PA04 Timer

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Contents

Chapter 1

Hierarchical Index

1.1 Class Hierarchy

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

Chapter 2

Class Index

2.1 Class List

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

Chapter 3

File Index

3.1 File List

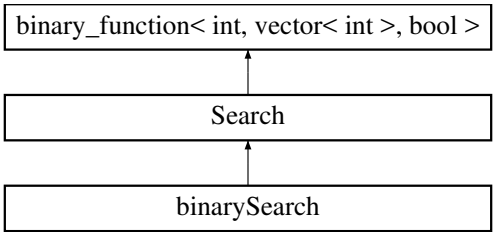
Here is a list of all files with brief descriptions:

Chapter 4

Class Documentation

4.1 binarySearch Class Reference

Inheritance diagram for binarySearch:



Public Member Functions

- bool operator() (int searchValue, const vector< int > &keys) const

4.1.1 Member Function Documentation

4.1.1.1 bool binarySearch::operator() (int *searchValue,* const vector< int > & *keys*) const [inline], [virtual]

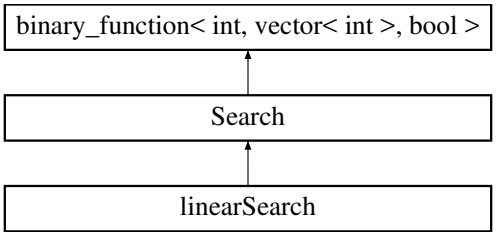
Implements Search.

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

- search.cpp

4.2 linearSearch Class Reference

Inheritance diagram for linearSearch:



Public Member Functions

- bool operator() (int searchValue, const vector< int > &keys) const

4.2.1 Member Function Documentation

4.2.1.1 bool linearSearch::operator() (int *searchValue,* const vector< int > & *keys*) const [inline], [virtual]

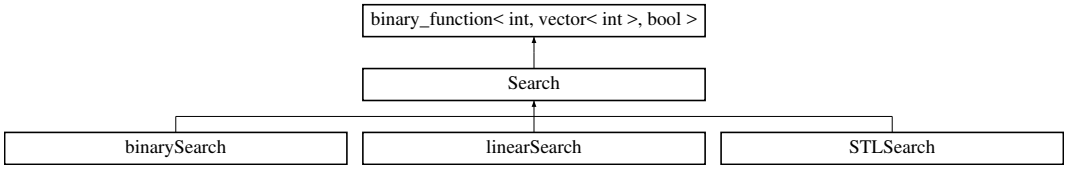
Implements Search.

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

- search.cpp

4.3 Search Class Reference

Inheritance diagram for Search:

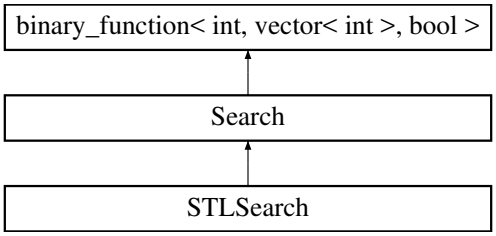


The documentation for this class was generated from the following file:

- search.cpp

4.4 STLSearch Class Reference

Inheritance diagram for STLSearch:



Public Member Functions

- bool operator() (int searchValue, const vector< int > &keys) const

4.4.1 Member Function Documentation

4.4.1.1 bool STLSearch::operator() (int *searchValue,* const vector< int > & *keys*) const [inline], [virtual]

Implements Search.

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

- search.cpp

4.5 TestVector Class Reference

`#include <testvector.h>`

Public Member Functions

- TestVector (int size)
- TestVector (const TestVector &rhs)
- TestVector & operator++ ()
- TestVector operator++ (int ignored)
- int operator[ ] (int loc) const

4.5.1 Constructor & Destructor Documentation

4.5.1.1 TestVector::TestVector (int *size*)

4.5.1.2 TestVector::TestVector (const TestVector & *rhs*)

4.5.2 Member Function Documentation

4.5.2.1 TestVector & TestVector::operator++ ( )

4.5.2.2 TestVector TestVector::operator++ (int *ignored*)

4.5.2.3 int TestVector::operator[ ] (int *loc*) const

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

- testvector.h
- testvector.cpp

4.6 Timer Class Reference

`#include <Timer.h>`

Public Member Functions

- Timer ()
- void start () throw (runtime_error)
- void stop () throw (logic_error)
- double getElapsedTime () const throw (logic_error)

4.6.1 Constructor & Destructor Documentation

4.6.1.1 Timer::Timer ( )

<Constructor>

Parameters

None	

Precondition

None

Postcondition

timerWasStarted is set to 0

4.6.2 Member Function Documentation

4.6.2.1 double Timer::getElapsedTime ( ) const throw logic_error)

Returns

None
Timer has been started and stopped
Length of time that has passed has been calculated

4.6.2.2 void Timer::start ( ) throw runtime_error)

<Marks the beginning of a time interval (starts the timer)>

Parameters

None	

Precondition

None

Postcondition

Timer has been started

Exceptions

Requires	the clock function is working correctly.

4.6.2.3 void Timer::stop ( ) throw logic_error)

<Marks the end of a timer interval (stops the timer)>

Parameters

None	

Precondition

Timer has started

Postcondition

Timer has been stopped @ exception Requires the beginning of a time interval has been marked.

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

- Timer.h
- Timer.cpp

Chapter 5

File Documentation

5.1 config.h File Reference

Macros

- #define LAB13_TEST1 0
- #define LAB13_TEST2 0

5.1.1 Macro Definition Documentation

5.1.1.1 #define LAB13_TEST1 0

Timer class (Lab 13) configuration file. Activate test 'N' by defining the corresponding LAB12_TESTN to have the value 1.

5.1.1.2 #define LAB13_TEST2 0

5.2 constructor.cpp File Reference

```
#include <iostream>
#include <string>
#include "Timer.h"
#include "testvector.h"
```

Macros

- #define runTest(Type) testConstructor<Type>(numValues, #Type)

Functions

- template<typename DataType >
  int testCompute (DataType value)
- template<>
  int testCompute< int > (int value)
- template<>
  int testCompute< double > (double value)
- template<typename DataType >
  void testConstructor (int numValues, string name)
- int main (int argc, char **argv)

Variables

- const int numRepetitions = 1000000

5.2.1 Macro Definition Documentation

5.2.1.1 #define runTest(*Type*) testConstructor<Type>(numValues, #Type)

5.2.2 Function Documentation

5.2.2.1 int main (int *argc,* char ** *argv*)

5.2.2.2 template<typename DataType > int testCompute (DataType *value*)

5.2.2.3 template<> int testCompute< double > (double *value*)

5.2.2.4 template<> int testCompute< int > (int *value*)

5.2.2.5 template<typename DataType > void testConstructor (int *numValues,* string *name*)

5.2.3 Variable Documentation

5.2.3.1 const int numRepetitions = 1000000

5.3 inc.cpp File Reference

```
#include <iostream>
#include "Timer.h"
#include "testvector.h"
```

Functions

- int main (int argc, char **argv)

Variables

- const int numRepetitions = 1000000

5.3.1 Function Documentation

5.3.1.1 int main (int *argc,* char ** *argv*)

5.3.2 Variable Documentation

5.3.2.1 const int numRepetitions = 1000000

5.4 search.cpp File Reference

```
#include <iostream>
#include <algorithm>
#include <vector>
#include "Timer.h"
```

Classes

- class Search
- class linearSearch
- class binarySearch
- class STLSearch

Functions

- int main (int argc, char **argv)

Variables

- const int numSearches = 100000

5.4.1 Function Documentation

5.4.1.1 int main (int *argc,* char ** *argv*)

5.4.2 Variable Documentation

5.4.2.1 const int numSearches = 100000

5.5 sort.cpp File Reference

```
#include <iostream>
#include <algorithm>
#include <vector>
#include "Timer.h"
```

Functions

- void selectionSort (vector< int >::iterator front, vector< int >::iterator back)
- void quickSort (vector< int >::iterator front, vector< int >::iterator back)
- void timeSort (void(*fcn)(vector< int >::iterator front, vector< int >::iterator back), const string name, const vector< int > &masterList, const Timer &overhead)
- int main (int argc, char **argv)

Variables

- const int numSorts = 100

5.5.1 Function Documentation

5.5.1.1 int main (int *argc,* char ** *argv*)

5.5.1.2 void quickSort (vector< int >::iterator *front,* vector< int >::iterator *back*)

5.5.1.3 void selectionSort (vector< int >::iterator *front,* vector< int >::iterator *back*)

5.5.1.4 void timeSort (void(*)(vector< int >::iterator front, vector< int >::iterator back) *fcn,* const string *name,* const vector< int > & *masterList,* const Timer & *overhead*)

5.5.2 Variable Documentation

5.5.2.1 const int numSorts = 100

5.6 test13.cpp File Reference

```
#include <iostream>
#include <cctype>
#include <ctime>
#include "Timer.h"
```

Functions

- void wait (int secs)
- void print_help ()
- int main ()

5.6.1 Function Documentation

5.6.1.1 int main ( )

5.6.1.2 void print_help ( )

5.6.1.3 void wait (int *secs*)

5.7 testtimer.cpp File Reference

```
#include "Timer.h"
#include <iostream>
#include <stddef.h>
#include <sys/time.h>
#include <cstdio>
```

Functions

- double getElapsed (timeval &t1)
- int main (int argc, char **argv)

5.7.1 Function Documentation

5.7.1.1 double getElapsed (timeval & *t1*)

5.7.1.2 int main (int *argc,* char ** *argv*)

5.8 testvector.cpp File Reference

```
#include <functional>
#include <algorithm>
#include "testvector.h"
```

5.9 testvector.h File Reference

```
#include <stdexcept>
#include <iostream>
#include <vector>
```

Classes

- class TestVector

5.10 Timer.cpp File Reference

```
#include <ctime>
#include <stdexcept>
#include <iostream>
#include <sys/time.h>
#include "Timer.h"
```

5.11 Timer.h File Reference

```
#include <ctime>
#include <stdexcept>
#include <iostream>
#include <sys/time.h>
```

Classes

- class Timer

5.11.1 Detailed Description

Author

Leah Kramer

Date

09/26/2017 <This program="" runs="" a="" timer>=""></This>

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