ADSA

1. ARRAYS:
    - DEFINITION
    - SINGLE-DIMENSIONAL ARRAYS
    - MULTIDIMENSIONAL ARRAYS
    - REPRESENTATION OF ARRAYS (ROW MAJOR ORDER, COLUMN MAJOR ORDER)
    - INDEX FORMULAE DERIVATION FOR 1-D, 2-D, 3-D ARRAYS
    - SPARSE MATRICES AND THEIR REPRESENTATIONS
2. LINKED LISTS:
    - SINGLY LINKED LISTS IMPLEMENTATION
    - OPERATIONS ON LINKED LISTS (INSERTION, DELETION, TRAVERSAL)
    - QUEUES
3. STACKS:
    - LIST IMPLEMENTATION OF A STACK
    - APPLICATIONS OF STACKS (INFIX, PREFIX, AND POSTFIX EXPRESSIONS)
    - INFIX TO POSTFIX EXPRESSION CONVERSION
    - EVALUATION OF POSTFIX EXPRESSIONS
    - RECURSION PRINCIPLES, TAIL RECURSION, REMOVAL OF RECURSION
    - PROBLEM-SOLVING USING ITERATION AND RECURSION (E.G., BINARY SEARCH, TOWER OF HANOI)
4. QUEUES:
    - QUEUE OPERATIONS (CREATE, ADD, DELETE, FULL & EMPTY)
    - SEARCHING
    - INDEX SEQUENTIAL SEARCH
    - HASHING CONCEPTS AND COLLISION RESOLUTION TECHNIQUES
5. TREES:
    - LINKED LIST REPRESENTATION
    - BINARY SEARCH TREE
    - TREE TRAVERSAL ALGORITHMS (IN-ORDER, PRE-ORDER, POST-ORDER)
    - CONSTRUCTING A BINARY TREE FROM GIVEN TREE TRAVERSALS
    - OPERATIONS OF INSERTION, DELETION, SEARCHING, MODIFICATION OF DATA IN BINARY SEARCH TREE
    - AVL TREE AND B+ TREE CONCEPTS AND BASIC OPERATIONS
    - IMPLEMENTATION OF QUAD-TREE AND OCTREE
6. GRAPHS:
    - REPRESENTATIONS (ADJACENCY MATRICES, ADJACENCY LIST)
    - GRAPH TRAVERSAL (DEPTH FIRST SEARCH, BREADTH FIRST SEARCH)

- **MINIMUM COST SPANNING TREES (PRIM'S AND KRUSKAL'S ALGORITHMS)**
- **SHORTEST PATH ALGORITHM (WARSHALL ALGORITHM)**

7. **DYNAMIC PROGRAMMING:**
   - **ELEMENTS OF DYNAMIC PROGRAMMING**
   - **LONGEST COMMON SUBSEQUENCE**
   - **OPTIMAL BINARY SEARCH TREES**
   - **0/1 KNAPSACK**
8. **GREEDY ALGORITHMS:**
   - **ELEMENTS OF THE GREEDY STRATEGY**
   - **OFFLINE CACHING**
   - **FRACTIONAL KNAPSACK**
9. **BACKTRACKING:**
   - **SUM OF SUBSET**
   - **N QUEENS' PROBLEM**
10. **BIPARTITE GRAPHS:**
    - **MAXIMUM BIPARTITE MATCHING**
    - **THE STABLE-MARRIAGE PROBLEM**
11. **TRIE DATA STRUCTURE:**
    - **TRIE INSERT AND SEARCH**
12. **SORTING ALGORITHMS:**
    - **BITONIC SORT**
    - **RADIX SORT**