Sortowania quicksort i mergesort

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Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

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IQueue< E > 10
Queue< E > 13
Main_timer 11
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Node< E > 12

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Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

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File Index

3.1 File List

Here is a list of all files with brief descriptions:

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algorytmy.hh 17
queue.hh 17
queue1.hh 17
struktura.hh 18
test.cpp 18

Chapter 4

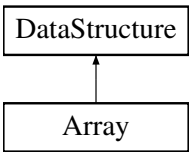
Class Documentation

4.1 Array Class Reference

Klasa struktury danych.

`#include <algorytmy.hh>`

Inheritance diagram for Array:



Public Member Functions

- void **add_num** (int number)
- void **quick_sort_random** (int left, int right)
- void **quick_sort_last** (int left, int right)
- void **quick_sort_mean** (int left, int right)
- void **show_arr** ()
- void **merge** (int left, int medium, int right)
- void **merge_sort** (int left, int right)
- **Array** (int a)
- ∼**Array** ()

Private Attributes

- int ∗ **arr** = NULL
- int ∗ **tmp** = NULL
- int **counter** = 0
- int **second_counter** =0
- int **arr_size** =0

4.1.1 Detailed Description

Klasa struktury danych.

Zawiera metodę umożliwiającą dodawanie elementów do tablicy. Dokumentacja metody w folderze Lab1.

Definition at line 30 of file algorytmy.hh.

4.1.2 Constructor & Destructor Documentation

4.1.2.1 Array::Array (int *a*)

Definition at line 5 of file algorytmy.cpp.

4.1.2.2 Array::∼Array ( )

Definition at line 15 of file algorytmy.cpp.

4.1.3 Member Function Documentation

4.1.3.1 void Array::add_num (int *number*) [virtual]

Implements **DataStructure** (p. 10).

Definition at line 21 of file algorytmy.cpp.

4.1.3.2 void Array::merge (int *left,* int *medium,* int *right*)

Definition at line 123 of file algorytmy.cpp.

4.1.3.3 void Array::merge_sort (int *left,* int *right*)

Definition at line 158 of file algorytmy.cpp.

4.1.3.4 void Array::quick_sort_last (int *left,* int *right*)

Definition at line 70 of file algorytmy.cpp.

4.1.3.5 void Array::quick_sort_mean (int *left,* int *right*)

Definition at line 93 of file algorytmy.cpp.

4.1.3.6 void Array::quick_sort_random (int *left,* int *right*)

Definition at line 47 of file algorytmy.cpp.

4.1.3.7 void Array::show_arr ( )

Definition at line 170 of file algorytmy.cpp.

4.1.4 Member Data Documentation

4.1.4.1 int∗ Array::arr = NULL [private]

Definition at line 33 of file algorytmy.hh.

4.1.4.2 int Array::arr_size =0 [private]

Definition at line 37 of file algorytmy.hh.

4.1.4.3 int Array::counter = 0 [private]

Definition at line 35 of file algorytmy.hh.

4.1.4.4 int Array::second_counter =0 [private]

Definition at line 36 of file algorytmy.hh.

4.1.4.5 int* Array::tmp = NULL [private]

Definition at line 34 of file algorytmy.hh.

The documentation for this class was generated from the following files:

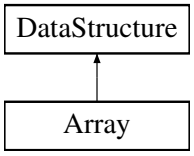
- **algorytmy.hh**
- **algorytmy.cpp**

4.2 DataStructure Class Reference

Interfejs struktury danych.

`#include <struktura.hh>`

Inheritance diagram for DataStructure:



Public Member Functions

- virtual void **add_num** (int element)=0
- virtual ~**DataStructure** ()

4.2.1 Detailed Description

Interfejs struktury danych.

Zawiera metodę umożliwiającą dodawanie elementu do struktury.

Definition at line 29 of file struktura.hh.

4.2.2 Constructor & Destructor Documentation

4.2.2.1 virtual DataStructure::~DataStructure ( ) [inline], [virtual]

Definition at line 34 of file struktura.hh.

4.2.3 Member Function Documentation

4.2.3.1 virtual void DataStructure::add_num (int *element*) [pure virtual]

Implemented in **Array** (p. 8).

The documentation for this class was generated from the following file:

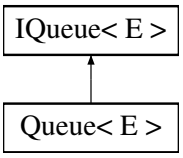
- **struktura.hh**

4.3 IQueue< E > Class Template Reference

Interfejs kolejki.

`#include <queue.hh>`

Inheritance diagram for IQueue< E >:



Public Member Functions

- virtual void **add** (const E &elem)=0
- virtual E **remove** ()=0
- virtual int **size** ()=0
- virtual ~**IQueue** ()

4.3.1 Detailed Description

template<typename E>class IQueue< E >

Interfejs kolejki.

Zawiera metody umożliwiające operacje na kolejce.

Definition at line 10 of file queue.hh.

4.3.2 Constructor & Destructor Documentation

4.3.2.1 template<typename E > virtual IQueue< E >::~IQueue ( ) [inline], [virtual]

Definition at line 17 of file queue.hh.

4.3.3 Member Function Documentation

4.3.3.1 template<typename E > virtual void IQueue< E >::add (const E & *elem*) [pure virtual]

Implemented in **Queue< E >** (p. 14).

4.3.3.2 template<typename E > virtual E IQueue< E >::remove ( ) [pure virtual]

Implemented in **Queue**< **E** > (p. 14).

4.3.3.3 template<typename E > virtual int IQueue< E >::size ( ) [pure virtual]

Implemented in **Queue**< **E** > (p. 14).

The documentation for this class was generated from the following file:

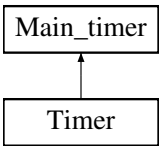
- **queue.hh**

4.4 Main_timer Class Reference

Interfejs stopera.

`#include <struktura.hh>`

Inheritance diagram for Main_timer:



Public Member Functions

- virtual long double **get_ms_time** ()=0
- virtual void **tim_start** ()=0
- virtual void **tim_stop** ()=0
- virtual long double **return_time** ()=0
- virtual ~**Main_timer** ()

4.4.1 Detailed Description

Interfejs stopera.

Zawiera metody umożliwiające mierzenie czasu w ms.

Definition at line 11 of file struktura.hh.

4.4.2 Constructor & Destructor Documentation

4.4.2.1 virtual Main_timer::~Main_timer ( ) [inline], [virtual]

Definition at line 19 of file struktura.hh.

4.4.3 Member Function Documentation

4.4.3.1 virtual long double Main_timer::get_ms_time ( ) [pure virtual]

Implemented in **Timer** (p. 16).

4.4.3.2 virtual long double Main_timer::return_time ( ) [pure virtual]

Implemented in **Timer** (p. 16).

4.4.3.3 virtual void Main_timer::tim_start ( ) [pure virtual]

Implemented in **Timer** (p. 16).

4.4.3.4 virtual void Main_timer::tim_stop ( ) [pure virtual]

Implemented in **Timer** (p. 16).

The documentation for this class was generated from the following file:

- **struktura.hh**

4.5 Node< E > Class Template Reference

Klasa węzła kolejki.

`#include <queue1.hh>`

Private Attributes

- E **elem**
- **Node**< E > * **next**

Friends

- class **Queue**< **E** >

4.5.1 Detailed Description

template<**typename E**>**class Node**< **E** >

Klasa węzła kolejki.

Zawiera element węzła oraz wskaźnik na następny węzeł.

Definition at line 6 of file queue1.hh.

4.5.2 Friends And Related Function Documentation

4.5.2.1 template<typename E> friend class Queue< E > [friend]

Definition at line 18 of file queue1.hh.

4.5.3 Member Data Documentation

4.5.3.1 template<typename E> E Node< E >::elem [private]

Element kolejki

Definition at line 21 of file queue1.hh.

4.5.3.2 template<typename E> Node<E>* Node< E >::next [private]

Wskaźnik na kolejny węzeł

Definition at line 22 of file queue1.hh.

The documentation for this class was generated from the following file:

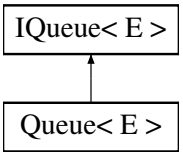
- **queue1.hh**

4.6 Queue< E > Class Template Reference

Klasa kolejki.

`#include <queue1.hh>`

Inheritance diagram for Queue< E >:



Public Member Functions

- **Queue** (int new_size)
- ~**Queue** ()
- void **add** (const E &elem)
- E **remove** ()
- int **size** ()
- void **show_queue** ()

Private Attributes

- **Node**< E > * **front**
- **Node**< E > * **end**
- int **queue_size** =0

4.6.1 Detailed Description

template<typename E>class Queue< E >

Klasa kolejki.

Zawiera metody umożliwiające operacje na kolejce.

Definition at line 8 of file queue1.hh.

4.6.2 Constructor & Destructor Documentation

4.6.2.1 template<typename E> Queue< E >::Queue (int *new_size*) [inline]

Definition at line 42 of file queue1.hh.

4.6.2.2 template<typename E> Queue< E >::~Queue ( ) [inline]

Definition at line 47 of file queue1.hh.

4.6.3 Member Function Documentation

4.6.3.1 template<typename E > void Queue< E >::add (const E & *elem*) [virtual]

Funkcja dodająca element na początek kolejki

Parameters

in	*element*	typu E

Implements **IQueue< E >** (p. 10).

Definition at line 84 of file queue1.hh.

4.6.3.2 template<typename E > E Queue< E >::remove ( ) [virtual]

Funkcja usuwająca element z kolejki Wyrzuca wyjątek EmptyQueueException jeśli kolejka jest pusta.

Returns

Element typu E

Implements **IQueue< E >** (p. 11).

Definition at line 102 of file queue1.hh.

4.6.3.3 template<typename E > void Queue< E >::show_queue ( )

Funkcja wyświetlająca kolejke

Definition at line 123 of file queue1.hh.

4.6.3.4 template<typename E > int Queue< E >::size ( ) [virtual]

Funkcja zwracająca rozmiar kolejki.

Returns

Rozmiar kolejki typu int

Implements **IQueue< E >** (p. 11).

Definition at line 118 of file queue1.hh.

4.6.4 Member Data Documentation

4.6.4.1 template<typename E> Node<E>* Queue< E >::end [private]

Wskaźnik na koniec kolejki

Definition at line 38 of file queue1.hh.

4.6.4.2 template<typename E> Node<E>* Queue< E >::front [private]

Wskaźnik na początek kolejki

Definition at line 37 of file queue1.hh.

4.6.4.3 template<typename E> int Queue< E >::queue_size =0 [private]

Rozmiar kolejki

Definition at line 39 of file queue1.hh.

The documentation for this class was generated from the following file:

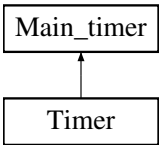
- **queue1.hh**

4.7 Timer Class Reference

Klasa stopera.

`#include <algorytmy.hh>`

Inheritance diagram for Timer:



Public Member Functions

- long double **get_ms_time** ()
- void **tim_start** ()
- void **tim_stop** ()
- long double **return_time** ()
- ~**Timer** ()

Private Attributes

- long double **time_of_start**
- long double **time_of_stop**

4.7.1 Detailed Description

Klasa stopera.

Zawiera metody umożliwiające mierzenie czasu w ms. Dokumentacja metod w folderze Lab1.

Definition at line 10 of file algorytmy.hh.

4.7.2 Constructor & Destructor Documentation

4.7.2.1 Timer::~Timer ( ) [inline]

Definition at line 21 of file algorytmy.hh.

4.7.3 Member Function Documentation

4.7.3.1 long double Timer::get_ms_time ( ) [virtual]

Implements **Main_timer** (p. 11).

Definition at line 175 of file algorytmy.cpp.

4.7.3.2 long double Timer::return_time ( ) [virtual]

Implements **Main_timer** (p. 12).

Definition at line 197 of file algorytmy.cpp.

4.7.3.3 void Timer::tim_start ( ) [virtual]

Implements **Main_timer** (p. 12).

Definition at line 185 of file algorytmy.cpp.

4.7.3.4 void Timer::tim_stop ( ) [virtual]

Implements **Main_timer** (p. 12).

Definition at line 191 of file algorytmy.cpp.

4.7.4 Member Data Documentation

4.7.4.1 long double Timer::time_of_start [private]

Definition at line 13 of file algorytmy.hh.

4.7.4.2 long double Timer::time_of_stop [private]

Definition at line 14 of file algorytmy.hh.

The documentation for this class was generated from the following files:

- **algorytmy.hh**
- **algorytmy.cpp**

Chapter 5

File Documentation

5.1 algorytmy.cpp File Reference

```
#include <iostream>
#include "algorytmy.hh"
#include "struktura.hh"
```

5.2 algorytmy.hh File Reference

```
#include "struktura.hh"
```

Classes

- class **Timer**

  Klasa stopera.
- class **Array**

  Klasa struktury danych.

5.3 queue.hh File Reference

Classes

- class **IQueue**< **E** >

  Interfejs kolejki.

5.4 queue1.hh File Reference

```
#include "queue.hh"
```

Classes

- class **Node**< **E** >

Klasa węzła kolejki.

- class **Queue**< **E** >

  Klasa kolejki.

- class **Node**< **E** >

  Klasa węzła kolejki.

- class **Queue**< **E** >

  Klasa kolejki.

5.5 struktura.hh File Reference

```
#include <sys/time.h>
```

Classes

- class **Main_timer**

  Interfejs stopera.

- class **DataStructure**

  Interfejs struktury danych.

5.6 test.cpp File Reference

```
#include <iostream>
#include <algorithm>
#include "struktura.hh"
#include "algorytmy.hh"
#include "queue.hh"
#include "queue1.hh"
```

Functions

- int **main** ()

5.6.1 Function Documentation

5.6.1.1 int main ( )

Definition at line 8 of file test.cpp.

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