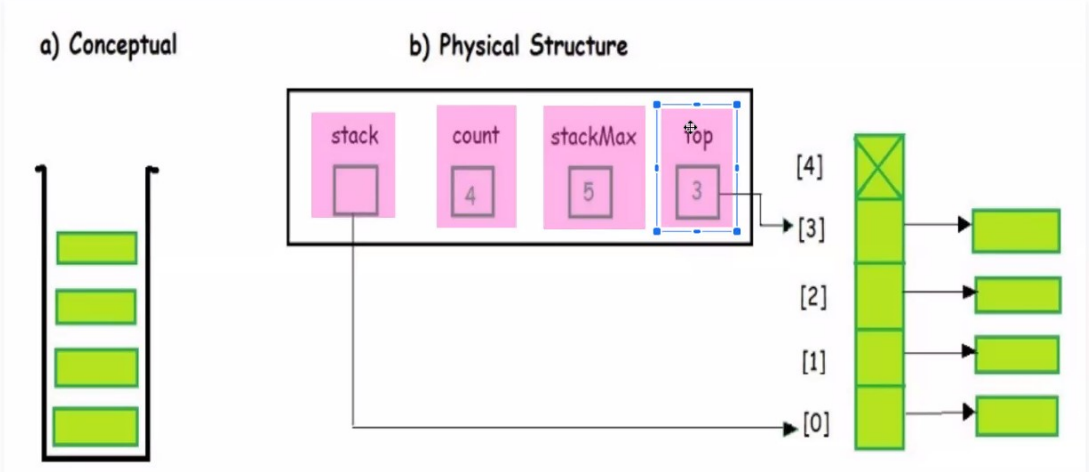


- **Abstract Data Type (ADT)**



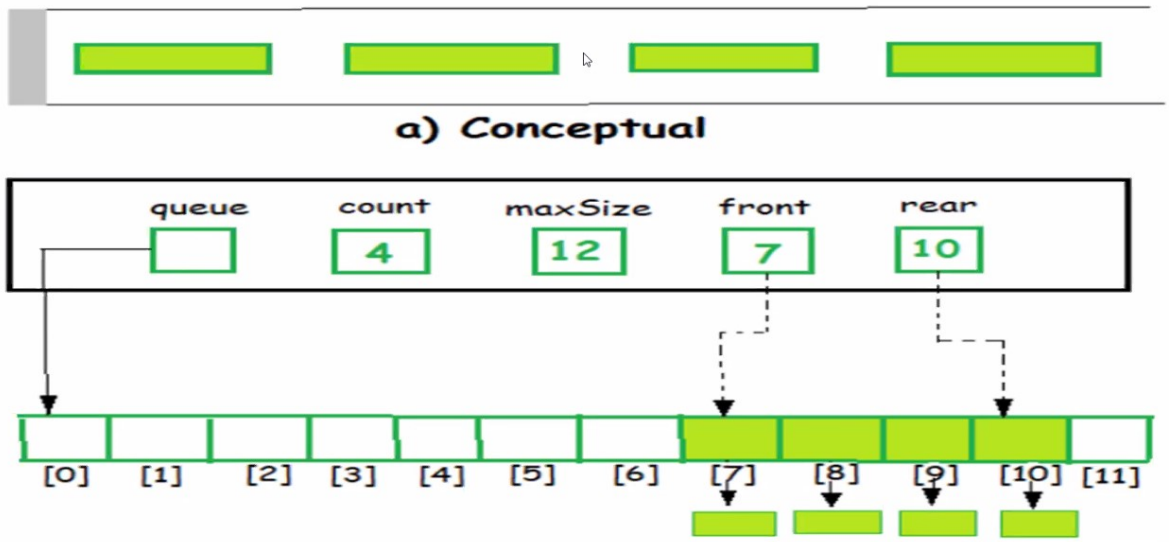
  - Stack ADT

Stack ADT



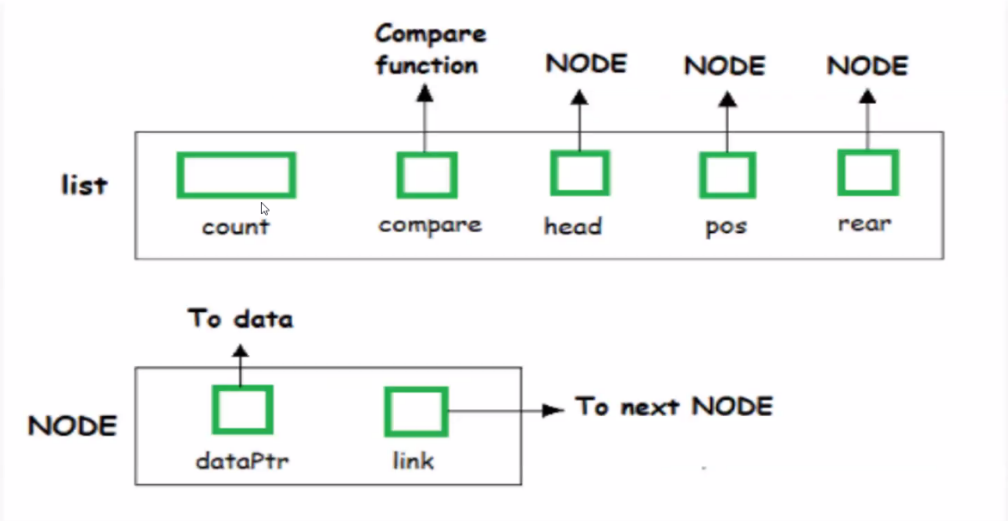
- Queue ADT

Queue ADT

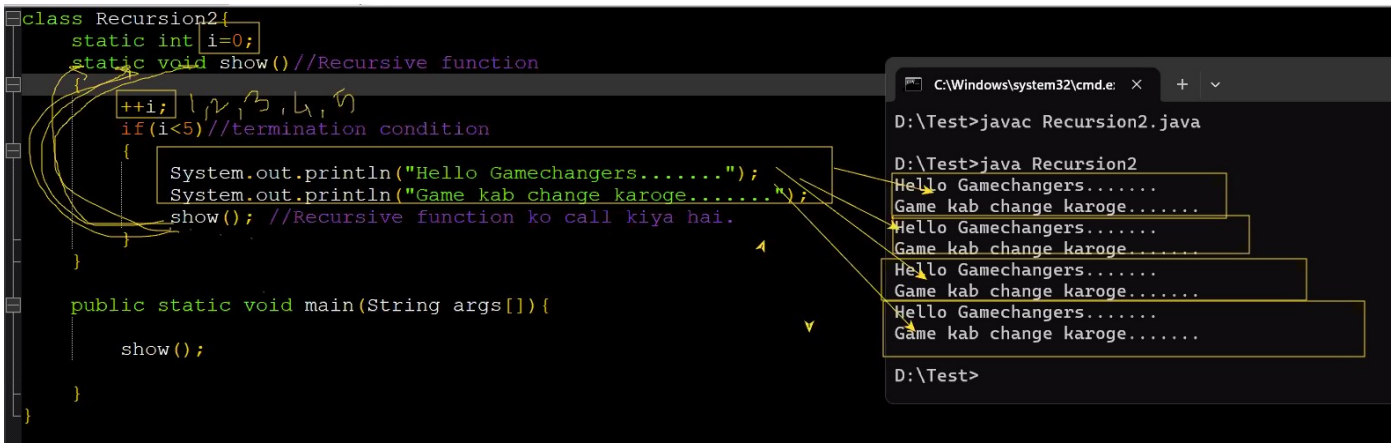


- **List ADT**

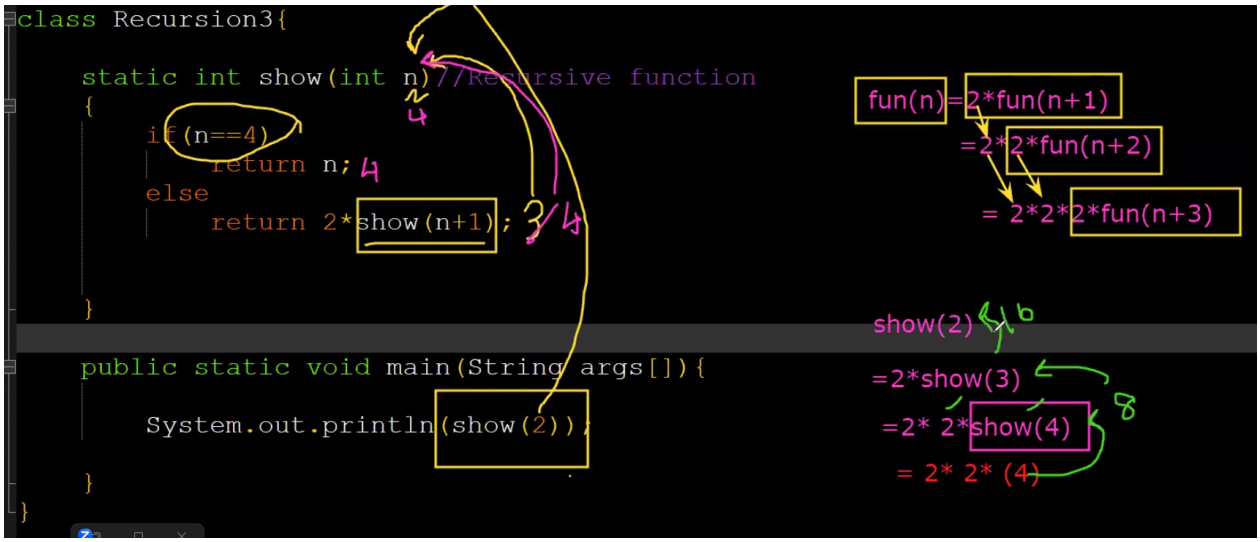
List ADT



- **Recursion :**
  - **Direct Recursion**



- **Indirect Recursion**



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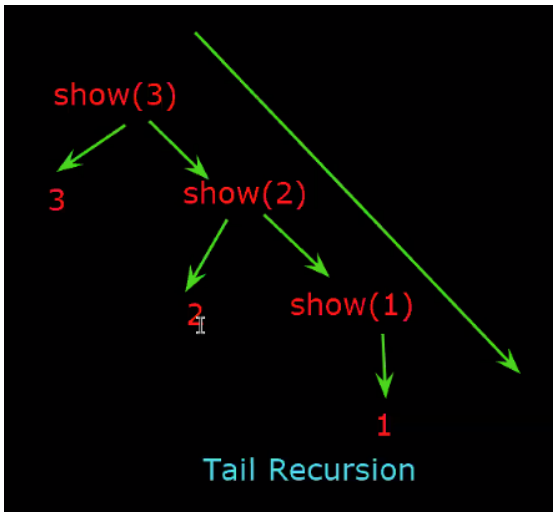
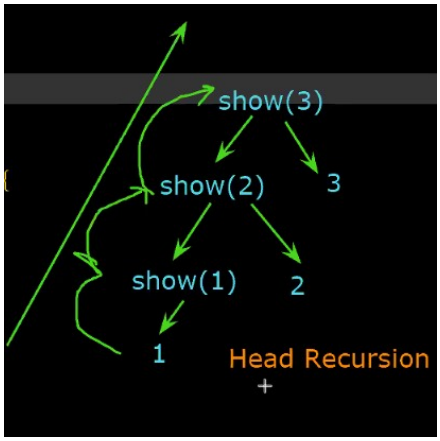
- **Type of recursion :**
  - Tail Recursion



  - Head Recursion


show(3)
show(2)
3
show(1)
2
1
Head Recursion