

Automatiser dit studievalg

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# Chapter 1

## Class Index

### 1.1 Class List

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

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## Chapter 2

# File Index

### 2.1 File List

Here is a list of all documented files with brief descriptions:

<a href="#">commands.h</a>	Contains functions related to command handling . . . . .	9
<a href="#">constants.h</a>	Contains symbolic constants used throughout the program . . . . .	9
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## Chapter 3

# Class Documentation

### 3.1 database Struct Reference

Collaboration diagram for database:

#### Public Attributes

- int **amount\_of\_educations**
- struct [education](#) \* [educations](#)
- int [amount\\_of\\_interests](#)
- char \*\* [interest\\_string](#)

#### 3.1.1 Member Data Documentation

##### 3.1.1.1 amount\_of\_interests

```
int database::amount_of_interests
```

an array of educations delimited by amount\_of\_educations

##### 3.1.1.2 educations

```
struct education* database::educations
```

the amount of educations in the database

### 3.1.1.3 interest\_string

```
char** database::interest_string
```

the amount of interests in the database

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

- [database.h](#)

## 3.2 education Struct Reference

Describes an education and all it requirements.

```
#include </home/xomnez/aau/1.semester/pl_ads/P1/include/education.h>
```

Collaboration diagram for education:

### Public Attributes

- char \* **name**
- char \* **description**
- char \* **link**
- enum [region](#) **region**
- double **required\_grade**
- struct [vector](#) **interests**
- struct [qualification](#) **required\_qualifications**

### 3.2.1 Detailed Description

Describes an education and all it requirements.

A structure, which contains amount\_of\_educations educations.

This structure defines an education and all the details about the education.

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

- [education.h](#)

## 3.3 location Struct Reference

### Public Attributes

- enum [region](#) **region**
- double **region\_importance**

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

- [region.h](#)

## 3.4 profile Struct Reference

Collaboration diagram for profile:

### Public Attributes

- struct [vector](#) **interests**
- struct [vector](#) **adjustment\_vector**
- char **name** [MAX\_NAME\_LENGTH]
- struct [qualification](#) **qualifications**
- double **average**
- struct [location](#) **location**
- char **saved\_educations** [EDUCATION\_LIST\_LENGTH][MAX\_EDU\_NAME\_LENGTH]
- int **last\_recommended**
- char **recommended\_educations** [EDUCATION\_LIST\_LENGTH][MAX\_EDU\_NAME\_LENGTH]

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

- [profile.h](#)

## 3.5 qualification Struct Reference

Collaboration diagram for qualification:

### Public Attributes

- int **amount\_of\_subjects**
- struct [subject](#) \* **subjects**

### 3.5.1 Member Data Documentation

#### 3.5.1.1 subjects

```
struct subject* qualification::subjects
```

the amount of subjects in qualifications

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

- [subjects.h](#)

## 3.6 subject Struct Reference

### Public Attributes

- enum level [level](#)

### 3.6.1 Member Data Documentation

#### 3.6.1.1 level

```
enum level subject::level
```

the name of the subject

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

- [subjects.h](#)

## 3.7 vector Struct Reference

### Public Attributes

- double \* **array**
- int **size**

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

- [vector.h](#)

## Chapter 4

# File Documentation

### 4.1 commands.h File Reference

Contains functions related to command handling.

```
#include "profile.h"
#include "education.h"
#include "subjects.h"
#include "vector.h"
#include "database.h"
```

Include dependency graph for commands.h:

### 4.2 constants.h File Reference

Contains symbolic constants used throughout the program.

This graph shows which files directly or indirectly include this file:

#### Macros

- `#define VERSION "1.0.1"`
- `#define NUMBER_OF_REGIONS 5`
- `#define IMPORTANT_SUBJECTS 5`
- `#define OTHER_SUBJECTS 11`
- `#define LANGUAGE_SUBJECTS 11`
- `#define USELESS_SUBJECTS 2`
- `#define TOTAL_SUBJECTS (IMPORTANT_SUBJECTS + OTHER_SUBJECTS + LANGUAGE_SUBJECTS)`
- `#define MAX_NAME_LENGTH 20`
- `#define MAX_FILE_NAME_LENGTH MAX_NAME_LENGTH + 12`
- `#define EDUCATION_LIST_LENGTH 10`
- `#define MAX_EDU_NAME_LENGTH 40`
- `#define MAX_COMMAND_LENGTH 10`
- `#define MAX_INPUT_LENGTH (MAX_COMMAND_LENGTH + 100)`
- `#define NOT_IN_LIST -1`
- `#define NO_EMPTY_INDEX -1`
- `#define FIELD_SIZE 25`
- `#define ADJUSTMENT_CONSTANT 0.1`
- `#define STRING_MAX_LENGTH 10000`
- `#define TABS ' '`
- `#define NOT_FOUND_STRING " "`
- `#define DATABASE_PATH "./bin/data/database.txt"`

### 4.2.1 Detailed Description

Contains symbolic constants used throughout the program.

<Detailed escription="" here>="">

## 4.3 database.h File Reference

Contains elements relating to the database.

```
#include "education.h"
```

Include dependency graph for database.h: This graph shows which files directly or indirectly include this file:

### Classes

- struct [database](#)

### Functions

- void [freeDatabase](#) (struct [database](#) \*)  
*Free a databases memories.*
- struct [database](#) \* [createDatabase](#) (char \*)  
*Create a Database object.*
- struct [education](#) \* [findEducation](#) (char \*, struct [database](#) \*)  
*Finds an education in a database and returns a pointer to the education.*
- void [searchDatabaseForEducation](#) (char \*, struct [database](#) \*, struct [education](#) \*\*, int \*)  
*Finds all educations with the matching search\_word.*

### 4.3.1 Detailed Description

Contains elements relating to the database.

<Detailed escription="" here>="">

### 4.3.2 Function Documentation

#### 4.3.2.1 createDatabase()

```
struct database* createDatabase (
    char * database_file )
```

Create a Database object.



## Parameters

<code>database_file</code>	is the databasefile, which will be read into a database object
----------------------------	--

## Returns

struct database\*

## 4.3.2.2 findEducation()

```
struct education* findEducation (
    char * key,
    struct database * database )
```

Finds an education in a database and returns a pointer to the education.

## Parameters

<code>database</code>	is the database, which will be searched
-----------------------	---

## Returns

struct education\*

## 4.3.2.3 freeDatabase()

```
void freeDatabase (
    struct database * database )
```

Free a databases memories.

## Parameters

<code>database</code>	
-----------------------	--

## 4.3.2.4 searchDatabaseForEducation()

```
void searchDatabaseForEducation (
    char * search_word,
    struct database * database,
```

```
struct education ** array,
int * size_of_array )
```

Finds all educations with the matching `search_word`.

#### Parameters

<code>search_word</code>	The name of the education you are searching for
--------------------------	---

#### Returns

struct educationArray\*

## 4.4 [education.h](#) File Reference

Contains elements relating to educations.

```
#include "region.h"
#include "subjects.h"
#include "vector.h"
```

Include dependency graph for [education.h](#): This graph shows which files directly or indirectly include this file:

#### Classes

- struct [education](#)  
*Describes an education and all it requirements.*

#### Functions

- struct [education](#) **createDefaultEducation** (int amount\_of\_interests, int amount\_of\_subjects)
- void **freeEducation** (struct [education](#) \*)

### 4.4.1 Detailed Description

Contains elements relating to educations.

This file contains the education struct and the function that creates educations.

### 4.4.2 Function Documentation

#### 4.4.2.1 **freeEducation()**

```
void freeEducation (
    struct education * education )
```

## Parameters

education	
-----------	--

## 4.5 parser.h File Reference

Contains elements relating to parsing the database.

```
#include <stdio.h>
#include <stdlib.h>
#include "database.h"
#include "region.h"
Include dependency graph for parser.h:
```

### Functions

- void [parseDatabase](#) (struct [database](#) \*[database](#), FILE \*[filereader](#))
- void [parseDatabaseLine](#) (const char key[], struct [database](#) \*[database](#), FILE \*[filereader](#))
- void [findDatabaseLine](#) (const char key[], FILE \*[filereader](#), char \*[current\\_line](#))
- int [parseNumOfEdu](#) (FILE \*[filereader](#))
 

*Returns the number of educations from database file.*
- int [parseNumOfInterests](#) (FILE \*[filereader](#))
- void [parseEduNames](#) (struct [database](#) \*[database](#), char [current\\_line](#)[])
- void [parseEduDesc](#) (struct [database](#) \*[database](#), char [current\\_line](#)[])
- void [parseEduLink](#) (struct [database](#) \*[database](#), char [current\\_line](#)[])
- void [parseEduRegion](#) (struct [database](#) \*[database](#), char [current\\_line](#)[])
- void [parseSubReq](#) (struct [education](#) \*[education](#), int [number\\_of\\_educations](#), FILE \*[filereader](#), char [current\\_line](#)[])
- void [parseReqGrade](#) (struct [database](#) \*[database](#), char [current\\_line](#)[])
- void [parseInterestValues](#) (struct [database](#) \*[database](#), FILE \*[filereader](#))
- void [parseInterestNames](#) (struct [database](#) \*[database](#), FILE \*[filereader](#))
- char \* [parseEduString](#) (char \*[current\\_line](#), int [amount\\_of\\_educations](#), int [offset](#))
 

*Scans the current line + i until TABS or newline. Saves the scanned string and returns a pointer to it.*
- int [sseek](#) (char \*, char)
- void [readReqString](#) (struct [qualification](#) \*, char \*, int)
- enum [region](#) [strToReg](#) (char \*[region\\_string](#))
 

*Converts a string into an enum region.*

### 4.5.1 Detailed Description

Contains elements relating to parsing the database.

<Detailed esription="" here>="">

### 4.5.2 Function Documentation

#### 4.5.2.1 [parseDatabase\(\)](#)

```
void parseDatabase (
    struct database * database,
    FILE * filereader )
```

**Parameters**

<i>database</i>	
<i>filereader</i>	

**4.5.2.2 parseEduString()**

```
char * parseEduString (
    char * current_line,
    int amount_of_educations,
    int offset )
```

Scans the current line + i until TABS or newline. Saves the scanned string and returns a pointer to it.

**Parameters**

<i>current_line</i>	The line to scan
<i>amount_of_educations</i>	The amount of educations in database
<i>offset</i>	The offset to decide how many chars to skip in <i>current_line</i>

**4.5.2.3 parseNumOfEdu()**

```
int parseNumOfEdu (
    FILE * filereader )
```

Returns the number of educations from database file.

**Parameters**

<i>filereader</i>	The file to read from
-------------------	-----------------------

**4.5.2.4 strToReg()**

```
int strToReg (
    char * region_string )
```

Converts a string into an enum region.

**Parameters**

<i>region_string</i>	The string to convert
----------------------	-----------------------

## 4.6 profile.h File Reference

Contains elements relating to profile.

```
#include "vector.h"
#include "subjects.h"
#include "region.h"
#include "education.h"
#include "constants.h"
```

Include dependency graph for profile.h: This graph shows which files directly or indirectly include this file:

### Classes

- struct [profile](#)

### Functions

- void **printProfile** (struct [profile](#) p)
- void **freeProfile** (struct [profile](#) p)
- void **freeQualifications** (struct [qualification](#) q)
- struct [qualification](#) **createQualifications** (int number\_of\_qualifications)
- struct [profile](#) **createProfile** (int number\_of\_interests)

#### 4.6.1 Detailed Description

Contains elements relating to profile.

<Detailed esription="" here>="">

## 4.7 region.h File Reference

Contains geographical elements.

This graph shows which files directly or indirectly include this file:

### Classes

- struct [location](#)

### Enumerations

- enum [region](#) {  
    **NORTH\_JUTLAND** = 0, **CENTRAL\_JUTLAND**, **SOUTHERN\_DENMARK**, **ZEALAND**,  
    **CAPITAL\_REGION** }  
    *Describes a region.*

### 4.7.1 Detailed Description

Contains geographical elements.

This file contains the enums for different regions and the struct that symbolises a location.

### 4.7.2 Enumeration Type Documentation

#### 4.7.2.1 region

enum `region`

Describes a region.

This enum describes a region AKA it describes a location in denmark.

## 4.8 `serialize.h` File Reference

Save and load profile data.

```
#include "profile.h"
```

Include dependency graph for `serialize.h`:

### Macros

- `#define SAVE_FILE "data/save.data"`

### Functions

- `int saveProfile (struct profile *)`
- `struct profile * loadProfile ()`

### 4.8.1 Detailed Description

Save and load profile data.

#### Author

#### Version

0.1

#### Date

2019-11-27

#### Copyright

Copyright (c) 2019

## 4.9 subjects.h File Reference

Contains code regarding subjects and qualifications for educations.

This graph shows which files directly or indirectly include this file:

### Classes

- struct [subject](#)
- struct [qualification](#)

### Enumerations

- enum {  
**MATHEMATICS, CHEMISTRY, BIOLOGY, PHYSICS,**  
**ENGLISH, BIOTECHNOLOGY, GEOSCIENCE, HISTORY,**  
**IDEA\_HISTORY, INFORMATICS, INTERNATIONAL\_ECONOMICS, COMMUNICATION\_AND\_IT,**  
**RELIGION, SOCIALSTUDIES, BUSINESS\_ECONOMICS, CONTEMPORARY\_HISTORY,**  
**FRENCH, SPANISH, GERMAN, CHINESE,**  
**ARABIC, GREEK, ITALIAN, JAPANESE,**  
**LATIN, PORTUGUESE, RUSSIAN, NONE,**  
**DANISH }**
- enum **level** { **Z, C, B, A** }

### Functions

- void [freeSubject](#) (struct [subject](#) \*)  
*free a subject and its members*
- void [freeQualification](#) (struct [qualification](#) \*)  
*free a qualification and its members*
- enum **stringToClass** (char \*)
- enum level **charToLevel** (char ch)
- char **levelToChar** (enum level l)

#### 4.9.1 Detailed Description

Contains code regarding subjects and qualifications for educations.

<Detailed esription="" here>="">

#### 4.9.2 Function Documentation

##### 4.9.2.1 freeQualification()

```
void freeQualification (
    struct qualification * qualification )
```

free a qualification and its members

## Parameters

<i>qualification</i>	the qualification to be freed
----------------------	-------------------------------

## 4.9.2.2 freeSubject()

```
void freeSubject (
    struct subject * subject )
```

free a subject and its members

## Parameters

<i>subject</i>	the subject to be freed
----------------	-------------------------

## 4.10 vector.h File Reference

Contains elements relating to vectors.

This graph shows which files directly or indirectly include this file:

## Classes

- struct **vector**

## Functions

- struct **vector** **createVector** (int size)  
*creates a vector on the heap and outputs it*
- struct **vector** **copyVector** (struct **vector** v)  
*Copies the the inputted vector into vector copy and returns this.*
- struct **vector** **addVector** (struct **vector** v1, struct **vector** v2)  
*Adds two vectors together and outputs the sum as a vector.*
- struct **vector** **subtractVector** (struct **vector** v1, struct **vector** v2)  
*Subtracts the second vector from the first vector and returns the result as a vector.*
- struct **vector** **scaleVector** (struct **vector** v, double scale)  
*Multiplies the given vector's array values by the value inputted as scale, then outputs the result as a vector.*
- struct **vector** **normalizeVector** (struct **vector** v)  
*Normalises a vector via scaling it by one over it's length, then returns the normalized vector.*
- double **lengthOfVector** (struct **vector** v)  
*Calculates and returns the length of the given vector.*
- double **dotProduct** (struct **vector** v1, struct **vector** v2)  
*Calculates and returns the dot product of two vectors.*
- void **printVector** (struct **vector** v)  
*Prints a vector.*
- void **freeVector** (struct **vector** v)  
*frees the dynamically allocated array on the heap*
- void **freeVectorM** (int num,...)  
*Frees a variable number of struct vectors using free(Vector)*



### 4.10.1 Detailed Description

Contains elements relating to vectors.

This file contains the vector struct and various functions used to create, manipulate or free vectors.

### 4.10.2 Function Documentation

#### 4.10.2.1 addVector()

```
struct vector addVector (
    struct vector v1,
    struct vector v2 )
```

Adds two vectors together and outputs the sum as a vector.

##### Parameters

<b>v1</b>	The first vector struct: v1.array[] is a vector, v1.size number of elements in the vector
<b>v2</b>	The second vector struct: v2.array[] is a vector

#### 4.10.2.2 copyVector()

```
struct vector copyVector (
    struct vector v )
```

Copies the the inputted vector into vector copy and returns this.

##### Parameters

<b>v</b>	The input vector that is copied
----------	---------------------------------

#### 4.10.2.3 createVector()

```
struct vector createVector (
    int size )
```

creates a vector on the heap and outputs it

**Parameters**

<i>size</i>	The number of elements in the vector
-------------	--------------------------------------

**4.10.2.4 dotProduct()**

```
double dotProduct (
    struct vector v1,
    struct vector v2 )
```

Calculates and returns the dot product of two vectors.

**Parameters**

<i>v1</i>	The first vector to be used for dot product calculation
<i>v2</i>	The second vector to be used for dot product calculation

**4.10.2.5 freeVector()**

```
void freeVector (
    struct vector v )
```

frees the dynamically allocated array on the heap

**Parameters**

<i>v</i>	The vector struct containing the array on the heap
----------	--

**4.10.2.6 freeVectorM()**

```
void freeVectorM (
    int num,
    ... )
```

Frees a variable number of struct vectors using free(Vector)

**Parameters**

<i>num</i>	The number of arguments (vectors) that should be freed
------------	--

#### 4.10.2.7 lengthOfVector()

```
double lengthOfVector (
    struct vector v )
```

Calculates and returns the length of the given vector.

##### Parameters

<b>v</b>	The vector whose length is found
----------	----------------------------------

#### 4.10.2.8 normalizeVector()

```
struct vector normalizeVector (
    struct vector v )
```

Normalises a vector via scaling it by one over it's length, then returns the normalized vector.

##### Parameters

<b>v</b>	The vector which is to be normalized
----------	--------------------------------------

#### 4.10.2.9 printVector()

```
void printVector (
    struct vector v )
```

Prints a vector.

##### Parameters

<b>v</b>	The vector that is printed
----------	----------------------------

#### 4.10.2.10 scaleVector()

```
struct vector scaleVector (
    struct vector v,
    double scale )
```

Multiplies the given vector's array values by the value inputted as scale, then outputs the result as a vector.

**Parameters**

<i>v</i>	The vector that should be up- or downscaled
<i>scale</i>	The value that the vector should be scaled by

**4.10.2.11 subtractVector()**

```
struct vector subtractVector (  
    struct vector v1,  
    struct vector v2 )
```

Subtracts the second vector from the first vector and returns the result as a vector.

**Parameters**

<i>v1</i>	The vector that should be subtracted from
<i>v2</i>	The vector that is used for subtraction

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