

Glossygloss

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Generated by Doxygen 1.8.6

Tue Apr 1 2014 19:47:04

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Chapter 1

glossygloss

Glossygloss is set of classes to use several data structures as [Tree](#) and [Hashtable](#).

More might come soon.

Documentation

All documented things are [here](#).

A PDF file (refman.pdf) is also available for offline doc.

You can generate the doc using [doxygen](#) and the config file `doxygen_config`

Usefull links :

- [C++ programming on wikibooks](#)
- what else ?

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Chapter 2

Hierarchical Index

2.1 Class Hierarchy

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

Alveole< K, V >	9
exception	
HashException	11
TreeException	20
Hashtable< K, V >	13
Node< T >	15
Tree< T >	18

Chapter 3

Class Index

3.1 Class List

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

Alveole< K, V >	Class to define Hashtable alveoles	9
HashException	Exception class to manage Hashtable errors	11
Hashtable< K, V >	Maps a key to a value	13
Node< T >	Defines tree nodes	15
Tree< T >	Tree is a recursive structure using nodes	18
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Chapter 4

File Index

4.1 File List

Here is a list of all files with brief descriptions:

src/ hashtable.hpp	23
src/ tree.hpp	24

Chapter 5

Class Documentation

5.1 `Alveole< K, V >` Class Template Reference

Class to define `Hashtable` alveoles.

```
#include <hashtable.hpp>
```

Public Member Functions

- `Alveole` (const `Alveole< K, V >` &other)
- `Alveole` (K key, V value)
- `Alveole` ()
- `Alveole` (K key, V value, `Alveole< K, V >` *next)
- `~Alveole` ()
- K `getKey` ()
- V `getValue` ()
- `Alveole< K, V >` * `getNext` ()
- void `setValue` (V n_value)
- void `setNext` (`Alveole< K, V >` *n_next)
- string `toString` ()

Private Attributes

- K `_key`
- V `_value`
- `Alveole< K, V >` * `_next`

5.1.1 Detailed Description

```
template<typename K, typename V>class Alveole< K, V >
```

Class to define `Hashtable` alveoles.

`Alveole` class embodies a `Hashtable`'s alveole. An alveole store a pair <k,v>. Alveoles are simply-linked elements.

5.1.2 Constructor & Destructor Documentation

5.1.2.1 `template<typename K, typename V> Alveole< K, V >::Alveole (const Alveole< K, V > &other)` `[inline]`

next aveole Copy constructor

Parameters

in	<i>other</i>	the alveole to copy
----	--------------	---------------------

5.1.2.2 `template<typename K, typename V> Alveole< K, V >::Alveole (K key, V value)` [inline]

Pair constructor

Parameters

in	<i>key</i>	key of the pair
in	<i>value</i>	value of the pair

5.1.2.3 `template<typename K, typename V> Alveole< K, V >::Alveole ()` [inline]

Empty constructor create an 'empty' alveole

5.1.2.4 `template<typename K, typename V> Alveole< K, V >::Alveole (K key, V value, Alveole< K, V > * next)`
[inline]

Complex constructor

Parameters

in	<i>key</i>	key of the pair
in	<i>value</i>	value of the pair
in	<i>next</i>	adresse to the next alveole

5.1.2.5 `template<typename K, typename V> Alveole< K, V >::~~Alveole ()` [inline]

Destructor for [Alveole](#)

5.1.3 Member Function Documentation

5.1.3.1 `template<typename K, typename V> K Alveole< K, V >::getKey ()` [inline]

Get the key of an alveole

Parameters

out	<i>key</i>	key stored into the alveole
-----	------------	-----------------------------

5.1.3.2 `template<typename K, typename V> Alveole<K,V>* Alveole< K, V >::getNext ()` [inline]

Which alveole coming next ?

Parameters

out	<i>ptr</i>	memory adress of the next alveole
-----	------------	-----------------------------------

5.1.3.3 `template<typename K, typename V> V Alveole< K, V >::getValue ()` [inline]

Get the value stored into an alveole

Parameters

out	<i>value</i>	value of the alveole
-----	--------------	----------------------

5.1.3.4 `template<typename K, typename V> void Alveole< K, V >::setNext (Alveole< K, V > * n_next)` `[inline]`

Set the next address of the next alveole

Parameters

in	<i>n_next</i>	adress of the new next alveole
----	---------------	--------------------------------

5.1.3.5 `template<typename K, typename V> void Alveole< K, V >::setValue (V n_value)` `[inline]`

Set the value stored into an alveole

Parameters

in	<i>n_value</i>	The new value of the pair
----	----------------	---------------------------

5.1.3.6 `template<typename K, typename V> string Alveole< K, V >::toString ()` `[inline]`

Return a string description of the pair stored into the alveole

Parameters

out	<i>desc</i>	a string representation of the alveole
-----	-------------	--

5.1.4 Member Data Documentation

5.1.4.1 `template<typename K, typename V> K Alveole< K, V >::_key` `[private]`

5.1.4.2 `template<typename K, typename V> Alveole<K,V>* Alveole< K, V >::_next` `[private]`

value of the pair

5.1.4.3 `template<typename K, typename V> V Alveole< K, V >::_value` `[private]`

key of the pair

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

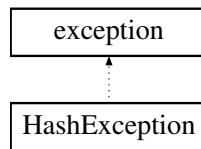
- [src/hashtable.hpp](#)

5.2 HashException Class Reference

Exception class to manage [Hashtable](#) errors.

```
#include <hashtable.hpp>
```

Inheritance diagram for HashException:



Public Member Functions

- [HashException](#) (const char *cause)
- virtual [~HashException](#) () throw ()
- virtual const char * [what](#) () const throw ()

Private Attributes

- const char * [_cause](#)

5.2.1 Detailed Description

Exception class to manage [Hashtable](#) errors.

5.2.2 Constructor & Destructor Documentation

5.2.2.1 `HashException::HashException (const char * cause)` `[inline]`

store exception description constructor called then HashExceptions are threw

Parameters

<code>in</code>	<code><i>cause</i></code>	description of exception origin
-----------------	---------------------------	---------------------------------

5.2.2.2 `virtual HashException::~~HashException () throw)` `[inline], [virtual]`

destructor currently, do anything special

5.2.3 Member Function Documentation

5.2.3.1 `virtual const char* HashException::what () const throw)` `[inline], [virtual]`

virtual fonction from superclass, usefull to get the exception description

5.2.4 Member Data Documentation

5.2.4.1 `const char* HashException::_cause` `[private]`

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

- [src/hashtable.hpp](#)

5.3 Hashtable< K, V > Class Template Reference

Maps a key to a value.

```
#include <hashtable.hpp>
```

Public Member Functions

- [Hashtable](#) ()
- [~Hashtable](#) ()
- bool [contains](#) (const K &key)
- V [get](#) (const K &key)
- bool [isEmpty](#) ()
- void [put](#) (K key, V value)
- void [remove](#) (const K &key)
FIXME : remove last element of a list lead to a seg. fault.
- string [toString](#) ()

Private Attributes

- [Alveole](#)< K, V > ** [_table](#)

5.3.1 Detailed Description

```
template<typename K, typename V>class Hashtable< K, V >
```

Maps a key to a value.

5.3.2 Constructor & Destructor Documentation

5.3.2.1 `template<typename K , typename V > Hashtable< K, V >::Hashtable ()` `[inline]`

array of alveoles Simple constructor

5.3.2.2 `template<typename K , typename V > Hashtable< K, V >::~~Hashtable ()` `[inline]`

Destructor

5.3.3 Member Function Documentation

5.3.3.1 `template<typename K , typename V > bool Hashtable< K, V >::contains (const K & key)` `[inline]`

Do table contains key ?

Parameters

in	<i>key</i>	key to find
out	<i>bool</i>	True if the key is here, else false

5.3.3.2 `template<typename K , typename V > V Hashtable< K, V >::get (const K & key)` `[inline]`

Return the value mapped to the specified key

Parameters

in	<i>key</i>	a key in the hashtable
out	<i>value</i>	value associated with the key

Exceptions

<i>HashException</i>	threw if key is not in the hashtable
--------------------------------------	--------------------------------------

5.3.3.3 `template<typename K , typename V > bool Hashtable< K, V >::isEmpty () [inline]`

Tests if this hashtable maps no keys to values.

Parameters

out	<i>bool</i>	true if no elements in the hashtable, else false;
-----	-------------	---

5.3.3.4 `template<typename K , typename V > void Hashtable< K, V >::put (K key, V value) [inline]`

Map the specified key to the specified value in this hashtable. or update the mapped value to the key

Parameters

in	<i>key</i>	key of the pair
in	<i>value</i>	value of the pair

5.3.3.5 `template<typename K , typename V > void Hashtable< K, V >::remove (const K & key) [inline]`

FIXME : remove last element of a list lead to a seg. fault.

Remove the key (and its corresponding value) from this hashtable.

Parameters

in	<i>key</i>	Key of the pair to delete
----	------------	---------------------------

Exceptions

<i>HashException</i>	threw if table does not contain key
--------------------------------------	-------------------------------------

5.3.3.6 `template<typename K , typename V > string Hashtable< K, V >::toString () [inline]`

Return a description of the hashtable, enclosed in braces as well as {key, value}.

Parameters

out	<i>desc</i>	a string representation of this hashtable.
-----	-------------	--

5.3.4 Member Data Documentation

5.3.4.1 `template<typename K , typename V > Alveole<K,V>** Hashtable< K, V >::_table [private]`

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

- [src/hashtable.hpp](#)

5.4 Node< T > Class Template Reference

Defines tree nodes.

```
#include <tree.hpp>
```

Public Member Functions

- [Node](#) (const [Node](#)< T > &other) [_tag](#)(other._tag)
- [_children](#) (other._children) [Node](#)< T >(T data)
- [~Node](#) ()
- [Node](#)< T > & [operator=](#) ([Node](#)< T > &other)
- [operator==](#) (const [Node](#)< T > &lhs, const [Node](#)< T > &rhs)
- bool [operator!=](#) (const [Node](#)< T > &lhs, const [Node](#)< T > &rhs)
- bool [isLeaf](#) ()
- int [height](#) ()
- void [append](#) (< T > n_data)
- void [remove](#) (< T > data)
- string [toString](#) ()

get a representation of the node

Private Attributes

- T [_tag](#)
letter stored into Knot, the tag
- list< Knot< T > > [_children](#)
children of the Knot

5.4.1 Detailed Description

```
template<typename T = char>class Node< T >
```

Defines tree nodes.

Class for nodes of a tree. A Knot store a tag and can have several children

5.4.2 Constructor & Destructor Documentation

5.4.2.1 `template<typename T = char> Node< T >::Node (const Node< T > & other)`

Copy constructor

Parameters

in	other	Node to copy
--------------------	-----------------------	------------------------------

5.4.2.2 `template<typename T = char> Node< T >::~~Node () [inline]`

Destructor for [Node](#)

5.4.3 Member Function Documentation

5.4.3.1 `template<typename T = char> Node< T >::_children (other._children)` `[inline]`

Simple constructor

Parameters

in	<i>data</i>	to store into the Node
----	-------------	--

5.4.3.2 `template<typename T = char> void Node< T >::append (< T > n_data) [inline]`

Hook up a new child to the node

Parameters

in	<i>n_data</i>	new data to store as a child of the node
----	---------------	--

5.4.3.3 `template<typename T = char> int Node< T >::height () [inline]`

The height of the node

Parameters

out	<i>hgt</i>	height of the node
-----	------------	--------------------

5.4.3.4 `template<typename T = char> bool Node< T >::isLeaf () [inline]`

Is the node a leaf ?

Parameters

out	<i>bool</i>	true, if no child, else false
-----	-------------	-------------------------------

5.4.3.5 `template<typename T = char> bool Node< T >::operator!= (const Node< T > & lhs, const Node< T > & rhs) [inline]`

inequality operator

Parameters

in	<i>lhs</i>	first node to compare
in	<i>rhs</i>	second node to compare
out	<i>bool</i>	true if nodes have not the same memory adress, else false

5.4.3.6 `template<typename T = char> Node<T>& Node< T >::operator= (Node< T > & other) [inline]`

assignment operator overload

Parameters

in	<i>other</i>	node to assign
out	<i>note</i>	assigned node

5.4.3.7 `template<typename T = char> Node< T >::operator== (const Node< T > & lhs, const Node< T > & rhs) [inline]`

equality operator

Parameters

in	<i>lhs</i>	left hand side, first node to compare
in	<i>rhs</i>	right hand side, second node to compare
out	<i>bool</i>	true if nodes have the same memory adress, else false

5.4.3.8 `template<typename T = char> void Node< T >::remove (< T > data)` `[inline]`

Remove a leaf from the node

Parameters

in	<i>data</i>	data of the node's tag to remove
----	-------------	----------------------------------

5.4.3.9 `template<typename T = char> string Node< T >::toString ()`

get a representation of the node

5.4.4 Member Data Documentation

5.4.4.1 `template<typename T = char> list<Knot<T> > Node< T >::_children` `[private]`

children of the Knot

5.4.4.2 `template<typename T = char> T Node< T >::_tag` `[private]`

letter stored into Knot, the tag

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

- [src/tree.hpp](#)

5.5 Tree< T > Class Template Reference

[Tree](#) is a recursive structure using nodes.

```
#include <tree.hpp>
```

Public Member Functions

- [Tree](#) (const [Tree](#)< T > &)
copy constructor
- [Tree](#) ()
common constructor
- [~Tree](#) ()
destructor
- [Tree](#)< T > & [operator=](#) (Tree< T >)
assignment operator
- bool [operator==](#) (const [Tree](#)< T > &, const [Tree](#)< T > &)
equal operator
- bool [operator!=](#) (const [Tree](#)< T > &, const [Tree](#)< T > &)
ne operator

- bool `contains` (T)
Is the element in the tree ?
- int `count` (T)
count among of appearances of a particular element
- int `height` ()
the height of the tree
- void `add` (T)
add an element in the tree
- void `remove` (T)
remove an element from the tree
- T[] `elements` ()
get the whole list of elements in the tree

Private Attributes

- `Node< T > _root`

5.5.1 Detailed Description

`template<typename T = string> class Tree< T >`

`Tree` is a recursive structure using nodes.

A root value and subtrees of children, represented as a set of linked nodes.

5.5.2 Constructor & Destructor Documentation

5.5.2.1 `template<typename T = string> Tree< T >::Tree (const Tree< T > &)`

copy constructor

5.5.2.2 `template<typename T = string> Tree< T >::Tree ()`

common constructor

5.5.2.3 `template<typename T = string> Tree< T >::~~Tree ()`

destructor

5.5.3 Member Function Documentation

5.5.3.1 `template<typename T = string> void Tree< T >::add (T)`

add an element in the tree

5.5.3.2 `template<typename T = string> bool Tree< T >::contains (T)`

Is the element in the tree ?

5.5.3.3 `template<typename T = string> int Tree< T >::count (T)`

count among of appearances of a particular element

5.5.3.4 `template<typename T = string> T [] Tree< T >::elements ()`

get the whole list of elements in the tree

5.5.3.5 `template<typename T = string> int Tree< T >::height ()`

the height of the tree

5.5.3.6 `template<typename T = string> bool Tree< T >::operator!= (const Tree< T > & , const Tree< T > &)`

ne operator

5.5.3.7 `template<typename T = string> Tree<T>& Tree< T >::operator= (Tree< T >)`

assignment operator

5.5.3.8 `template<typename T = string> bool Tree< T >::operator== (const Tree< T > & , const Tree< T > &)`

equal operator

5.5.3.9 `template<typename T = string> void Tree< T >::remove (T)`

remove an element from the tree

5.5.4 Member Data Documentation

5.5.4.1 `template<typename T = string> Node<T> Tree< T >::_root [private]`

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

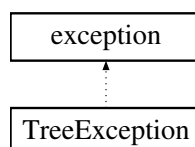
- [src/tree.hpp](#)

5.6 TreeException Class Reference

exception class for trees

```
#include <tree.hpp>
```

Inheritance diagram for TreeException:



Public Member Functions

- [TreeException](#) (char *cause)
- virtual [~BagException](#) () throw ()
- virtual const char * [what](#) () const throw ()

Private Attributes

- char * [_cause](#)

5.6.1 Detailed Description

exception class for trees

Usefull to manage errors and the unforeseen

5.6.2 Constructor & Destructor Documentation

5.6.2.1 [TreeException::TreeException](#) (char * *cause*) [\[inline\]](#)

store exception description constructor called then TreeExceptions are threw

Parameters

<i>in</i>	<i>cause</i>	description of exception origin
-----------	--------------	---------------------------------

5.6.2.2 [virtual TreeException::~~BagException](#) () throw) [\[inline\]](#), [\[virtual\]](#)

destructor currently, do anything special

5.6.3 Member Function Documentation

5.6.3.1 [virtual const char* TreeException::what](#) () const throw) [\[inline\]](#), [\[virtual\]](#)

virtual fonction from superclass, usefull to get the exception description

5.6.4 Member Data Documentation

5.6.4.1 [char* TreeException::_cause](#) [\[private\]](#)

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

- [src/tree.hpp](#)

Chapter 6

File Documentation

6.1 README.md File Reference

6.2 src/hashtable.hpp File Reference

```
#include <string>
#include <cassert>
```

Classes

- class [HashException](#)
Exception class to manage [Hashtable](#) errors.
- class [Alveole< K, V >](#)
Class to define [Hashtable](#) alveoles.
- class [Hashtable< K, V >](#)
Maps a key to a value.

Macros

- #define [END](#) 0
macro to define end of alveole chains
- #define [ARRAYSIZE](#) 10
macro to define size of hash arrays

Functions

- template<typename K >
unsigned [computehash](#) (K element)

6.2.1 Detailed Description

6.2.2 File description

data structure to store pairs in a table a hashcode is compute with k to evaluate the suitable place to store the pair

!! WARNING: int hashCode(K key) must be implemented !!

6.2.3 Copyright

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You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA.

6.2.4 File informations

\$Date\$ 2014/03/27 \$Rev\$ 0.2 \$Author\$ Benjamin Sientzoff \$URL\$ <http://www.github.com/blasterbug>

6.2.5 Macro Definition Documentation

6.2.5.1 #define ARRAYSIZE 10

macro to define size of hash arrays

6.2.5.2 #define END 0

macro to define end of alveole chains

6.2.6 Function Documentation

6.2.6.1 template<typename K > unsigned computehash (K element)

Fonction you must define

Parameters

in	<i>element</i>	element to compute hashcode from
out	<i>hashcode</i>	the hashcode of element, an unsigned integer

template<> unsigned computehash<string>(string element) { your implementation of hashcode function }

6.3 src/tree.hpp File Reference

```
#include <cassert>
#include <string>
#include <list>
```

Classes

- class [TreeException](#)
exception class for trees
- class [Node< T >](#)
Defines tree nodes.

- class `Tree< T >`
Tree is a recursive structure using nodes.

6.3.1 Detailed Description

6.3.2 File description

Implémentation d'un arbre pour stocker des mots. Chaque noeud stocke une lettre.

6.3.3 Copyright

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6.3.4 File informations

\$Date\$ 2014/03/27 \$Rev\$ 0.1 \$Author\$ Benjamin Sientzoff \$URL\$ <http://www.github.com/blasterbug>

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