API Reference

Welcome to the API documentation for the **BelNytheraSeiche.WaveletMatrix** library. This library is organized into several key components that work together to provide powerful sequence and text analysis capabilities.

Below is an overview of the main classes and their roles.

Core Data Structures

These are the fundamental building blocks of the library.

- **WaveletMatrixGeneric**

  The main generic class for creating a Wavelet Matrix from any `IComparable<T>` sequence. It handles coordinate compression and provides a rich set of query APIs.

- **WaveletMatrixCore**

  The high-performance, non-generic engine that powers the `WaveletMatrixGeneric<T>`. It operates directly on integer sequences.

- **SparseTable** and **AggregateSparseTable**

  Helper data structures used for answering Range Minimum/Maximum Queries (RMQ) in O(1) or O(log N) time, respectively. They are used internally by `LcpIndex`.

Text Analysis Components

These classes are specialized for advanced stringology and full-text search.

- **SuffixArray**

  The foundational class for most text analysis. It builds a Suffix Array and LCP Array from a given text, enabling fast substring searches.

- **LcpIndex**

  An index built on top of a `SuffixArray` that provides advanced O(1) LCP queries. This is the key to complex analyses like finding tandem repeats or calculating string complexity.

- **FMIndex**

  The high-level, all-in-one full-text search index. It combines the power of the `WaveletMatrix`, `SuffixArray`, and Burrows-Wheeler Transform to offer extremely fast pattern counting (`Count`) and

locating (`Locate`).

- ## BurrowsWheelerTransform

  A static utility class that performs the Burrows-Wheeler Transform, a key step in building the `FMIndex`.