

## Tablica asocjacyjna

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# Chapter 1

## Hierarchical Index

### 1.1 Class Hierarchy

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

IArray	11
AsArray	7
IHashMap	12
HashMap	9
IList	13
List	14
Main_timer	18
Timer	20
Node	19





## Chapter 2

# Class Index

### 2.1 Class List

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

<b>AsArray</b>	Klasa tablicy asocjacyjnej . . . . .	7
<b>HashArray</b>	Klasa tablicy z haszowaniem . . . . .	9
<b>IAsArray</b>	Interfejs tablicy asocjacyjnej . . . . .	11
<b>IHashArray</b>	Interfejs tablicy z haszowaniem . . . . .	12
<b>IList</b>	Interfejs listy . . . . .	13
<b>List</b>	Klasa listy . . . . .	14
<b>Main_timer</b>	Interfejs stopera . . . . .	18
<b>Node</b>	Klasa węzła listy . . . . .	19
<b>Timer</b>	Klasa stopera . . . . .	20



## Chapter 3

# File Index

### 3.1 File List

Here is a list of all files with brief descriptions:

<b>asarray.cpp</b>	23
<b>asarray.hh</b>	23
<b>hasharray.cpp</b>	23
<b>hasharray.hh</b>	24
<b>iasarray.hh</b>	24
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## Chapter 4

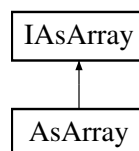
# Class Documentation

### 4.1 AsArray Class Reference

Klasa tablicy asocjacyjnej.

```
#include <asarray.hh>
```

Inheritance diagram for AsArray:



#### Public Member Functions

- **AsArray** (int number\_of\_elements)
- **~AsArray** ()
- void **insert** (const std::string &key, const int &value)
- void **remove** (const std::string &key)
- int **search** (const std::string &key)
- void **read\_from\_file** (std::string file\_name, int amount\_of\_data)
- void **search\_with\_file** (std::string file\_name, int amount\_of\_data)
- int **operator[]** (const std::string &key)

#### Private Attributes

- **HashMap** \* **hasharr** =NULL

#### 4.1.1 Detailed Description

Klasa tablicy asocjacyjnej.

Zawiera metody umożliwiające operacje na tablicy.

Definition at line 14 of file asarray.hh.

### 4.1.2 Constructor & Destructor Documentation

#### 4.1.2.1 `AsArray::AsArray ( int number_of_elements )`

Definition at line 9 of file `asarray.cpp`.

#### 4.1.2.2 `AsArray::~AsArray ( )`

Definition at line 13 of file `asarray.cpp`.

### 4.1.3 Member Function Documentation

#### 4.1.3.1 `void AsArray::insert ( const std::string & key, const int & value ) [virtual]`

Funkcja umożliwiająca wstawienie elementu do tablicy.

Implements **IAsArray** (p. 12).

Definition at line 22 of file `asarray.cpp`.

#### 4.1.3.2 `int AsArray::operator[] ( const std::string & key ) [virtual]`

Przeciążenie operatora indeksowania. Umożliwia wypisywanie elementu o podanym kluczu korzystając z indeksowania.

Implements **IAsArray** (p. 12).

Definition at line 17 of file `asarray.cpp`.

#### 4.1.3.3 `void AsArray::read_from_file ( std::string file_name, int amount_of_data ) [virtual]`

Funkcja wczytująca dane do tablicy. Napisana została na potrzeby testowe.

Implements **IAsArray** (p. 12).

Definition at line 56 of file `asarray.cpp`.

#### 4.1.3.4 `void AsArray::remove ( const std::string & key ) [virtual]`

Funkcja usuwająca element o podanym kluczu.

Implements **IAsArray** (p. 12).

Definition at line 33 of file `asarray.cpp`.

#### 4.1.3.5 `int AsArray::search ( const std::string & key ) [virtual]`

Funkcja wyszukująca element o podanym kluczu i zwracająca jego wartość.

##### Returns

wartość typu całkowitego

Implements **IAsArray** (p. 12).

Definition at line 46 of file `asarray.cpp`.

4.1.3.6 `void AsArray::search_with_file ( std::string file_name, int amount_of_data )` [virtual]

Funkcja wyszukująca dane na podstawie znanego klucza. Napisana została na potrzeby testowe.

Implements **IArray** (p. 12).

Definition at line 84 of file `asarray.cpp`.

#### 4.1.4 Member Data Documentation

4.1.4.1 `HashArray* AsArray::hasharr =NULL` [private]

Wskaźnik na miejsce dla tablicy haszującej

Definition at line 17 of file `asarray.hh`.

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

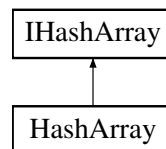
- `asarray.hh`
- `asarray.cpp`

## 4.2 HashArray Class Reference

Klasa tablicy z haszowaniem.

```
#include <hasharray.hh>
```

Inheritance diagram for HashArray:



#### Public Member Functions

- **HashArray** (int number\_of\_elements)
- **~HashArray** ()
- int **hash** (std::string name)
- void **realloc\_and\_rehash** ()

#### Private Attributes

- **List** \* **arr** =NULL
- int **size\_of\_arr** =0
- int **number\_of\_not\_empty\_lists** =0

#### Friends

- class **AsArray**

### 4.2.1 Detailed Description

Klasa tablicy z haszowaniem.

Zawiera metody umożliwiające operacje na tablicy.

Definition at line 12 of file hasharray.hh.

### 4.2.2 Constructor & Destructor Documentation

#### 4.2.2.1 `HashArray::HashArray ( int number_of_elements )`

Definition at line 7 of file hasharray.cpp.

#### 4.2.2.2 `HashArray::~~HashArray ( )`

Definition at line 13 of file hasharray.cpp.

### 4.2.3 Member Function Documentation

#### 4.2.3.1 `int HashArray::hash ( std::string name ) [virtual]`

Funkcja haszująca.

##### Returns

wartość typu całkowitego

Implements **IHashArray** (p. 13).

Definition at line 17 of file hasharray.cpp.

#### 4.2.3.2 `void HashArray::realloc_and_rehash ( ) [virtual]`

Funkcja powiększająca i rehaszująca tablicę.

Implements **IHashArray** (p. 13).

Definition at line 28 of file hasharray.cpp.

### 4.2.4 Friends And Related Function Documentation

#### 4.2.4.1 `friend class AsArray [friend]`

Definition at line 18 of file hasharray.hh.

### 4.2.5 Member Data Documentation

#### 4.2.5.1 `List* HashArray::arr =NULL [private]`

Wskaźnik na miejsce dla tablicy dynamicznej

Definition at line 15 of file hasharray.hh.



4.2.5.2 `int HashArray::number_of_not_empty_lists=0` `[private]`

Liczba niepustych list

Definition at line 17 of file hasharray.hh.

4.2.5.3 `int HashArray::size_of_arr=0` `[private]`

Rozmiar tablicy z haszowaniem

Definition at line 16 of file hasharray.hh.

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

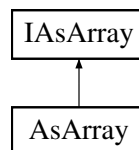
- **hasharray.hh**
- **hasharray.cpp**

## 4.3 IAsArray Class Reference

Interfejs tablicy asocjacyjnej.

```
#include <iasarray.hh>
```

Inheritance diagram for IAsArray:



### Public Member Functions

- virtual void **insert** (const std::string &key, const int &value)=0
- virtual void **remove** (const std::string &key)=0
- virtual int **search** (const std::string &key)=0
- virtual void **read\_from\_file** (std::string file\_name, int amount\_of\_data)=0
- virtual void **search\_with\_file** (std::string file\_name, int amount\_of\_data)=0
- virtual int **operator[]** (const std::string &key)=0
- virtual **~IAsArray** ()

#### 4.3.1 Detailed Description

Interfejs tablicy asocjacyjnej.

Zawiera metody umożliwiające operacje na tablicy.

Definition at line 11 of file iasarray.hh.

#### 4.3.2 Constructor & Destructor Documentation

4.3.2.1 `virtual IAsArray::~IAsArray ( )` `[inline]`, `[virtual]`

Definition at line 20 of file iasarray.hh.

### 4.3.3 Member Function Documentation

4.3.3.1 `virtual void IAsArray::insert ( const std::string & key, const int & value ) [pure virtual]`

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

4.3.3.2 `virtual int IAsArray::operator[] ( const std::string & key ) [pure virtual]`

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

4.3.3.3 `virtual void IAsArray::read_from_file ( std::string file_name, int amount_of_data ) [pure virtual]`

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

4.3.3.4 `virtual void IAsArray::remove ( const std::string & key ) [pure virtual]`

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

4.3.3.5 `virtual int IAsArray::search ( const std::string & key ) [pure virtual]`

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

4.3.3.6 `virtual void IAsArray::search_with_file ( std::string file_name, int amount_of_data ) [pure virtual]`

Implemented in **AsArray** (p. 9).

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

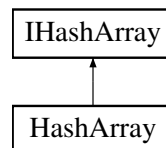
- **iasarray.hh**

## 4.4 IHashArray Class Reference

Interfejs tablicy z haszowaniem.

```
#include <ihasharray.hh>
```

Inheritance diagram for IHashArray:



### Public Member Functions

- virtual int **hash** (std::string surname)=0
- virtual void **realloc\_and\_rehash** ()=0
- virtual **~IHashArray** ()

#### 4.4.1 Detailed Description

Interfejs tablicy z haszowaniem.

Zawiera metody umożliwiające operacje na tablicy.

Definition at line 12 of file ihasharray.hh.

#### 4.4.2 Constructor & Destructor Documentation

4.4.2.1 `virtual IHashArray::~IHashArray ( ) [inline],[virtual]`

Definition at line 17 of file ihasharray.hh.

#### 4.4.3 Member Function Documentation

4.4.3.1 `virtual int IHashArray::hash ( std::string surname ) [pure virtual]`

Implemented in **HashArray** (p. 10).

4.4.3.2 `virtual void IHashArray::realloc_and_rehash ( ) [pure virtual]`

Implemented in **HashArray** (p. 10).

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

- **ihasharray.hh**

## 4.5 IList Class Reference

Interfejs listy.

```
#include <ilist.hh>
```

Inheritance diagram for IList:



#### Public Member Functions

- `virtual void add (const std::string &elem, const int &phone_number, int i)=0`
- `virtual int remove (int i)=0`
- `virtual int size ()=0`
- `virtual int search_by_key (std::string key)=0`
- `virtual int find_key_position (std::string key)=0`
- `virtual std::string get_hashed_key ()=0`
- `virtual ~IList ()`

### 4.5.1 Detailed Description

Interfejs listy.

Zawiera metody umożliwiające operacje na liście.

Definition at line 10 of file `ilist.hh`.

### 4.5.2 Constructor & Destructor Documentation

4.5.2.1 `virtual IList::~IList( ) [inline],[virtual]`

Definition at line 20 of file `ilist.hh`.

### 4.5.3 Member Function Documentation

4.5.3.1 `virtual void IList::add ( const std::string & elem, const int & phone_number, int i ) [pure virtual]`

Implemented in **List** (p. 15).

4.5.3.2 `virtual int IList::find_key_position ( std::string key ) [pure virtual]`

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

4.5.3.3 `virtual std::string IList::get_hashed_key ( ) [pure virtual]`

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

4.5.3.4 `virtual int IList::remove ( int i ) [pure virtual]`

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

4.5.3.5 `virtual int IList::search_by_key ( std::string key ) [pure virtual]`

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

4.5.3.6 `virtual int IList::size ( ) [pure virtual]`

Implemented in **List** (p. 17).

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

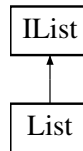
- **ilist.hh**

## 4.6 List Class Reference

Klasa listy.

```
#include <list.hh>
```

Inheritance diagram for List:



### Public Member Functions

- **List** ()
- **~List** ()
- void **add** (const std::string &elem, const int &phone\_number, int i)
- int **remove** (int i)
- int **size** ()
- void **show\_list** ()
- int **search\_by\_key** (std::string key)
- int **find\_key\_position** (std::string key)
- std::string **get\_hashed\_key** ()

### Private Attributes

- **Node** \* **front**
- **Node** \* **end**
- int **list\_size** =0

#### 4.6.1 Detailed Description

Klasa listy.

Zawiera metody umożliwiające operacje na liście.

Definition at line 29 of file list.hh.

#### 4.6.2 Constructor & Destructor Documentation

##### 4.6.2.1 List::List( ) [inline]

Definition at line 37 of file list.hh.

##### 4.6.2.2 List::~List( ) [inline]

Definition at line 41 of file list.hh.

#### 4.6.3 Member Function Documentation

##### 4.6.3.1 void List::add( const std::string & elem, const int & phone\_number, int i ) [virtual]

Funkcja dodająca element do listy

**Parameters**

<i>in</i>	<i>element</i>	typu string
<i>in</i>	<i>element</i>	typu int
<i>in</i>	<i>pozycja</i>	<i>i</i>

Implements **IList** (p. 14).

Definition at line 5 of file list.cpp.

**4.6.3.2 int List::find\_key\_position ( std::string key ) [virtual]**

Funkcja zwracająca pozycję danego klucza

**Parameters**

<i>in</i>	<i>element</i>	typu string
-----------	----------------	-------------

**Returns**

pozycja typu int

Implements **IList** (p. 14).

Definition at line 119 of file list.cpp.

**4.6.3.3 std::string List::get\_hashed\_key ( ) [virtual]**

Funkcja zwracająca klucz pierwszego elementu listy

**Returns**

klucz pierwszego elementu listy

Implements **IList** (p. 14).

Definition at line 145 of file list.cpp.

**4.6.3.4 int List::remove ( int i ) [virtual]**

Funkcja usuwająca element z listy Wyrzuca wyjątek EmptyListException jeśli lista jest pusta oraz WrongIndexException jeśli wybrano zły indeks.

**Returns**

Element typu int

Implements **IList** (p. 14).

Definition at line 46 of file list.cpp.

**4.6.3.5 int List::search\_by\_key ( std::string key ) [virtual]**

Funkcja zwracająca element typu int o podanym kluczu

## Parameters

<i>in</i>	<i>element</i>	typu string
-----------	----------------	-------------

## Returns

element typu int

Implements **IList** (p. 14).

Definition at line 106 of file list.cpp.

#### 4.6.3.6 void List::show\_list ( )

Funkcja wyświetlająca listę

Definition at line 131 of file list.cpp.

#### 4.6.3.7 int List::size ( ) [virtual]

Funkcja zwracająca rozmiar listy

## Returns

Rozmiar kolejki typu int

Implements **IList** (p. 14).

Definition at line 102 of file list.cpp.

### 4.6.4 Member Data Documentation

#### 4.6.4.1 Node\* List::end [private]

Wskaźnik na koniec listy

Definition at line 33 of file list.hh.

#### 4.6.4.2 Node\* List::front [private]

Wskaźnik na początek listy

Definition at line 32 of file list.hh.

#### 4.6.4.3 int List::list\_size=0 [private]

Rozmiar listy

Definition at line 34 of file list.hh.

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

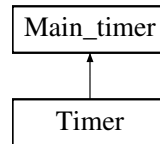
- **list.hh**
- **list.cpp**

## 4.7 Main\_timer Class Reference

Interfejs stopera.

```
#include <maintimer.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** ()

#### 4.7.1 Detailed Description

Interfejs stopera.

Zawiera metody umożliwiające mierzenie czasu.

Definition at line 9 of file maintimer.hh.

#### 4.7.2 Constructor & Destructor Documentation

4.7.2.1 virtual Main\_timer::~~Main\_timer ( ) [inline],[virtual]

Definition at line 16 of file maintimer.hh.

#### 4.7.3 Member Function Documentation

4.7.3.1 virtual long double Main\_timer::get\_ms\_time ( ) [pure virtual]

Implemented in **Timer** (p. 21).

4.7.3.2 virtual long double Main\_timer::return\_time ( ) [pure virtual]

Implemented in **Timer** (p. 21).

4.7.3.3 virtual void Main\_timer::tim\_start ( ) [pure virtual]

Implemented in **Timer** (p. 21).



4.7.3.4 `virtual void Main_timer::tim_stop ( ) [pure virtual]`

Implemented in **Timer** (p.21).

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

- **maintimer.hh**

## 4.8 Node Class Reference

Klasa węzła listy.

```
#include <list.hh>
```

### Private Attributes

- `std::string elem`
- `int number`
- `Node * next`

### Friends

- class **List**

### 4.8.1 Detailed Description

Klasa węzła listy.

Zawiera element węzła oraz wskaźnik na następny węzeł.

Definition at line 14 of file list.hh.

### 4.8.2 Friends And Related Function Documentation

4.8.2.1 `friend class List [friend]`

Definition at line 15 of file list.hh.

### 4.8.3 Member Data Documentation

4.8.3.1 `std::string Node::elem [private]`

Element listy

Definition at line 18 of file list.hh.

4.8.3.2 `Node* Node::next [private]`

Wskaźnik na kolejny węzeł

Definition at line 20 of file list.hh.

#### 4.8.3.3 `int Node::number` `[private]`

Drugi element listy

Definition at line 19 of file list.hh.

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

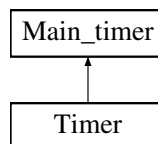
- **list.hh**

## 4.9 Timer Class Reference

Klasa stopera.

```
#include <timer.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**

### 4.9.1 Detailed Description

Klasa stopera.

Zawiera metody umożliwiające mierzenie czasu. Dokładny opis metod w dokumentacji projektu Lab2.

Definition at line 11 of file timer.hh.

### 4.9.2 Constructor & Destructor Documentation

#### 4.9.2.1 `Timer::~Timer( )` `[inline]`

Definition at line 21 of file timer.hh.

### 4.9.3 Member Function Documentation

#### 4.9.3.1 `long double Timer::get_ms_time ( ) [virtual]`

Implements **Main\_timer** (p. 18).

Definition at line 25 of file timer.hh.

#### 4.9.3.2 `long double Timer::return_time ( ) [virtual]`

Implements **Main\_timer** (p. 18).

Definition at line 47 of file timer.hh.

#### 4.9.3.3 `void Timer::tim_start ( ) [virtual]`

Implements **Main\_timer** (p. 18).

Definition at line 35 of file timer.hh.

#### 4.9.3.4 `void Timer::tim_stop ( ) [virtual]`

Implements **Main\_timer** (p. 19).

Definition at line 41 of file timer.hh.

### 4.9.4 Member Data Documentation

#### 4.9.4.1 `long double Timer::time_of_start [private]`

Definition at line 13 of file timer.hh.

#### 4.9.4.2 `long double Timer::time_of_stop [private]`

Definition at line 14 of file timer.hh.

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

- **timer.hh**



## Chapter 5

# File Documentation

### 5.1 asarray.cpp File Reference

```
#include "hasharray.hh"
#include "list.hh"
#include "asarray.hh"
#include "timer.hh"
#include <string>
#include <iostream>
#include <fstream>
```

### 5.2 asarray.hh File Reference

```
#include <string>
#include "list.hh"
#include "hasharray.hh"
#include "iasarray.hh"
```

#### Classes

- class **AsArray**

*Klasa tablicy asocjacyjnej.*

### 5.3 hasharray.cpp File Reference

```
#include "hasharray.hh"
#include "asarray.hh"
#include "list.hh"
#include <string>
#include <iostream>
```

## 5.4 hasharray.hh File Reference

```
#include "ihasharray.hh"
#include <string>
#include "list.hh"
```

### Classes

- class **HashArray**

*Klasa tablicy z haszowaniem.*

## 5.5 iasarray.hh File Reference

```
#include <string>
```

### Classes

- class **IAsArray**

*Interfejs tablicy asocjacyjnej.*

## 5.6 ihasharray.hh File Reference

```
#include "list.hh"
#include <string>
```

### Classes

- class **IHashArray**

*Interfejs tablicy z haszowaniem.*

## 5.7 ilist.hh File Reference

```
#include <string>
```

### Classes

- class **IList**

*Interfejs listy.*

## 5.8 list.cpp File Reference

```
#include "list.hh"  
#include <iostream>  
#include <string>
```

## 5.9 list.hh File Reference

```
#include "ilist.hh"  
#include <string>
```

### Classes

- class **Node**  
*Klasa węzła listy.*
- class **List**  
*Klasa listy.*

## 5.10 maintimer.hh File Reference

### Classes

- class **Main\_timer**  
*Interfejs stopera.*

## 5.11 test.cpp File Reference

```
#include <iostream>  
#include <string>  
#include "list.hh"  
#include "hasharray.hh"  
#include "asarray.hh"
```

### Functions

- int **main** ()

### 5.11.1 Function Documentation

#### 5.11.1.1 int main ( )

Definition at line 8 of file test.cpp.

## 5.12 timer.hh File Reference

```
#include <sys/time.h>
#include "maintimer.hh"
```

### Classes

- class **Timer**  
*Klasa stopera.*



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