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Chapter 1

Hierarchical Index

1.1 Class Hierarchy

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

zmogus 12
  studentas 7

Chapter 2

Class Index

2.1 Class List

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

studentas 7
zmogus 12

Chapter 3

File Index

3.1 File List

Here is a list of all files with brief descriptions:

headers/error.h 15
headers/function.h 16
headers/main.h 19
headers/studentas.h 20
headers/zmogus.h 22
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source/function.cpp 23
source/main.cpp 26

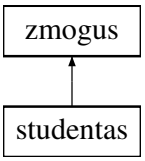
Chapter 4

Class Documentation

4.1 studentas Class Reference

`#include <studentas.h>`

Inheritance diagram for studentas:



Public Member Functions

- studentas ()
- studentas (const string &vard, const string &pavard)
- string getName () const
- string getSurname () const
- vector< int > getND () const
- int getEgz () const
- double getMed () const
- double getVid () const
- int ndSize () const
- void ndSort ()
- int ndSum ()
- int getLastND ()
- void setName (string vard)
- void setSurname (string pav)
- void setEgz (int egz2)
- void setMed (double med2)
- void setVid (double vid2)
- void setND (int nd2)
- void deleteLastNd ()
- double finalGrade (int n, int sum, int egz)
- void clearStudent ()
- double median (const vector< int > &nd, int n, int egz)
- void print () const override
- studentas (const studentas &LaikinasStudentas)
- studentas (studentas &&Laikinasstudentas)
- studentas & operator= (const studentas &Laikinasstudentas)
- studentas & operator= (studentas &&Laikinasstudentas)
- ~studentas ()

Public Member Functions inherited from zmogus

- string getName () const
- string getSurname () const
- void setName (string vard)
- void setSurname (string pav)

Friends

- istringstream & operator>> (istringstream &filename, studentas &Laikinasstudentas)
- istream & operator>> (istream &manual, studentas &Laikinasstudentas)
- ostream & operator<< (ostream &console, const studentas &Laikinasstudentas)
- ofstream & operator<< (ofstream &filename, const studentas &Laikinasstudentas)

Additional Inherited Members

Protected Member Functions inherited from zmogus

- zmogus ()
- zmogus (const string &vard, const string &pav)
- virtual ~zmogus ()

Protected Attributes inherited from zmogus

- string name
- string surname

4.1.1 Constructor & Destructor Documentation

4.1.1.1 studentas() [1/4]

```
studentas::studentas ()
```

4.1.1.2 studentas() [2/4]

```
studentas::studentas (
            const string & vard,
            const string & pavard)
```

4.1.1.3 studentas() [3/4]

```
studentas::studentas (
            const studentas & LaikinasStudentas)
```

4.1.1.4 studentas() [4/4]

```
studentas::studentas (
            studentas && Laikinasstudentas)
```

4.1.1.5 ~studentas()

```
studentas::~studentas ()
```

4.1.2 Member Function Documentation

4.1.2.1 clearStudent()

```
void studentas::clearStudent ()  [inline]
```

4.1.2.2 deleteLastNd()

```
void studentas::deleteLastNd ()  [inline]
```

4.1.2.3 finalGrade()

```
double studentas::finalGrade (
            int n,
            int sum,
            int egz)
```

4.1.2.4 getEgz()

```
int studentas::getEgz () const  [inline]
```

4.1.2.5 getLastND()

```
int studentas::getLastND ()  [inline]
```

4.1.2.6 getMed()

```
double studentas::getMed () const  [inline]
```

4.1.2.7 getName()

```
string studentas::getName () const  [inline]
```

4.1.2.8 getND()

```
vector< int > studentas::getND () const  [inline]
```

4.1.2.9 getSurname()

```
string studentas::getSurname () const  [inline]
```

4.1.2.10 getVid()

```
double studentas::getVid () const  [inline]
```

4.1.2.11 median()

```
double studentas::median (
            const vector< int > & nd,
            int n,
            int egz)
```

4.1.2.12 ndSize()

```
int studentas::ndSize () const  [inline]
```

4.1.2.13 ndSort()

```
void studentas::ndSort ()  [inline]
```

4.1.2.14 ndSum()

```
int studentas::ndSum ()  [inline]
```

4.1.2.15 operator=() [1/2]

```
studentas & studentas::operator= (
            const studentas & Laikinasstudentas)
```

4.1.2.16 operator=() [2/2]

```
studentas & studentas::operator= (
            studentas && Laikinasstudentas)
```

4.1.2.17 print()

```
void studentas::print () const  [inline], [override], [virtual]
```

Implements zmogus.

4.1.2.18 setEgz()

```
void studentas::setEgz (
            int egz2)  [inline]
```

4.1.2.19 setMed()

```
void studentas::setMed (
            double med2)  [inline]
```

4.1.2.20 setName()

```
void studentas::setName (
            string vard)  [inline]
```

4.1.2.21 setND()

```
void studentas::setND (
            int nd2)  [inline]
```

4.1.2.22 setSurname()

```
void studentas::setSurname (
            string pav)  [inline]
```

4.1.2.23 setVid()

```
void studentas::setVid (
            double vid2)  [inline]
```

4.1.3 Friends And Related Symbol Documentation

4.1.3.1 operator<< [1/2]

```
ofstream & operator<< (
            ofstream & filename,
            const studentas & Laikinasstudentas)  [friend]
```

4.1.3.2 operator<< [2/2]

```
ostream & operator<< (
            ostream & console,
            const studentas & Laikinasstudentas)  [friend]
```

4.1.3.3 operator>> [1/2]

```
istream & operator>> (
            istream & manual,
            studentas & Laikinasstudentas)  [friend]
```

4.1.3.4 operator>> [2/2]

```
istringstream & operator>> (
            istringstream & filename,
            studentas & Laikinasstudentas)  [friend]
```

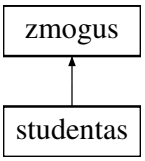
The documentation for this class was generated from the following files:

- headers/studentas.h
- source/function.cpp

4.2 zmogus Class Reference

```
#include <zmogus.h>
```

Inheritance diagram for zmogus:



Public Member Functions

- string getName () const
- string getSurname () const
- void setName (string vard)
- void setSurname (string pav)
- virtual void print () const =0

Protected Member Functions

- zmogus ()
- zmogus (const string &vard, const string &pav)
- virtual ~zmogus ()

Protected Attributes

- string name
- string surname

4.2.1 Constructor & Destructor Documentation

4.2.1.1 zmogus() [1/2]

```
zmogus::zmogus ()  [inline], [protected]
```

4.2.1.2 zmogus() [2/2]

```
zmogus::zmogus (
            const string & vard,
            const string & pav)  [inline], [protected]
```

4.2.1.3 ~zmogus()

```
virtual zmogus::~zmogus ()  [inline], [protected], [virtual]
```

4.2.2 Member Function Documentation

4.2.2.1 getName()

```
string zmogus::getName () const  [inline]
```

4.2.2.2 getSurname()

```
string zmogus::getSurname () const  [inline]
```

4.2.2.3 print()

```
virtual void zmogus::print () const  [pure virtual]
```

Implemented in studentas.

4.2.2.4 setName()

```
void zmogus::setName (
            string vard)  [inline]
```

4.2.2.5 setSurname()

```
void zmogus::setSurname (
            string pav)  [inline]
```

4.2.3 Member Data Documentation

4.2.3.1 name

```
string zmogus::name  [protected]
```

4.2.3.2 surname

```
string zmogus::surname  [protected]
```

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

- headers/zmogus.h

Chapter 5

File Documentation

5.1 headers/error.h File Reference

```
#include <iostream>
#include <cerrno>
#include <limits>
```

Functions

- int intIvestis (int sRange, int eRange)
- int intIvestis2 ()
- char SimbolioTikrinimas ()
- char SimbolioTikrinimas2 ()
- char SimbolioTikrinimas3 ()

5.1.1 Function Documentation

5.1.1.1 intIvestis()

```
int intIvestis (
            int sRange,
            int eRange)
```

5.1.1.2 intIvestis2()

```
int intIvestis2 ()
```

5.1.1.3 SimbolioTikrinimas()

```
char SimbolioTikrinimas ()
```

5.1.1.4 SimbolioTikrinimas2()

```
char SimbolioTikrinimas2 ()
```

5.1.1.5 SimbolioTikrinimas3()

```
char SimbolioTikrinimas3 ()
```

5.2 error.h

Go to the documentation of this file.

```
00001 #ifndef error_h
00002 #define error_h
00003 #include <iostream>
00004 #include <cerrno>
00005 #include <limits>
00006 using namespace std;
00007 int intIvestis(int sRange, int eRange);
00008 int intIvestis2();
00009 char SimbolioTikrinimas();
00010 char SimbolioTikrinimas2();
00011 char SimbolioTikrinimas3();
00012
00013 #endif
```

5.3 headers/function.h File Reference

```
#include <cstdio>
#include <locale>
#include <time.h>
#include <limits>
#include <iostream>
#include <fstream>
#include <iomanip>
#include <vector>
#include <sstream>
#include <algorithm>
#include <ctime>
#include <cstdlib>
#include <string>
#include <cstring>
#include <cerrno>
#include <random>
#include <chrono>
#include "studentas.h"
#include "error.h"
#include "zmogus.h"
```

Functions

- void Skaicius1 (vector< studentas > &s, int &m, int skaicius, int MinP, int MaxP)
- void Skaicius2 (vector< studentas > &s, int skaicius, int MinP, int MaxP)
- void FailoSkaitymas (vector< studentas > &s, string &duomPav)
- void VarduGeneravimui ()
- void Sorting (vector< studentas > &s, vector< studentas > &k, vector< studentas > &l, string choice, int rikiavimas, int strategy)
- void Isvedimas (vector< studentas > s, vector< studentas > &l, vector< studentas > &k)
- bool rikiavimasVid (studentas &s1, studentas &s2)
- bool rikiavimasMed (studentas &s1, studentas &s2)
- bool isBelowMedian (const studentas &stud)
- bool isBelowAverage (const studentas &stud)
- string generateRandomName (vector< string > names)
- string generateRandomSurname (vector< string > surnames)
- void GenerateFile (int kiekis, int nd_kiekis, string &fileName)

5.3.1 Function Documentation

5.3.1.1 FailoSkaitymas()

```
void FailoSkaitymas (
            vector< studentas > & s,
            string & duomPav)
```

5.3.1.2 GenerateFile()

```
void GenerateFile (
            int kiekis,
            int nd_kiekis,
            string & fileName)
```

5.3.1.3 generateRandomName()

```
string generateRandomName (
            vector< string > names)
```

5.3.1.4 generateRandomSurname()

```
string generateRandomSurname (
            vector< string > surnames)
```

5.3.1.5 isBelowAverage()

```
bool isBelowAverage (
            const studentas & stud)
```

5.3.1.6 isBelowMedian()

```
bool isBelowMedian (
            const studentas & stud)
```

5.3.1.7 Isvedimas()

```
void Isvedimas (
            vector< studentas > s,
            vector< studentas > & l,
            vector< studentas > & k)
```

5.3.1.8 rikiavimasMed()

```
bool rikiavimasMed (
            studentas & s1,
            studentas & s2)
```

5.3.1.9 rikiavimasVid()

```
bool rikiavimasVid (
            studentas & s1,
            studentas & s2)
```

5.3.1.10 Skaicius1()

```
void Skaicius1 (
            vector< studentas > & s,
            int & m,
            int skaicius,
            int MinP,
            int MaxP)
```

5.3.1.11 Skaicius2()

```
void Skaicius2 (
            vector< studentas > & s,
            int skaicius,
            int MinP,
            int MaxP)
```

5.3.1.12 Sorting()

```
void Sorting (
            vector< studentas > & s,
            vector< studentas > & k,
            vector< studentas > & l,
            string choice,
            int rikiavimas,
            int strategy)
```

5.3.1.13 VarduGeneravimui()

```
void VarduGeneravimui ()
```

5.4 function.h

Go to the documentation of this file.

```
00001 #ifndef function_h
00002 #define function_h
00003 #include <cstdio>
00004 #include <locale>
00005 #include <time.h>
00006 #include <limits>
00007 #include <iostream>
00008 #include <fstream>
00009 #include <iomanip>
00010 #include <vector>
00011 #include <sstream>
00012 #include <algorithm>
00013 #include <ctime>
00014 #include <cstdlib>
00015 #include <string>
00016 #include <cstring>
00017 #include <cerrno>
00018 #include <random>
00019 #include <chrono>
00020 #include "studentas.h"
00021 #include "error.h"
00022 #include "zmogus.h"
00023
00024 void Skaicius1(vector<studentas>& s, int &m, int skaicius, int MinP, int MaxP);
00025 void Skaicius2(vector<studentas>& s, int skaicius, int MinP, int MaxP);
00026 void FailoSkaitymas(vector <studentas> &s, string &duomPav);
00027 void VarduGeneravimui();
00028 void Sorting(vector<studentas>& s,vector<studentas> &k, vector <studentas> &l, string choice, int
      rikiavimas, int strategy);
00029 void Isvedimas(vector <studentas> s, vector <studentas> &l, vector <studentas> &k);
00030 bool rikiavimasVid(studentas& s1, studentas& s2);
00031 bool rikiavimasMed(studentas& s1, studentas& s2);
00032 bool isBelowMedian(const studentas& stud);
00033 bool isBelowAverage(const studentas& stud);
00034 string generateRandomName(vector <string> names);
00035 string generateRandomSurname(vector <string> surnames);
00036 void GenerateFile (int kiekis, int nd_kiekis, string &fileName);
00037 #endif
```

5.5 headers/main.h File Reference

```
#include <iostream>
#include <fstream>
#include "studentas.h"
#include <cerrno>
#include "error.h"
#include "function.h"
#include "zmogus.h"
```

5.6 main.h

Go to the documentation of this file.

```
00001 #ifndef main_h
00002 #define main_h
00003 #include <iostream>
00004 #include <fstream>
```

```
00005 #include "studentas.h"
00006 #include <cerrno>
00007 #include "error.h"
00008 #include "function.h"
00009 #include "zmogus.h"
00010
00011 #endif
```

5.7 headers/studentas.h File Reference

```
#include <numeric>
#include <vector>
#include <string>
#include <iostream>
#include <algorithm>
#include "zmogus.h"
```

Classes

- class studentas

Variables

- int number1
- int skaicius
- vector< string > names
- vector< string > surnames
- vector< studentas > s
- int n
- int m

5.7.1 Variable Documentation

5.7.1.1 m

```
int m  [extern]
```

5.7.1.2 n

```
int n  [extern]
```

5.7.1.3 names

```
vector<string> names  [extern]
```

5.7.1.4 number1

```
int number1  [extern]
```

5.7.1.5 s

```
vector<studentas> s  [extern]
```

5.7.1.6 skaicius

```
int skaicius  [extern]
```

5.7.1.7 surnames

```
vector<string> surnames  [extern]
```

5.8 studentas.h

Go to the documentation of this file.

```
00001 #ifndef studentas_h
00002 #define studentas_h
00003 #include <numeric>
00004 #include <vector>
00005 #include <string>
00006 #include <iostream>
00007 #include <algorithm>
00008 #include "zmogus.h"
00009 using namespace std;
00010
00011 class studentas : public zmogus
00012 {
00013   private:
00014   int egz;
00015   double vid;
00016   vector <int> nd;
00017   double med;
00018
00019   public:
00020   studentas();
00021   studentas(const string &vard, const string &pavard);
00022   inline string getName() const { return name; }
00023   inline string getSurname() const { return surname; }
00024   vector<int> getND() const { return nd; }
00025   int getEgz() const { return egz; }
00026   double getMed() const { return med; }
00027   double getVid() const { return vid; }
00028   int ndSize() const { return nd.size(); }
00029   void ndSort() { sort(nd.begin(), nd.end()); }
00030   int ndSum() { return accumulate(nd.begin(), nd.end(), 0); }
00031   int getLastND() { return nd.back(); }
00032
00033   void setName(string vard) { this->name = vard; }
00034   void setSurname(string pav) { this->surname= pav; }
00035   void setEgz(int egz2) { this->egz= egz2; }
00036   void setMed(double med2) { this->med = med2; }
00037   void setVid(double vid2) { this->vid = vid2; }
00038   void setND(int nd2) { this->nd.push_back(nd2); }
00039   void deleteLastNd() { this->nd.pop_back(); }
00040   double finalGrade(int n, int sum, int egz);
00041   void clearStudent() { this->name.clear(); this->surname.clear(); this->nd.clear(); this->egz = 0;
      this->med = 0.0; this->vid = 0.0; }
00042   double median(const vector<int> &nd, int n, int egz);
00043   void print() const override{};
00044
00045   studentas(const studentas &LaikinasStudentas);
```

```
00046   studentas(studentas &&Laikinasstudentas);
00047   studentas& operator=(const studentas &Laikinasstudentas);
00048   studentas& operator=(studentas &&Laikinasstudentas);
00049   friend istringstream& operator»(istringstream& filename, studentas &Laikinasstudentas);
00050   friend istream& operator»(istream& manual, studentas &Laikinasstudentas);
00051   friend ostream& operator«(ostream& console, const studentas &Laikinasstudentas);
00052   friend ofstream& operator«(ofstream& filename, const studentas &Laikinasstudentas);
00053
00054  ~studentas();
00055 };
00056 extern int number1;
00057 extern int skaicius;
00058 extern vector<string> names;
00059 extern vector<string> surnames;
00060 extern vector <studentas> s; //studentai
00061 extern int n;
00062 extern int m;
00063 #endif
```

5.9 headers/zmogus.h File Reference

```
#include <string>
```

Classes

- class zmogus

5.10 zmogus.h

Go to the documentation of this file.

```
00001 #ifndef ZMOGUS_H
00002 #define ZMOGUS_H
00003
00004 #include <string>
00005 using namespace std;
00006
00007 class zmogus{
00008   protected:
00009   string name, surname;
00010   zmogus() : name(""), surname("") {};
00011   zmogus(const string &vard, const string &pav) : name(vard), surname(pav) {};
00012   virtual ~zmogus() {};
00013   public:
00014   inline string getName() const {return name;}
00015   inline string getSurname() const{return surname;}
00016   void setName(string vard){this->name = vard;}
00017   void setSurname(string pav){this->surname = pav;}
00018   virtual void print() const=0;
00019 };
00020
00021 #endif
```

5.11 source/error.cpp File Reference

```
#include "../headers/error.h"
```

Functions

- int intIvestis (int sRange, int eRange)
- int intIvestis2 ()
- char SimbolioTikrinimas ()
- char SimbolioTikrinimas2 ()
- char SimbolioTikrinimas3 ()

5.11.1 Function Documentation

5.11.1.1 intIvestis()

```
int intIvestis (
            int sRange,
            int eRange)
```

5.11.1.2 intIvestis2()

```
int intIvestis2 ()
```

5.11.1.3 SimbolioTikrinimas()

```
char SimbolioTikrinimas ()
```

5.11.1.4 SimbolioTikrinimas2()

```
char SimbolioTikrinimas2 ()
```

5.11.1.5 SimbolioTikrinimas3()

```
char SimbolioTikrinimas3 ()
```

5.12 source/function.cpp File Reference

```
#include "../headers/function.h"
```

Functions

- istringstream & operator>> (istringstream &filename, studentas &Laikinasstudentas)
- istream & operator>> (istream &manual, studentas &Laikinasstudentas)
- ostream & operator<< (ostream &console, const studentas &Laikinasstudentas)
- ofstream & operator<< (ofstream &filename, const studentas &Laikinasstudentas)
- void initializeNamesAndSurnames ()
- string generateRandomName (vector< string > names)
- string generateRandomSurname (vector< string > surnames)
- bool isBelowAverage (const studentas &stud)
- bool isBelowMedian (const studentas &stud)
- void FailoSkaitymas (vector< studentas > &s, string &duomPav)
- void VarduGeneravimui ()
- void Isvedimas (vector< studentas > s, vector< studentas > &l, vector< studentas > &k)
- bool rikiavimasVardu (studentas &s1, studentas &s2)
- bool rikiavimasPavarde (studentas &s1, studentas &s2)
- bool rikiavimasVid (studentas &s1, studentas &s2)
- bool rikiavimasMed (studentas &s1, studentas &s2)
- void Sorting (vector< studentas > &s, vector< studentas > &k, vector< studentas > &l, string choice, int rikiavimas, int strategy)
- void GenerateFile (int kiekis, int nd_kiekis, string &fileName)

5.12.1 Function Documentation

5.12.1.1 FailoSkaitymas()

```
void FailoSkaitymas (
            vector< studentas > & s,
            string & duomPav)
```

5.12.1.2 GenerateFile()

```
void GenerateFile (
            int kiekis,
            int nd_kiekis,
            string & fileName)
```

5.12.1.3 generateRandomName()

```
string generateRandomName (
            vector< string > names)
```

5.12.1.4 generateRandomSurname()

```
string generateRandomSurname (
            vector< string > surnames)
```

5.12.1.5 initializeNamesAndSurnames()

```
void initializeNamesAndSurnames ()
```

5.12.1.6 isBelowAverage()

```
bool isBelowAverage (
            const studentas & stud)
```

5.12.1.7 isBelowMedian()

```
bool isBelowMedian (
            const studentas & stud)
```

5.12.1.8 Isvedimas()

```
void Isvedimas (
            vector< studentas > s,
            vector< studentas > & l,
            vector< studentas > & k)
```

5.12.1.9 operator<<() [1/2]

```
ofstream & operator<< (
            ofstream & filename,
            const studentas & Laikinasstudentas)
```

5.12.1.10 operator<<() [2/2]

```
ostream & operator<< (
            ostream & console,
            const studentas & Laikinasstudentas)
```

5.12.1.11 operator>>() [1/2]

```
istream & operator>> (
            istream & manual,
            studentas & Laikinasstudentas)
```

5.12.1.12 operator>>() [2/2]

```
istringstream & operator>> (
            istringstream & filename,
            studentas & Laikinasstudentas)
```

5.12.1.13 rikiavimasMed()

```
bool rikiavimasMed (
            studentas & s1,
            studentas & s2)
```

5.12.1.14 rikiavimasPavarde()

```
bool rikiavimasPavarde (
            studentas & s1,
            studentas & s2)
```

5.12.1.15 rikiavimasVardu()

```
bool rikiavimasVardu (
            studentas & s1,
            studentas & s2)
```

5.12.1.16 rikiavimasVid()

```
bool rikiavimasVid (
            studentas & s1,
            studentas & s2)
```

5.12.1.17 Sorting()

```
void Sorting (
            vector< studentas > & s,
            vector< studentas > & k,
            vector< studentas > & l,
            string choice,
            int rikiavimas,
            int strategy)
```

5.12.1.18 VarduGeneravimui()

```
void VarduGeneravimui ()
```

5.13 source/main.cpp File Reference

```
#include "../headers/main.h"
```

Functions

- int main ()

Variables

- int number1
- int skaicius
- int n
- int m
- vector< string > names
- vector< string > surnames
- vector< studentas > s

5.13.1 Function Documentation

5.13.1.1 main()

```
int main ()
```

5.13.2 Variable Documentation

5.13.2.1 m

```
int m
```

5.13.2.2 n

```
int n
```

5.13.2.3 names

```
vector<string> names
```

5.13.2.4 number1

```
int number1
```

5.13.2.5 s

```
vector<studentas> s
```

5.13.2.6 skaicius

```
int skaicius
```

5.13.2.7 surnames

```
vector<string> surnames
```

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