

# CE205 Data Structures Week-12

String Search Algorithms, Tries, Data Structures for Disjoint Sets

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### 1 CE205 Data Structures

### 2 Week-12

#### 2.0.1 String Search Algorithms, Tries, Data Structures for Disjoint Sets

Download PDF<sup>1</sup>,DOCX<sup>2</sup>, SLIDE<sup>3</sup>, PPTX<sup>4</sup>

#### 2.0.2 Outline

- Strings
  - Reverse Factor Algorithm (String Search)
    - \* Knuth-Morris-Pratt Algorithm
    - \* Horspool Algorithm
    - \* Boyer-Moore Algorithm
    - \* Brute-Force / Linear Text Search
    - \* DFA Text Search
  - Tries
    - \* Patricia Tree (Radix Tree)
  - Data Structures for Disjoint Sets

<sup>1</sup>pandoc\_ce205-week-12-string-algorithms.tr\_doc.pdf

<sup>2</sup>pandoc\_ce205-week-12-string-algorithms.tr\_word.docx

<sup>3</sup>ce205-week-12-string-algorithms.tr\_slide.pdf

<sup>4</sup>ce205-week-12-string-algorithms.tr\_slide.pptx

- \* Disjoint-set operations
- \* Linked-list representation of disjoint sets
- \* Disjoint-set forests
- \* Analysis of union by rank with path compression

## 2.0.3 Strings - Reverse Factor Algorithm (String Search)

### 2.0.3.1 Knuth-Morris-Pratt Algorithm

- [https://en.wikipedia.org/wiki/Knuth%E2%80%93Morris%E2%80%93Pratt\\_algorithm](https://en.wikipedia.org/wiki/Knuth%E2%80%93Morris%E2%80%93Pratt_algorithm)
- <https://www.geeksforgeeks.org/kmp-algorithm-for-pattern-searching/>
- <https://www.javatpoint.com/daa-knuth-morris-pratt-algorithm>
- <https://www.educative.io/answers/what-is-the-knuth-morris-pratt-algorithm>
- [http://www.btechsmartclass.com/data\\_structures/knuth-morris-pratt-algorithm.html](http://www.btechsmartclass.com/data_structures/knuth-morris-pratt-algorithm.html)
- <https://www-igm.univ-mlv.fr/~lecroq/string/node32.html#SECTION00320>
- <https://algs4.cs.princeton.edu/lectures/keynote/53SubstringSearch.pdf>

## 2.0.4 Strings - Reverse Factor Algorithm (String Search)

### 2.0.4.1 Horspool Algorithm

- [https://en.wikipedia.org/wiki/Boyer%E2%80%93Moore%E2%80%93Horspool\\_algorithm](https://en.wikipedia.org/wiki/Boyer%E2%80%93Moore%E2%80%93Horspool_algorithm)
- <https://www.inf.hs-flensburg.de/lang/algorithmen/pattern/horsen.htm>
- <https://www-igm.univ-mlv.fr/~lecroq/string/node18.html>

## 2.0.5 Strings - Reverse Factor Algorithm (String Search)

### 2.0.5.1 Boyer-Moore Algorithm

- [https://en.wikipedia.org/wiki/Boyer%E2%80%93Moore\\_string-search\\_algorithm](https://en.wikipedia.org/wiki/Boyer%E2%80%93Moore_string-search_algorithm)
- <https://www.geeksforgeeks.org/boyer-moore-algorithm-for-pattern-searching/?ref=gcse>

## 2.0.6 Strings - Reverse Factor Algorithm (String Search)

### 2.0.6.1 Brute-Force / Linear Text Search

- <https://algs4.cs.princeton.edu/lectures/keynote/53SubstringSearch.pdf>

## 2.0.7 Strings - Reverse Factor Algorithm (String Search)

### 2.0.7.1 DFA (deterministic finite automaton) Text Search

- <https://www.geeksforgeeks.org/finite-automata-algorithm-for-pattern-searching/>

## 2.0.8 Tries

### 2.0.8.1 Patricia Tree (Radix Tree)

- [https://en.wikipedia.org/wiki/Radix\\_tree](https://en.wikipedia.org/wiki/Radix_tree)
- [http://www.btechsmartclass.com/data\\_structures/tries.html](http://www.btechsmartclass.com/data_structures/tries.html)
- <https://www.geeksforgeeks.org/implementing-patricia-trie-in-java/>

## 2.0.9 Data Structures for Disjoint Sets

- <https://ucoruh.github.io/ce100-algorithms-and-programming-II/week-10/ce100-week-10-graphs/?h=disjoint#disjoint-set-operations>
- Disjoint-set operations
- Linked-list representation of disjoint sets
- Disjoint-set forests
- Analysis of union by rank with path compression

- <https://www.geeksforgeeks.org/disjoint-set-data-structures/>
- <https://www.javatpoint.com/disjoint-set-data-structure>

*End – Of – Week – 12*