labo_03_basset_nils_lange_yanik_gallay_david

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Contents

Chapter 1

Class Index

1.1 Class List

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

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

Chapter 3

Class Documentation

3.1 Enigma Class Reference

Representation of the enigma machine.

`#include <enigma.h>`

Public Member Functions

- Enigma (Reflector reflector, const Rotors &rotors)
- char encrypt (char c)

  Return the encrypted input if it is an alphabetic character, else return the character.
- std::string encrypt (const std::string &text)

  Return the encrypted input.
- Enigma & reset ()

  Reset the enigma machine to its initial configuration.
- Rotors & getRotors ()

  get the rotors, this is the way to change them
- Enigma & setReflector (const Reflector &reflector)

  set the reflector of the enigma machine

3.1.1 Detailed Description

Representation of the enigma machine.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 Enigma()

```
Enigma::Enigma (
            Reflector reflector,
            const Rotors & rotors )
```

3.1.3 Member Function Documentation

3.1.3.1 encrypt() [1/2]

```
char Enigma::encrypt (
            char c )
```

Return the encrypted input if it is an alphabetic character, else return the character.

Parameters

c	character we want to encrypt

3.1.3.2 encrypt() [2/2]

```
std::string Enigma::encrypt (
            const std::string & text )
```

Return the encrypted input.

Parameters

text	text

3.1.3.3 getRotors()

```
Rotors& Enigma::getRotors ( )
```

get the rotors, this is the way to change them

3.1.3.4 reset()

```
Enigma& Enigma::reset ( )
```

Reset the enigma machine to its initial configuration.

Returns

Reference on the enigma object

3.1.3.5 setReflector()

```
Enigma& Enigma::setReflector (
            const Reflector & reflector )
```

set the reflector of the enigma machine

Returns

Reference on the enigma object

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

- enigma.h

3.2 Reflector Class Reference

Class used to map uppercase letters to others.

`#include <reflector.h>`

Public Member Functions

- Reflector (std::string match)
- char translate (char c) const

  Return the char mapped to c, it only handle uppercase characters.
- char backwardTranslate (char c) const

  This is the inverse function of translate, also only handle uppercase characters.
- std::string getWiring () const

3.2.1 Detailed Description

Class used to map uppercase letters to others.

3.2.2 Constructor & Destructor Documentation

3.2.2.1 Reflector()

```
Reflector::Reflector (
            std::string match )
```

Parameters

match	string containing all uppercase letter once and only once, otherwise, the behaviour is undefined

3.2.3 Member Function Documentation

3.2.3.1 backwardTranslate()

```
char Reflector::backwardTranslate (
            char c ) const
```

This is the inverse function of translate, also only handle uppercase characters.

Parameters

c	character to backward translate

3.2.3.2 getWiring()

```
std::string Reflector::getWiring ( ) const
```

Returns

Return the wiring of the reflector

3.2.3.3 translate()

```
char Reflector::translate (
            char c ) const
```

Return the char mapped to c, it only handle uppercase characters.

Parameters

c	character to translate

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

- reflector.h

3.3 Rotor Class Reference

Representation of a rotor of the enigma machine.

`#include <rotor.h>`

Public Member Functions

- Rotor (const std::string &match, char notch=DEFAULT_NOTCH, int rotation=0)
- Rotor (const std::string &, char notch, char position)
- Rotor & reset ()

  Reset the rotor to its initial states.
- char translate (char c) const
- char backwardTranslate (char c) const

  This is the inverse function of translate, also only handle uppercase characters.
- bool rotate ()

  Rotate the rotor.
- Rotor & setRotation (int rotation)

  Set the rotation of the rotor.
- Rotor & setRotation (char rotation)

  Set the rotation of the rotor.
- int getRotation () const
- Rotor & setInitialRotation (int rotation)

  Set the initial rotation of the rotor.
- Rotor & setInitialRotation (char rotation)

  Set the initial rotation of the rotor.
- int getInitialRotation () const
- bool setNotch (char notch)

  Set the notch if it is valid.
- char getNotch () const
- std::string getWiring () const

3.3.1 Detailed Description

Representation of a rotor of the enigma machine.

3.3.2 Constructor & Destructor Documentation

3.3.2.1 Rotor() [1/2]

```
Rotor::Rotor (
            const std::string & match,
            char notch = DEFAULT_NOTCH,
            int rotation = 0 )
```

Parameters

match	string containing all uppercase letter once and only once, otherwise, the behaviour is undefined
notch	notch of the rotor, if rotor steps from _notch to another character, the next rotor must be advanced
rotation	initial rotation/position of the rotor

3.3.2.2 Rotor() [2/2]

```
Rotor::Rotor (
            const std::string & ,
            char notch,
            char position )
```

Parameters

match	string containing all uppercase letter once and only once, otherwise, the behaviour is undefined
notch	notch of the rotor, if rotor steps from _notch to another character, the next rotor must be advanced
rotation	initial rotation/position of the rotor

3.3.3 Member Function Documentation

3.3.3.1 backwardTranslate()

```
char Rotor::backwardTranslate (
            char c ) const
```

This is the inverse function of translate, also only handle uppercase characters.

Parameters

c	character to backward translate

3.3.3.2 getInitialRotation()

```
int Rotor::getInitialRotation ( ) const
```

Returns

The initial rotation of the rotor

3.3.3.3 getNotch()

```
char Rotor::getNotch ( ) const
```

Returns

Return the notch of the rotor

3.3.3.4 getRotation()

```
int Rotor::getRotation ( ) const
```

Returns

The current rotation of the rotor

3.3.3.5 getWiring()

```
std::string Rotor::getWiring ( ) const
```

Returns

Return the wiring of the rotor

3.3.3.6 reset()

```
Rotor& Rotor::reset ( )
```

Reset the rotor to its initial states.

Returns

Reference on the rotor

3.3.3.7 rotate()

```
bool Rotor::rotate ( )
```

Rotate the rotor.

Returns

true if the notch is passed, else return false

3.3.3.8 setInitialRotation() [1/2]

```
Rotor& Rotor::setInitialRotation (
            int rotation )
```

Set the initial rotation of the rotor.

Parameters

rotation	the initial rotation of the rotor

Returns

Reference on the rotor

3.3.3.9 setInitialRotation() [2/2]

```
Rotor& Rotor::setInitialRotation (
            char rotation )
```

Set the initial rotation of the rotor.

Parameters

rotation	the initial rotation of the rotor

Returns

Reference on the rotor

3.3.3.10 setNotch()

```
bool Rotor::setNotch (
            char notch )
```

Set the notch if it is valid.

Returns

true if the notch is valid, else false

3.3.3.11 setRotation() [1/2]

```
Rotor& Rotor::setRotation (
            int rotation )
```

Set the rotation of the rotor.

Parameters

rotation	the current rotation of the rotor

Returns

Reference on the rotor

3.3.3.12 setRotation() [2/2]

```
Rotor& Rotor::setRotation (
            char rotation )
```

Set the rotation of the rotor.

Parameters

rotation	the current rotation of the rotor

Returns

Reference on the rotor

3.3.3.13 translate()

```
char Rotor::translate (
            char c ) const
```

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

- rotor.h

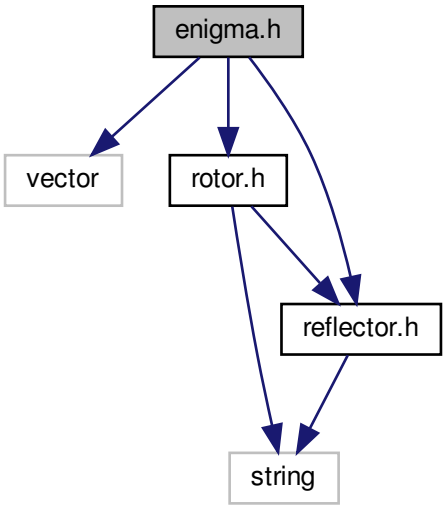
Chapter 4

File Documentation

4.1 enigma.h File Reference

```
#include <vector>
#include "rotor.h"
#include "reflector.h"
```

Include dependency graph for enigma.h:



Classes

- class Enigma

  Representation of the enigma machine.

Typedefs

- typedef std::vector< Rotor > Rotors

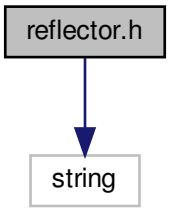
4.1.1 Typedef Documentation

4.1.1.1 Rotors

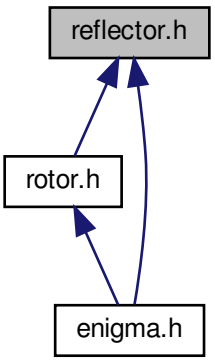
```
typedef std::vector<Rotor> Rotors
```

4.2 reflector.h File Reference

```
#include <string>
```
Include dependency graph for reflector.h:



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



Classes

- class Reflector

  Class used to map uppercase letters to others.

Variables

- const Reflector REFLECTOR_B

4.2.1 Variable Documentation

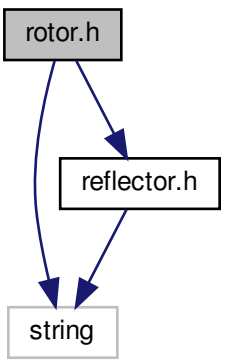
4.2.1.1 REFLECTOR_B

```
const Reflector REFLECTOR_B
```

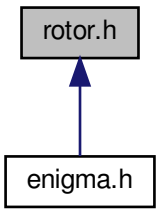
4.3 rotor.h File Reference

```
#include <string>
#include "reflector.h"
```

Include dependency graph for rotor.h:



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



Classes

- class Rotor

  Representation of a rotor of the enigma machine.

Variables

- const char DEFAULT_NOTCH = 'A'
- const Rotor ROTOR_I
- const Rotor ROTOR_II
- const Rotor ROTOR_III

4.3.1 Variable Documentation

4.3.1.1 DEFAULT_NOTCH

```
const char DEFAULT_NOTCH = 'A'
```

4.3.1.2 ROTOR_I

```
const Rotor ROTOR_I
```

4.3.1.3 ROTOR_II

```
const Rotor ROTOR_II
```

4.3.1.4 ROTOR_III

```
const Rotor ROTOR_III
```

4.4 utilities.h File Reference

Functions

- char indexToChar (int index)
- unsigned mod (int a, int b)

  since operator% is not mathematical modulo but reminder operator, this version ensure a positive result
- unsigned alphaIndex (int index)
- int alphaIndex (char c)

4.4.1 Function Documentation

4.4.1.1 alphaIndex() [1/2]

```
unsigned alphaIndex (
            int index )
```

Parameters

a	index that may be invalid

Returns

return the valid index corresponding to a

4.4.1.2 alphaIndex() [2/2]

```
int alphaIndex (
            char c )
```

Parameters

c	char of which we want to have the corresponding index

Returns

return the valid index corresponding to c

4.4.1.3 indexToChar()

```
char indexToChar (
            int index )
```

Parameters

index	index of a char in the alphabete

Returns

char corresponding to index

4.4.1.4 mod()

```
unsigned mod (
            int a,
            int b )
```

since operator% is not mathematical modulo but reminder operator, this version ensure a positive result

Parameters

a	left operand
b	right operand

Returns

return the modulo of a and b

Index