CE205 Data Structures Week-2

Linked Lists and Related Algorithms, Arrays and Matrices

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# CE205 Data Structures

# Week-2

### Linked Lists and Related Algorithms Arrays and Matrices

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### Outline-1

* Resources
* ASN.1 C Workshop
* Single Linked List
* Circular Linked List
* Double Linked List
* XOR Linked List
* Skip List
* Strand Sort

### Outline-2

* Arrays
  + Array Rotations
  + Arrangement Rearrangement
  + Array Searching and Sorting
* Matrix
* Sparse Matrix

### Resources

* WilliamFiset
  + [WilliamFiset - YouTube](https://www.youtube.com/c/WilliamFiset-videos/playlists)
  + [GitHub - williamfiset/Algorithms: A collection of algorithms and data structures](https://github.com/williamfiset/Algorithms)
* Btech Smart Class
  + [Data Structures Tutorials - Introduction to Algorithms](http://www.btechsmartclass.com/data_structures/introduction-to-algorithms.html)
* Programiz
  + [Data Structure and Types](https://www.programiz.com/dsa/data-structure-types)
* GeeksforGeeks
  + [Array Data Structure - GeeksforGeeks](https://www.geeksforgeeks.org/array-data-structure/?ref=ghm)
* Visual Algo
  + https://visualgo.net/en

### Workshop

* https://github.com/ucoruh/asn1c-wsl-sample

### Single Linked List

* Btech Smart Class
  + [Data Structures Tutorials - Single Linked List with an example](http://www.btechsmartclass.com/data_structures/single-linked-list.html)
* Visual Algo
  + https://visualgo.net/en/list

### Circular Linked List

* Btech Smart Class
  + [Data Structures Tutorials - Circular Linked List with an example | Implementation](http://www.btechsmartclass.com/data_structures/circular-linked-list.html)
* Geeks for Geeks
  + [Circular Linked List | Set 1 (Introduction and Applications) - GeeksforGeeks](https://www.geeksforgeeks.org/circular-linked-list/)
* Geeks for Geeks
  + [Circular Linked List | Set 2 (Traversal) - GeeksforGeeks](https://www.geeksforgeeks.org/circular-linked-list-set-2-traversal/)

### Double Linked List

* Btech Smart Class
  + [Data Structures Tutorials - Double Linked List with an example program](http://www.btechsmartclass.com/data_structures/double-linked-list.html)
* Geeks for Geeks
  + [Doubly Linked List | Set 1 (Introduction and Insertion) - GeeksforGeeks](https://www.geeksforgeeks.org/doubly-linked-list/)
* Visual Algo
  + [Linked List (Single, Doubly), Stack, Queue, Deque - VisuAlgo](https://visualgo.net/en/list)

### XOR Linked List

* Wikipedia
  + [XOR linked list - Wikipedia](https://en.wikipedia.org/wiki/XOR_linked_list)
* Geeks for Geeks
  + [XOR Linked List - A Memory Efficient Doubly Linked List | Set 1 - GeeksforGeeks](https://www.geeksforgeeks.org/xor-linked-list-a-memory-efficient-doubly-linked-list-set-1/)
* Geeks for Geeks
  + [XOR Linked List – A Memory Efficient Doubly Linked List | Set 2 - GeeksforGeeks](https://www.geeksforgeeks.org/xor-linked-list-a-memory-efficient-doubly-linked-list-set-2/)

### Skip List

* Wikipedia
  + [Skip list - Wikipedia](https://en.wikipedia.org/wiki/Skip_list)
* Geeks for Geeks
  + [Skip List | Set 1 (Introduction) - GeeksforGeeks](https://www.geeksforgeeks.org/skip-list/)
  + [Skip List | Set 2 (Insertion) - GeeksforGeeks](https://www.geeksforgeeks.org/skip-list-set-2-insertion/)
  + [Skip List | Set 3 (Searching and Deletion) - GeeksforGeeks](https://www.geeksforgeeks.org/skip-list-set-3-searching-deletion/)

### Strand Sort

* Geeks for Geeks
  + [Strand Sort - GeeksforGeeks](https://www.geeksforgeeks.org/strand-sort/)

### Arrays

* Geeks for Geeks
  + [Array Data Structure - GeeksforGeeks](https://www.geeksforgeeks.org/array-data-structure/)
  + [Data structures Tutorials - Arrays](http://www.btechsmartclass.com/data_structures/arrays.html)
  + [Circular array - GeeksforGeeks](https://www.geeksforgeeks.org/circular-array/)

#### Array Rotations

* Geeks for Geeks
  + [Program for array rotation - GeeksforGeeks](https://www.geeksforgeeks.org/array-rotation/)

#### Arrangement Rearrangement

* Geeks for Geeks
  + [Array Rearrangement - GeeksforGeeks](https://www.geeksforgeeks.org/array-data-structure/array-rearrangement/)

#### Array Searching and Sorting

* Geeks for Geeks
  + [Difference between Searching and Sorting Algorithms - GeeksforGeeks](https://www.geeksforgeeks.org/difference-between-searching-and-sorting-algorithms/)

### Matrix

* Geeks for Geeks
  + [Matrix Archives - GeeksforGeeks](https://www.geeksforgeeks.org/matrix/?ref=ghm)

#### Sparse Matrix

* Geeks for Geeks
  + [Data Structures Tutorials - Sparse Matrix with an example](http://www.btechsmartclass.com/data_structures/sparse-matrix.html)