

# CE205 Data Structures Week-2

Linked Lists and Related Algorithms, Arrays and Matrices

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### 1 CE205 Data Structures

### 2 Week-2

#### 2.0.1 Linked Lists and Related Algorithms Arrays and Matrices

Download DOC<sup>1</sup>, SLIDE<sup>2</sup>, PPTX<sup>3</sup>

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#### 2.0.2 Outline-1

- Resources
- ASN.1 C Workshop
- Single Linked List
- Circular Linked List
- Double Linked List
- XOR Linked List

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<sup>1</sup>ce205-week-2-linkedlist.md\_doc.pdf

<sup>2</sup>ce205-week-2-linkedlist.md\_slide.pdf

<sup>3</sup>ce205-week-2-linkedlist.md\_slide.pptx

- Skip List
  - Strand Sort
- 

### 2.0.3 Outline-2

- Arrays
    - Array Rotations
    - Arrangement Rearrangement
    - Array Searching and Sorting
  - Matrix
  - Sparse Matrix
- 

### 2.0.4 Resources

- WilliamFiset
    - WilliamFiset - YouTube<sup>4</sup>
    - GitHub - williamfiset/Algorithms: A collection of algorithms and data structures<sup>5</sup>
  - Btech Smart Class
    - Data Structures Tutorials - Introduction to Algorithms<sup>6</sup>
  - Programiz
    - Data Structure and Types<sup>7</sup>
  - GeeksforGeeks
    - Array Data Structure - GeeksforGeeks<sup>8</sup>
  - Visual Algo
    - <https://visualgo.net/en>
- 

### 2.0.5 Workshop

- <https://github.com/ucoruh/asn1c-wsl-sample>
- 

### 2.0.6 Single Linked List

- Btech Smart Class
    - Data Structures Tutorials - Single Linked List with an example<sup>9</sup>
  - Visual Algo
    - <https://visualgo.net/en/list>
- 

### 2.0.7 Circular Linked List

- Btech Smart Class
  - Data Structures Tutorials - Circular Linked List with an example | Implementation<sup>10</sup>
- Geeks for Geeks
  - Circular Linked List | Set 1 (Introduction and Applications) - GeeksforGeeks<sup>11</sup>
- Geeks for Geeks

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<sup>4</sup><https://www.youtube.com/c/WilliamFiset-videos/playlists>

<sup>5</sup><https://github.com/williamfiset/Algorithms>

<sup>6</sup>[http://www.btechsmartclass.com/data\\_structures/introduction-to-algorithms.html](http://www.btechsmartclass.com/data_structures/introduction-to-algorithms.html)

<sup>7</sup><https://www.programiz.com/dsa/data-structure-types>

<sup>8</sup><https://www.geeksforgeeks.org/array-data-structure/?ref=ghm>

<sup>9</sup>[http://www.btechsmartclass.com/data\\_structures/single-linked-list.html](http://www.btechsmartclass.com/data_structures/single-linked-list.html)

<sup>10</sup>[http://www.btechsmartclass.com/data\\_structures/circular-linked-list.html](http://www.btechsmartclass.com/data_structures/circular-linked-list.html)

<sup>11</sup><https://www.geeksforgeeks.org/circular-linked-list/>

- Circular Linked List | Set 2 (Traversal) - GeeksforGeeks<sup>12</sup>
- 

### 2.0.8 Double Linked List

- Btech Smart Class
    - Data Structures Tutorials - Double Linked List with an example program<sup>13</sup>
  - Geeks for Geeks
    - Doubly Linked List | Set 1 (Introduction and Insertion) - GeeksforGeeks<sup>14</sup>
  - Visual Algo
    - Linked List (Single, Doubly), Stack, Queue, Deque - VisuAlgo<sup>15</sup>
- 

### 2.0.9 XOR Linked List

- Wikipedia
    - XOR linked list - Wikipedia<sup>16</sup>
  - Geeks for Geeks
    - XOR Linked List - A Memory Efficient Doubly Linked List | Set 1 - GeeksforGeeks<sup>17</sup>
  - Geeks for Geeks
    - XOR Linked List – A Memory Efficient Doubly Linked List | Set 2 - GeeksforGeeks<sup>18</sup>
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### 2.0.10 Skip List

- Wikipedia
    - Skip list - Wikipedia<sup>19</sup>
  - Geeks for Geeks
    - Skip List | Set 1 (Introduction) - GeeksforGeeks<sup>20</sup>
    - Skip List | Set 2 (Insertion) - GeeksforGeeks<sup>21</sup>
    - Skip List | Set 3 (Searching and Deletion) - GeeksforGeeks<sup>22</sup>
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### 2.0.11 Strand Sort

- Geeks for Geeks
    - Strand Sort - GeeksforGeeks<sup>23</sup>
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### 2.0.12 Arrays

- Geeks for Geeks
  - Array Data Structure - GeeksforGeeks<sup>24</sup>
  - Data structures Tutorials - Arrays<sup>25</sup>

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<sup>12</sup><https://www.geeksforgeeks.org/circular-linked-list-set-2-traversal/>

<sup>13</sup>[http://www.btechsmartclass.com/data\\_structures/double-linked-list.html](http://www.btechsmartclass.com/data_structures/double-linked-list.html)

<sup>14</sup><https://www.geeksforgeeks.org/doubly-linked-list/>

<sup>15</sup><https://visualgo.net/en/list>

<sup>16</sup>[https://en.wikipedia.org/wiki/XOR\\_linked\\_list](https://en.wikipedia.org/wiki/XOR_linked_list)

<sup>17</sup><https://www.geeksforgeeks.org/xor-linked-list-a-memory-efficient-doubly-linked-list-set-1/>

<sup>18</sup><https://www.geeksforgeeks.org/xor-linked-list-a-memory-efficient-doubly-linked-list-set-2/>

<sup>19</sup>[https://en.wikipedia.org/wiki/Skip\\_list](https://en.wikipedia.org/wiki/Skip_list)

<sup>20</sup><https://www.geeksforgeeks.org/skip-list/>

<sup>21</sup><https://www.geeksforgeeks.org/skip-list-set-2-insertion/>

<sup>22</sup><https://www.geeksforgeeks.org/skip-list-set-3-searching-deletion/>

<sup>23</sup><https://www.geeksforgeeks.org/strand-sort/>

<sup>24</sup><https://www.geeksforgeeks.org/array-data-structure/>

<sup>25</sup>[http://www.btechsmartclass.com/data\\_structures/arrays.html](http://www.btechsmartclass.com/data_structures/arrays.html)

- Circular array - GeeksforGeeks<sup>26</sup>
- 

### 2.0.12.1 Array Rotations

- Geeks for Geeks
    - Program for array rotation - GeeksforGeeks<sup>27</sup>
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### 2.0.12.2 Arrangement Rearrangement

- Geeks for Geeks
    - Array Rearrangement - GeeksforGeeks<sup>28</sup>
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### 2.0.12.3 Array Searching and Sorting

- Geeks for Geeks
    - Difference between Searching and Sorting Algorithms - GeeksforGeeks<sup>29</sup>
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### 2.0.13 Matrix

- Geeks for Geeks
    - Matrix Archives - GeeksforGeeks<sup>30</sup>
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#### 2.0.13.1 Sparse Matrix

- Geeks for Geeks
    - Data Structures Tutorials - Sparse Matrix with an example<sup>31</sup>
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*End – Of – Week – 2*

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<sup>26</sup><https://www.geeksforgeeks.org/circular-array/>

<sup>27</sup><https://www.geeksforgeeks.org/array-rotation/>

<sup>28</sup><https://www.geeksforgeeks.org/array-data-structure/array-rearrangement/>

<sup>29</sup><https://www.geeksforgeeks.org/difference-between-searching-and-sorting-algorithms/>

<sup>30</sup><https://www.geeksforgeeks.org/matrix/?ref=ghm>

<sup>31</sup>[http://www.btechsmartclass.com/data\\_structures/sparse-matrix.html](http://www.btechsmartclass.com/data_structures/sparse-matrix.html)