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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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<a href="#">Reflector</a>	Class used to map uppercase letters to others . . . . .	<a href="#">7</a>
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## Chapter 2

# File Index

### 2.1 File List

Here is a list of all files with brief descriptions:

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<a href="#">rotor.h</a>	.....	17
<a href="#">utilities.h</a>	.....	19





## 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

<i>c</i>	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

<i>text</i>	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 )
```

### 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**

<code>c</code>	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**

<code>c</code>	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 )
```

#### 3.3.2.2 Rotor() [2/2]

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

### 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**

<i>c</i>	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

<i>rotation</i>	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**

<i>rotation</i>	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**

<i>rotation</i>	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

<i>rotation</i>	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](#)

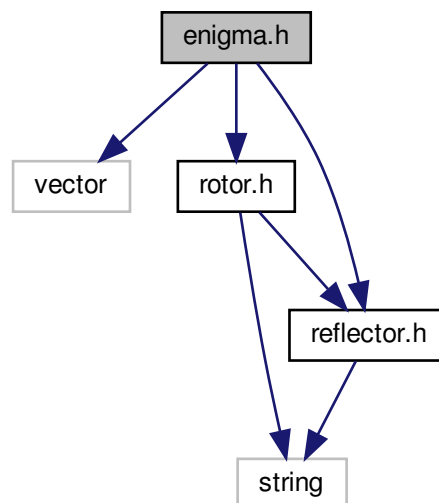


## Chapter 4

# 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

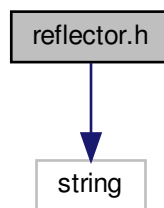
#### 4.1.1.1 Rotors

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

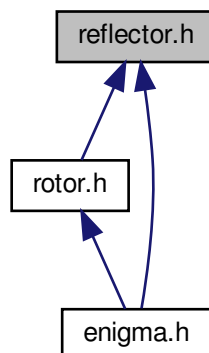
## 4.2 reflector.h File Reference

```
#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

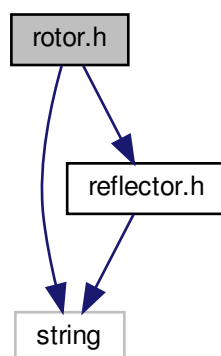
### 4.2.1 Variable Documentation

#### 4.2.1.1 REFLECTOR\_B

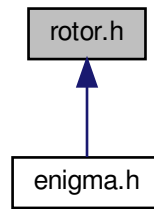
```
const Reflector REFLECTOR_B
```

## 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**

<i>a</i>	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**

<i>c</i>	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

<i>index</i>	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

<i>a</i>	left operand
<i>b</i>	right operand

##### Returns

return the modulo of a and b



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