My Project

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Chapter 1

22 Gödelnummer

1.1 Implemented features

- [x] Parsing prime numbers
- [x] Checking file for errors
- [x] converting userinput to Gödel number
- [x] Detecting when Gödel number overflows

1.1.1 Error codes

Error Codes are implemented to be similar to HTTP:

- 404: File not found
- 416: Number is out of range
- 418: I'm a teapot
- 422: File contains unprocessable char

1.1.2 Limitations

- Integers within the formula cannot be larger than 4,294,967,295 as conversion would fail
- But we cant get to this point either, as the file only contains around 9.000 prime numbers
- And due to the way Godel numbers are calculated, the result itself would overflow first
- Only the variables 'a' and 'b' are implemented

Chapter 2

Class Index

2.1 Class List

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

Chapter 3

Class Documentation

3.1 GoedelNumber Class Reference

Handles calculation of goedelnumber and saves each step.

`#include <goedelNumber.hpp>`

Public Member Functions

- GoedelNumber (PrimeNumbers *prime)
  Construct a new Goedel Number object.
- void input (std::string input)
  Accepts string and attempts to convert it to goedel number.
- void printResults ()
  prints out the goedel number and it's calculation steps.

3.1.1 Detailed Description

Handles calculation of goedelnumber and saves each step.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 GoedelNumber()

```
GoedelNumber::GoedelNumber (
            PrimeNumbers * prime )
```

Construct a new Goedel Number object.

Parameters

prime	requires pointer to previously created PrimeNumbers object

3.1.3 Member Function Documentation

3.1.3.1 input()

```
void GoedelNumber::input (
            std::string input )
```

Accepts string and attempts to convert it to goedel number.

Parameters

input	formula to be converted

3.1.3.2 printResults()

```
void GoedelNumber::printResults ( )
```

prints out the goedel number and it's calculation steps.

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

- goedelNumber.hpp
- goedelNumber.cpp

3.2 PrimeNumbers Class Reference

Handles import of primeNumbers and accessing them.

```
#include <primeNumbers.hpp>
```

Public Member Functions

- unsigned long int operator[ ] (unsigned long int index)

  allows to access prime number by index
- void init ()

  imports prime numbers, throws error on failure This function is not part of a constructor, because it would be limited to the scope of the try block it's in
- unsigned long long size ()

  returns size() of the prime number vector in the object

3.2.1 Detailed Description

Handles import of primeNumbers and accessing them.

3.2.2 Member Function Documentation

3.2.2.1 operator[]()

```
unsigned long int PrimeNumbers::operator[] (
            unsigned long int index )
```

allows to access prime number by index

Parameters

index	

Returns

unsigned long int prime number

3.2.2.2 size()

```
unsigned long long PrimeNumbers::size ( )
```

returns size() of the prime number vector in the object

Returns

int amount of primes

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

- primeNumbers.hpp
- primeNumbers.cpp

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