

JSON2Batch

0.2.3

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# Chapter 1

## JSON2Batch

0.2.3

JSON2Batch was developed during a project during our first and second semester of university. It generates batch files from JSON files, which can spawn terminals or applications, that run under certain parameters specified within the JSON file.

The project was carried out by **Elena Schwarzbach, Max Rodler, Simon Blum, Sonia Sinaci**.

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  - LoggingWrapper
  - jsoncpp
5. License

### 1.2 Build Instructions

#### 1.2.1 Linux

```
git clone https://github.com/DHBWProjectsIT23/JSON2Bat/!TODO
cmake -S . -B build --config Release
cmake --build build
```

### 1.2.1.1 UNIX Compiler Compatibility

The project has been tested with GCC version  $\geq 10.5$  and Clang version  $> 14$ .

## 1.2.2 Windows

@TODO Fix Windows

### 1.2.2.1 Windows Compiler Compatibility

## 1.2.3 Generating Documentation

If the *doxygen* executable is installed local documentation can be generated using:

```
git clone https://github.com/DHBWProjectsIT23/JSON2Bat/!TODO
cmake -S . -B build --config Release
cmake --build build --target doxygen_build
```

## 1.3 Documentation

The documentation for this project can be found [here](#). A PDF version can be found [\[here\]\(\)](#) and a short man page can be found [\[here\]\(\)](#).

### 1.3.1 Project Structure

The project directory is structured as follows:

- assets > *Includes files, not directly related to the code*
- man > *Includes the man page*
- conf > *Includes files which will be configured by CMake*
- include > *Includes header files for external libraries*
- lib > *Includes source/binary files for external libraries*
- src > *Includes the source code for the project*
  - sources > *Includes all ".cpp" files*
  - include > *Includes all ".hpp" files*
  - [main.cpp](#)

## 1.4 External Libraries

### 1.4.1 easylogging++

The [easylogging++](#) library is used for logging within the application. The configuration for the library is done via a logging file which can be found in [conf/easylogging.in.conf](#). Cmake configures this file into the binary directory upon building. If the configuration file is removed, the application will no longer run.

### 1.4.2 LoggingWrapper

While easylogging++ is used for the logging back-end within the code there are little remains apart from the configuration. The logging and output of the application is done over a self written wrapper. Although it is self written, due to it being not part of the project we consider it an external libraries. The wrapper is used to simplify parallel output to stdout and the logfile and also enables increased output to stdout for the verbose mode. A few macros are defined for use within the application:

- `OUTPUT` > *Outputs to stdout and the logfile*
- `LOG_INFO` > *By default only outputs to the logfile*
- `LOG_WARNING` > *Formats text and outputs to stdout and the logfile*
- `LOG_ERROR` > *Same as `LOG_WARNING` but in red and bold*

The macros can be used with streaming in the same way as `std::cout` would be used. Furthermore, some rudimentary performance tests showed, that the use of the wrapper, does not affect performance in comparison to using both `std::cout` and easylogging itself.

### 1.4.3 jsoncpp

For parsing the JSON files, the `jsoncpp` library is used. On UNIX system this library can simply be installed using the systems package manager (tested with WSL/Ubuntu and Arch). For Windows system a prebuild version is included - See Windows for more information.

## 1.5 License

The project is published under the Apache License V2.0. Check the [license file](LICENSE) for more information!



# Chapter 2

## Topic Index

### 2.1 Topics

Here is a list of all topics with brief descriptions:

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------------------------	----





## Chapter 3

# Namespace Index

### 3.1 Namespace List

Here is a list of all namespaces with brief descriptions:

<a href="#">cli</a>	Includes everything regarding the CLI . . . . .	17
<a href="#">config</a>	Namespace used for general project information . . . . .	18
<a href="#">exceptions</a>	Namespace used for customized exceptions . . . . .	20
<a href="#">parsing</a>	The namespace containing everything relevant to parsing . . . . .	20
<a href="#">utilities</a>	Includes all utilities . . . . .	21



## Chapter 4

# Hierarchical Index

### 4.1 Class Hierarchy

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

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std::exception	
exceptions::CustomException . . . . .	35
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# Chapter 5

## Class Index

### 5.1 Class List

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

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<a href="#">cli::CommandLineHandler</a>	Responsible for the Command Line Interface . . . . .	30
<a href="#">exceptions::CustomException</a>	Base class for all custom exceptions . . . . .	35
<a href="#">exceptions::FailedToOpenFileException</a>	Exception for when a file can't be opened . . . . .	37
<a href="#">parsing::FileData</a>	This class contains all data from the json file . . . . .	39
<a href="#">exceptions::FileExistsException</a>	Exception for an already exisiting outputfile . . . . .	45
<a href="#">exceptions::InvalidKeyException</a>	Exception for invalid keys . . . . .	47
<a href="#">exceptions::InvalidTypeException</a>	Exception for invalid types . . . . .	49
<a href="#">exceptions::InvalidValueException</a>	Exception for an ivalid (usually empty) value field . . . . .	52
<a href="#">parsing::JsonHandler</a>	This file reads all data from the json file . . . . .	54
<a href="#">parsing::KeyValidator</a>	Validates keys of a Json::Value object . . . . .	63
<a href="#">exceptions::MissingKeyException</a>	Exception for missing keys within entries . . . . .	70
<a href="#">exceptions::MissingTypeException</a>	Exception for missing types of entries . . . . .	73
<a href="#">exceptions::NoSuchDirException</a>	Exception for when a directory does not exist . . . . .	75
<a href="#">options</a>	The struct containing all possible options . . . . .	77
<a href="#">exceptions::ParsingException</a>	Exception for syntax errors within the json file . . . . .	77
<a href="#">exceptions::UnreachableCodeException</a>	Exception for when the application reaches code it shouldn't reach . . . . .	79
<a href="#">utilities::Utils</a>	Responsible for utility function . . . . .	81



# Chapter 6

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### 6.1 File List

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## Chapter 7

# Topic Documentation

### 7.1 StyleHelpers

Static variables to help with CLI styling.

Static variables to help with CLI styling.

A group of strings, that use escape sequences to easily style the command line interface on Unix systems. When compiling for Windows all of these strings will be empty, as escape sequences can't be used the same way.



## Chapter 8

# Namespace Documentation

### 8.1 cli Namespace Reference

Includes everything regarding the CLI.

#### Classes

- class [CommandLineHandler](#)  
*Responsible for the Command Line Interface.*

#### Variables

- static const struct option [options](#) []

#### 8.1.1 Detailed Description

Includes everything regarding the CLI.

This namespace includes all the code regarding the Command Line Interface. This includes the [CommandLineHandler](#) Class, the struct for the options and helpers for Styling.

#### See also

[CommandLineHandler](#)  
[options](#)  
[StyleHelpers](#)

## 8.1.2 Variable Documentation

### 8.1.2.1 options

```
const struct option cli::options[] [static]
```

Initial value:

```
= {
    {"help", no_argument, nullptr, 'h'},
    {"version", no_argument, nullptr, 'v'},
    {"credits", no_argument, nullptr, 'c'},
    {"verbose", no_argument, nullptr, 0},
    {"outdir", required_argument, nullptr, 'o'},
    nullptr
}
```

Definition at line 120 of file [CommandLineHandler.hpp](#).

## 8.2 config Namespace Reference

Namespace used for general project information.

### Variables

- constexpr auto [LOG\\_CONFIG](#)
- constexpr auto [EXECUTABLE\\_NAME](#) = "json2batch"
- constexpr auto [MAJOR\\_VERSION](#) = "0"
- constexpr auto [MINOR\\_VERSION](#) = "2"
- constexpr auto [PATCH\\_VERSION](#) = "3"
- constexpr auto [DESCRIPTION](#) = "A simple tool to convert json to batch."
- constexpr auto [PROJECT\\_NAME](#) = "JSON2Batch"
- constexpr auto [AUTHORS](#) = "@AUTHORS"
- constexpr auto [HOMEPAGE\\_URL](#)

### 8.2.1 Detailed Description

Namespace used for general project information.

## 8.2.2 Variable Documentation

### 8.2.2.1 AUTHORS

```
constexpr auto config::AUTHORS = "@AUTHORS" [inline], [constexpr]
```

Definition at line 34 of file [config.hpp](#).

### 8.2.2.2 DESCRIPTION

```
constexpr auto config::DESCRIPTION = "A simple tool to convert json to batch." [inline],
[constexpr]
```

Definition at line 32 of file [config.hpp](#).

### 8.2.2.3 EXECUTABLE\_NAME

```
constexpr auto config::EXECUTABLE_NAME = "json2batch" [inline], [constexpr]
```

Definition at line 28 of file [config.hpp](#).

### 8.2.2.4 HOMEPAGE\_URL

```
constexpr auto config::HOMEPAGE_URL [inline], [constexpr]
```

**Initial value:**

```
=  
    "https://dhwprojectsit23.github.io/JSON2Bat "
```

Definition at line 35 of file [config.hpp](#).

### 8.2.2.5 LOG\_CONFIG

```
constexpr auto config::LOG_CONFIG [inline], [constexpr]
```

**Initial value:**

```
=  
    "/home/simon/1_Coding/cpp/JsonToBat/build/Debug/config/easylogging.conf"
```

Definition at line 26 of file [config.hpp](#).

### 8.2.2.6 MAJOR\_VERSION

```
constexpr auto config::MAJOR_VERSION = "0" [inline], [constexpr]
```

Definition at line 29 of file [config.hpp](#).

### 8.2.2.7 MINOR\_VERSION

```
constexpr auto config::MINOR_VERSION = "2" [inline], [constexpr]
```

Definition at line 30 of file [config.hpp](#).

### 8.2.2.8 PATCH\_VERSION

```
constexpr auto config::PATCH_VERSION = "3" [inline], [constexpr]
```

Definition at line 31 of file [config.hpp](#).

### 8.2.2.9 PROJECT\_NAME

```
constexpr auto config::PROJECT_NAME = "JSON2Batch" [inline], [constexpr]
```

Definition at line 33 of file [config.hpp](#).

## 8.3 exceptions Namespace Reference

Namespace used for customized exceptions.

### Classes

- class [CustomException](#)  
*Base class for all custom exceptions.*
- class [FailedToOpenFileException](#)  
*Exception for when a file can't be opened.*
- class [FileExistsException](#)  
*Exception for an already existing outputfile.*
- class [InvalidKeyException](#)  
*Exception for invalid keys.*
- class [InvalidTypeException](#)  
*Exception for invalid types.*
- class [InvalidValueException](#)  
*Exception for an invalid (usually empty) value field.*
- class [MissingKeyException](#)  
*Exception for missing keys within entries.*
- class [MissingTypeException](#)  
*Exception for missing types of entries.*
- class [NoSuchDirException](#)  
*Exception for when a directory does not exist.*
- class [ParsingException](#)  
*Exception for syntax errors within the json file.*
- class [UnreachableCodeException](#)  
*Exception for when the application reaches code it shouldn't reach.*

### 8.3.1 Detailed Description

Namespace used for customized exceptions.

## 8.4 parsing Namespace Reference

The namespace containing everything relevant to parsing.

### Classes

- class [FileData](#)  
*This class contains all data from the json file.*
- class [JsonHandler](#)  
*This file reads all data from the json file.*
- class [KeyValidator](#)  
*Validates keys of a `Json::Value` object.*

### 8.4.1 Detailed Description

The namespace containing everything relevant to parsing.

This namespace contains all relevant classes to parsing the json file and creating the batch output.

See also

[JsonHandler](#)

[FileData](#)

[KeyValidator](#)

[BatchCreator](#)

## 8.5 utilities Namespace Reference

Includes all utilities.

### Classes

- class [Utils](#)  
*Responsible for utility function.*

### 8.5.1 Detailed Description

Includes all utilities.

This namespace includes the [Utils](#) class with utility functions which can be used throughout the project.

See also

[Utils](#)





# Chapter 9

## Class Documentation

### 9.1 BatchCreator Class Reference

Creates a batch file from a FileData object.

```
#include <BatchCreator.hpp>
```

#### Public Member Functions

- [BatchCreator](#) (std::shared\_ptr< [parsing::FileData](#) > fileData)  
*Initializes the [BatchCreator](#).*
- std::shared\_ptr< std::stringstream > [getDataStream](#) () const  
*Returns the stringstream.*

#### Private Member Functions

- void [createBatch](#) () const  
*Creates the batch stream.*
- void [writeStart](#) () const  
*Writes the start of the batch file.*
- void [writeHideShell](#) () const  
*Writes the visibility of the shell.*
- void [writeCommands](#) () const  
*Writes the commands to be executed.*
- void [writeEnvVariables](#) () const  
*Set's environment variables.*
- void [writePathVariables](#) () const  
*Set's the path variables.*
- void [writeApplication](#) () const  
*If an application is given, it is started at the end.*
- void [writeEnd](#) () const  
*Writes the end of the batch file.*

## Private Attributes

- `std::shared_ptr< std::stringstream > dataStream`
- `std::shared_ptr< parsing::FileData > fileData`

### 9.1.1 Detailed Description

Creates a batch file from a FileData obeject.

Uses a FileData object to create a string stream, which can then be streamed into a batch file.

See also

[FileData](#)

Definition at line 29 of file [BatchCreator.hpp](#).

### 9.1.2 Constructor & Destructor Documentation

#### 9.1.2.1 BatchCreator()

```
BatchCreator::BatchCreator (
    std::shared_ptr< parsing::FileData > fileData ) [explicit]
```

Initializes the [BatchCreator](#).

Creates a stringstream and calls the [createBatch\(\)](#) function

Parameters

<i>fileData</i>	A shared pointer to the FileData object
-----------------	---

Definition at line 18 of file [BatchCreator.cpp](#).

References [createBatch\(\)](#), and [dataStream](#).

Here is the call graph for this function:



## 9.1.3 Member Function Documentation

### 9.1.3.1 createBatch()

```
void BatchCreator::createBatch ( ) const [private]
```

Creates the batch stream.

< FileData object

The method calls all necessary functions to create the stream for the batch file.

Definition at line 25 of file [BatchCreator.cpp](#).

References [writeApplication\(\)](#), [writeCommands\(\)](#), [writeEnd\(\)](#), [writeEnvVariables\(\)](#), [writeHideShell\(\)](#), [writePathVariables\(\)](#), and [writeStart\(\)](#).

Here is the call graph for this function:



Here is the caller graph for this function:



### 9.1.3.2 `getDataStream()`

```
std::shared_ptr< std::stringstream > BatchCreator::getDataStream ( ) const [inline]
```

Returns the stringstream.

#### Returns

A shared pointer to the stringstream

Definition at line 46 of file [BatchCreator.hpp](#).

References [dataStream](#).

Here is the caller graph for this function:



### 9.1.3.3 writeApplication()

```
void BatchCreator::writeApplication ( ) const [private]
```

If an application is given, it is started at the end.

If the key "application" is given in the json file, the application is started at the end of the batch file.

- {ReqFunc16}
- {ReqFunc25}

Definition at line 81 of file [BatchCreator.cpp](#).

References [dataStream](#), and [fileData](#).

Here is the caller graph for this function:



### 9.1.3.4 writeCommands()

```
void BatchCreator::writeCommands ( ) const [private]
```

Writes the commands to be executed.

Writes the commands to be executed from the FileData object. Those originate from the "commands" entry in the json file

- {ReqFunc20}
- {ReqFunc22}

Definition at line 53 of file [BatchCreator.cpp](#).

References [dataStream](#), and [fileData](#).

Here is the caller graph for this function:



### 9.1.3.5 writeEnd()

```
void BatchCreator::writeEnd ( ) const [private]
```

Writes the end of the batch file.

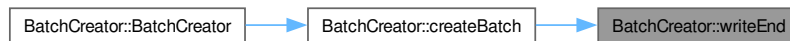
Writes the end of the batch file, which is always the same:

- @ECHO ON

Definition at line 99 of file [BatchCreator.cpp](#).

References [dataStream](#).

Here is the caller graph for this function:



### 9.1.3.6 writeEnvVariables()

```
void BatchCreator::writeEnvVariables ( ) const [private]
```

Set's environment variables.

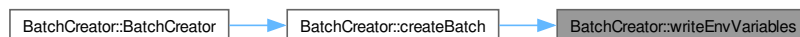
Set's the envirimnt variables for the batch. Those originate from the "ENV" entry in the json file with the following syntax:

- Entry under "key" = Entry under "value"
- {ReqFunc20}
- {ReqFunc21}

Definition at line 62 of file [BatchCreator.cpp](#).

References [dataStream](#), and [fileData](#).

Here is the caller graph for this function:



### 9.1.3.7 writeHideShell()

```
void BatchCreator::writeHideShell ( ) const [private]
```

Writes the visibility of the shell.

This hides/shows the shell after the batch file has been executed

- {ReqFunc19}

Definition at line 42 of file [BatchCreator.cpp](#).

References [dataStream](#), and [fileData](#).

Here is the caller graph for this function:



### 9.1.3.8 writePathVariables()

```
void BatchCreator::writePathVariables ( ) const [private]
```

Set's the path variables.

Set's the path variables for the batch. Those originate from the "PATH" entry in the json file

- {ReqFunc20}
- {ReqFunc23}

Definition at line 70 of file [BatchCreator.cpp](#).

References [dataStream](#), and [fileData](#).

Here is the caller graph for this function:



### 9.1.3.9 writeStart()

```
void BatchCreator::writeStart ( ) const [private]
```

Writes the start of the batch file.

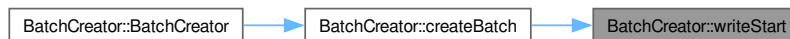
Writes the start of the batch file, which is always the same:

- setzt ECHO off
- startet cmd.exe

Definition at line 36 of file [BatchCreator.cpp](#).

References [dataStream](#).

Here is the caller graph for this function:



## 9.1.4 Member Data Documentation

### 9.1.4.1 dataStream

```
std::shared_ptr<std::stringstream> BatchCreator::dataStream [private]
```

Definition at line 52 of file [BatchCreator.hpp](#).

### 9.1.4.2 fileData

```
std::shared_ptr<parsing::FileData> BatchCreator::fileData [private]
```

< stringstream for the batch file

Definition at line 54 of file [BatchCreator.hpp](#).

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

- src/include/[BatchCreator.hpp](#)
- src/sources/[BatchCreator.cpp](#)

## 9.2 cli::CommandLineHandler Class Reference

Responsible for the Command Line Interface.

```
#include <CommandLineHandler.hpp>
```



## Public Member Functions

- [CommandLineHandler](#) ()=delete  
*The Constructor of the [CommandLineHandler](#) Class.*
- [~CommandLineHandler](#) ()=delete  
*The Destructor of the [CommandLineHandler](#) Class.*

## Static Public Member Functions

- static void [printHelp](#) ()  
*Prints the help message.*
- static void [printVersion](#) ()  
*Prints the version message.*
- static void [printCredits](#) ()  
*Prints the credits message.*
- static std::tuple< std::optional< std::string >, std::vector< std::string > > [parseArguments](#) (int argc, char \*argv[])  
*Parses the Command Line Arguments.*

### 9.2.1 Detailed Description

Responsible for the Command Line Interface.

This class is responsible for parsing the command line arguments, printing Help/Version/Credits messages and returning inputted files.

#### Author

Simon Blum

#### Date

2024-04-18

#### Version

0.1.5

#### See also

[options](#)

Definition at line 55 of file [CommandLineHandler.hpp](#).

## 9.2.2 Constructor & Destructor Documentation

### 9.2.2.1 CommandLineHandler()

```
cli::CommandLineHandler::CommandLineHandler ( ) [delete]
```

The Constructor of the [CommandLineHandler](#) Class.

#### Note

As all functions are static it should not be used and as such is deleted.

### 9.2.2.2 ~CommandLineHandler()

```
cli::CommandLineHandler::~~CommandLineHandler ( ) [delete]
```

The Destructor of the [CommandLineHandler](#) Class.

#### Note

As all functions are static it should not be used and as such is deleted.

## 9.2.3 Member Function Documentation

### 9.2.3.1 parseArguments()

```
std::tuple< std::optional< std::string >, std::vector< std::string > > cli::CommandLine↵
Handler::parseArguments (
    int argc,
    char * argv[] ) [static]
```

Parses the Command Line Arguments.

This function uses the "getopt.h" library to parse all options given and then returns all files which are given as arguments.

- {ReqFunc4}
- {ReqFunc5}
- {ReqNonFunc4}

#### Parameters

<i>argc</i>	The number of arguments given
<i>argv</i>	The arguments given

**Returns**

Returns a tuple containing the output directory and the files

Definition at line 68 of file [CommandLineHandler.cpp](#).

References [printCredits\(\)](#), [printHelp\(\)](#), and [printVersion\(\)](#).

Here is the call graph for this function:



Here is the caller graph for this function:

**9.2.3.2 printCredits()**

```
void cli::CommandLineHandler::printCredits ( ) [static]
```

Prints the credits message.

- {ReqFunc3}

**Note**

This function ends the application.

Definition at line 50 of file [CommandLineHandler.cpp](#).

References [config::AUTHORS](#), [config::DESCRIPTION](#), [config::HOMEPAGE\\_URL](#), [config::MAJOR\\_VERSION](#), [config::MINOR\\_VERSION](#), [config::PATCH\\_VERSION](#), and [config::PROJECT\\_NAME](#).

Here is the caller graph for this function:

**9.2.3.3 printHelp()**

```
void cli::CommandLineHandler::printHelp ( ) [static]
```

Prints the help message.

- {ReqFunc1}
- {ReqFunc2}

**Note**

This function ends the application.

Definition at line 22 of file [CommandLineHandler.cpp](#).

References [config::EXECUTABLE\\_NAME](#).

Here is the caller graph for this function:



#### 9.2.3.4 printVersion()

```
void cli::CommandLineHandler::printVersion ( ) [static]
```

Prints the version message.

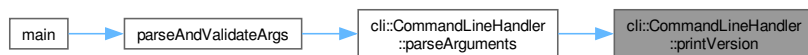
##### Note

This function ends the application.

Definition at line 44 of file [CommandLineHandler.cpp](#).

References [config::MAJOR\\_VERSION](#), [config::MINOR\\_VERSION](#), [config::PATCH\\_VERSION](#), and [config::PROJECT\\_NAME](#).

Here is the caller graph for this function:



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

- [src/include/CommandLineHandler.hpp](#)
- [src/sources/CommandLineHandler.cpp](#)

## 9.3 exceptions::CustomException Class Reference

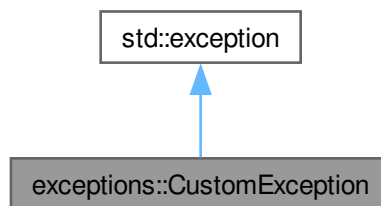
Base class for all custom exceptions.

```
#include <Exceptions.hpp>
```

Inheritance diagram for exceptions::CustomException:



Collaboration diagram for exceptions::CustomException:



## Public Member Functions

- `const char * what () const` noexcept override

### 9.3.1 Detailed Description

Base class for all custom exceptions.

This class is the base class which is inherited by all custom exceptions. It can be used to catch all exceptions that are thrown by us.

See also

`std::exception`

Definition at line 35 of file [Exceptions.hpp](#).

## 9.3.2 Member Function Documentation

### 9.3.2.1 what()

```
const char * exceptions::CustomException::what ( ) const [inline], [override], [noexcept]
```

Definition at line 37 of file [Exceptions.hpp](#).

Here is the caller graph for this function:



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

- `src/include/Exceptions.hpp`

## 9.4 exceptions::FailedToOpenFileException Class Reference

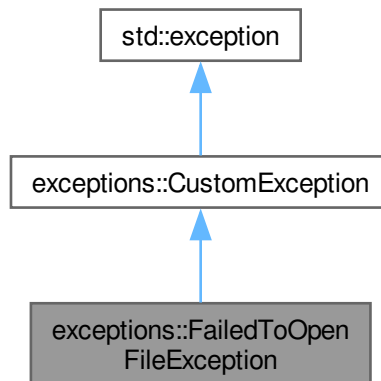
Exception for when a file can't be opened.

```
#include <Exceptions.hpp>
```

Inheritance diagram for `exceptions::FailedToOpenFileException`:



Collaboration diagram for exceptions::FailedToOpenFileException:



#### Public Member Functions

- [FailedToOpenFileException](#) (const std::string &file)
- const char \* [what](#) () const noexcept override

#### Public Member Functions inherited from [exceptions::CustomException](#)

- const char \* [what](#) () const noexcept override

#### Private Attributes

- std::string [message](#)

### 9.4.1 Detailed Description

Exception for when a file can't be opened.

Definition at line [259](#) of file [Exceptions.hpp](#).

### 9.4.2 Constructor & Destructor Documentation

#### 9.4.2.1 FailedToOpenFileException()

```
exceptions::FailedToOpenFileException::FailedToOpenFileException (  
    const std::string & file ) [inline], [explicit]
```

Definition at line [264](#) of file [Exceptions.hpp](#).

References [message](#).



### 9.4.3 Member Function Documentation

#### 9.4.3.1 what()

`const char * exceptions::FailedToOpenFileException::what ( ) const [inline], [override], [noexcept]`

Definition at line 268 of file [Exceptions.hpp](#).

References [message](#).

### 9.4.4 Member Data Documentation

#### 9.4.4.1 message

`std::string exceptions::FailedToOpenFileException::message [private]`

Definition at line 261 of file [Exceptions.hpp](#).

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

- [src/include/Exceptions.hpp](#)

## 9.5 parsing::FileData Class Reference

This class contains all data from the json file.

```
#include <FileData.hpp>
```

#### Public Member Functions

- void [setOutputFile](#) (std::string &newOutputfile)  
*Setter for this->outputfile.*
- void [setHideShell](#) (bool newHideShell)  
*Setter for this->hideshell.*
- void [setApplication](#) (const std::string &newApplication)  
*Setter for this->application.*
- void [addCommand](#) (const std::string &command)  
*Adds a given command to this->commands.*
- void [addEnvironmentVariable](#) (const std::string &name, const std::string &value)  
*Adds a given tuple to this->environmentVariables.*
- void [addPathValue](#) (const std::string &pathValue)  
*Add's a given value to this->pathValues.*
- const std::string & [getOutputFile](#) () const  
*Getter for this->outputfile.*
- bool [getHideShell](#) () const  
*Getter for this->hideShell.*
- const std::optional< std::string > & [getApplication](#) () const  
*Getter for this->application.*
- const std::vector< std::string > & [getCommands](#) () const  
*Getter for this->commands.*
- const std::vector< std::tuple< std::string, std::string > > & [getEnvironmentVariables](#) () const  
*Getter for this->environmentVariables.*
- const std::vector< std::string > & [getPathValues](#) () const  
*Getter for this->pathValues.*

## Private Attributes

- `std::string` [outputfile](#)
- `bool` [hideShell](#)
- `std::optional< std::string >` [application](#)
- `std::vector< std::string >` [commands](#)
- `std::vector< std::tuple< std::string, std::string > >` [environmentVariables](#)
- `std::vector< std::string >` [pathValues](#)

## 9.5.1 Detailed Description

This class contains all data from the json file.

The data from the json file is parsed by the [JsonHandler](#) and then assigned to the attributes of an instance of this class. This class also handles a part of the error handling.

- {ReqFunc14}

Definition at line 32 of file [FileData.hpp](#).

## 9.5.2 Member Function Documentation

### 9.5.2.1 addCommand()

```
void parsing::FileData::addCommand (
    const std::string & command )
```

Adds a given command to this->commands.

Makes sure, that the given command value is not empty and then add's it to the commands attribute.

#### Parameters

<i>command</i>	The command to be added
----------------	-------------------------

#### Exceptions

<a href="#">exceptions::InvalidValueException</a>	
---	--

Definition at line 56 of file [FileData.cpp](#).

References [commands](#).

### 9.5.2.2 addEnvironmentVariable()

```
void parsing::FileData::addEnvironmentVariable (
    const std::string & name,
    const std::string & value )
```

Adds a given tuple to this->environmentVariables.

Makes sure that neither the key nor the value is empty and then adds a tuple with both values to the environmentVariables attribute

#### Parameters

<i>name</i>	The name of the env variable
<i>value</i>	The value of the env variable

#### Exceptions

<a href="#">exceptions::InvalidValueException</a>	
---	--

Definition at line 67 of file [FileData.cpp](#).

References [environmentVariables](#).

### 9.5.2.3 addPathValue()

```
void parsing::FileData::addPathValue (
    const std::string & pathValue )
```

Add's a given value to this->pathValues.

Makes sure that the given value is not empty and then assigns it to the given pathValues attribute

#### Parameters

<i>pathValue</i>	The value to be added
------------------	-----------------------

#### Exceptions

<a href="#">exceptions::InvalidValueException</a>	
---	--

Definition at line 83 of file [FileData.cpp](#).

References [pathValues](#).

### 9.5.2.4 getApplication()

```
const std::optional< std::string > & parsing::FileData::getApplication ( ) const [inline]
```

Getter for this->application.

#### Returns

The assigned application

Definition at line 122 of file [FileData.hpp](#).

References [application](#).

#### 9.5.2.5 getCommands()

```
const std::vector< std::string > & parsing::FileData::getCommands ( ) const [inline]
```

Getter for this->commands.

##### Returns

The vector of assigned commands

Definition at line 130 of file [FileData.hpp](#).

References [commands](#).

#### 9.5.2.6 getEnvironmentVariables()

```
const std::vector< std::tuple< std::string, std::string > > & parsing::FileData::getEnvironmentVariables ( ) const [inline]
```

Getter for this->environmentVariables.

##### Returns

The vector of assigned env variables

Definition at line 139 of file [FileData.hpp](#).

References [environmentVariables](#).

#### 9.5.2.7 getHideShell()

```
bool parsing::FileData::getHideShell ( ) const [inline]
```

Getter for this->hideShell.

##### Returns

The assigned value for hideshow

Definition at line 114 of file [FileData.hpp](#).

References [hideShell](#).

#### 9.5.2.8 getOutputFile()

```
const std::string & parsing::FileData::getOutputFile ( ) const [inline]
```

Getter for this->outputfile.

##### Returns

The assigned outputfile

Definition at line 106 of file [FileData.hpp](#).

References [outputfile](#).

### 9.5.2.9 getPathValues()

```
const std::vector< std::string > & parsing::FileData::getPathValues ( ) const [inline]
```

Getter for this->pathValues.

#### Returns

The vector of assigned pathValues

Definition at line 147 of file [FileData.hpp](#).

References [pathValues](#).

### 9.5.2.10 setApplication()

```
void parsing::FileData::setApplication (
    const std::string & newApplication )
```

Setter for this->application.

Set's the application attribute. Return's if the given string is empty.

#### Parameters

<i>newApplication</i>	The application to be set
-----------------------	---------------------------

Definition at line 46 of file [FileData.cpp](#).

References [application](#).

### 9.5.2.11 setHideShell()

```
void parsing::FileData::setHideShell (
    bool newHideShell ) [inline]
```

Setter for this->hideshell.

#### Parameters

<i>newHideShell</i>	The hideshell value to be set
---------------------	-------------------------------

Definition at line 50 of file [FileData.hpp](#).

References [hideShell](#).

### 9.5.2.12 setOutputFile()

```
void parsing::FileData::setOutputFile (
    std::string & newOutputfile )
```

Setter for this->outputfile.

Checks that neither the given string is empty, nor that the outputfile is already set and then assigns the newOutputfile to the instance.

#### Parameters

<i>newOutputfile</i>	The outputfile to be set
----------------------	--------------------------

#### Exceptions

<a href="#">exceptions::InvalidValueException</a>	
---	--

Definition at line 18 of file [FileData.cpp](#).

References [outputfile](#).

## 9.5.3 Member Data Documentation

### 9.5.3.1 application

```
std::optional<std::string> parsing::FileData::application [private]
```

Definition at line 154 of file [FileData.hpp](#).

### 9.5.3.2 commands

```
std::vector<std::string> parsing::FileData::commands [private]
```

Definition at line 156 of file [FileData.hpp](#).

### 9.5.3.3 environmentVariables

```
std::vector<std::tuple<std::string, std::string> > parsing::FileData::environmentVariables  
[private]
```

Definition at line 158 of file [FileData.hpp](#).

### 9.5.3.4 hideShell

```
bool parsing::FileData::hideShell [private]
```

Definition at line 153 of file [FileData.hpp](#).

### 9.5.3.5 outputfile

```
std::string parsing::FileData::outputfile [private]
```

Definition at line 152 of file [FileData.hpp](#).

### 9.5.3.6 pathValues

```
std::vector<std::string> parsing::FileData::pathValues [private]
```

Definition at line 160 of file [FileData.hpp](#).

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

- [src/include/FileData.hpp](#)
- [src/sources/FileData.cpp](#)

## 9.6 exceptions::FileExistsException Class Reference

Exception for an already existing outputfile.

```
#include <Exceptions.hpp>
```

Inheritance diagram for exceptions::FileExistsException:



Collaboration diagram for `exceptions::FileExistsException`:



### Public Member Functions

- [FileExistsException](#) (const std::string &[file](#))
- const char \* [what](#) () const noexcept override

### Public Member Functions inherited from [exceptions::CustomException](#)

- const char \* [what](#) () const noexcept override

### Private Attributes

- const std::string [file](#)
- std::string [message](#)

## 9.6.1 Detailed Description

Exception for an already existing outputfile.

Definition at line 74 of file [Exceptions.hpp](#).

## 9.6.2 Constructor & Destructor Documentation

### 9.6.2.1 FileExistsException()

```
exceptions::FileExistsException::FileExistsException (
    const std::string & file ) [inline], [explicit]
```

#### Note

I planned to use `std::format`, however it seems that the required Compiler Version is not yet available in the stable Ubuntu Repo!

Definition at line 80 of file [Exceptions.hpp](#).

References [file](#), and [message](#).



### 9.6.3 Member Function Documentation

#### 9.6.3.1 what()

```
const char * exceptions::FileExistsException::what ( ) const [inline], [override], [noexcept]
```

Definition at line 92 of file [Exceptions.hpp](#).

References [message](#).

### 9.6.4 Member Data Documentation

#### 9.6.4.1 file

```
const std::string exceptions::FileExistsException::file [private]
```

Definition at line 76 of file [Exceptions.hpp](#).

#### 9.6.4.2 message

```
std::string exceptions::FileExistsException::message [private]
```

Definition at line 77 of file [Exceptions.hpp](#).

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

- [src/include/Exceptions.hpp](#)

## 9.7 exceptions::InvalidKeyException Class Reference

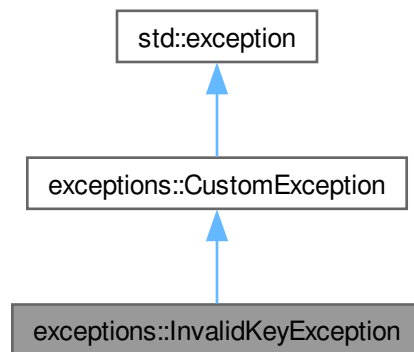
Exception for invalid keys.

```
#include <Exceptions.hpp>
```

Inheritance diagram for exceptions::InvalidKeyException:



Collaboration diagram for exceptions::InvalidKeyException:



#### Public Member Functions

- [InvalidKeyException](#) (const std::vector< std::tuple< int, std::string > > &keys)
- const char \* [what](#) () const noexcept override

#### Public Member Functions inherited from [exceptions::CustomException](#)

- const char \* [what](#) () const noexcept override

#### Private Attributes

- std::string [message](#) = "Invalid key found!"

### 9.7.1 Detailed Description

Exception for invalid keys.

This exception is thrown when a key is found within the json file, that is not part of the valid keys. It will also display the name and the line of the invalid key.

See also

[parsing::KeyValidator::validKeys](#)

[parsing::KeyValidator::validEntryKeys](#)

Definition at line 135 of file [Exceptions.hpp](#).

## 9.7.2 Constructor & Destructor Documentation

### 9.7.2.1 InvalidKeyException()

```
exceptions::InvalidKeyException::InvalidKeyException (
    const std::vector< std::tuple< int, std::string > > & keys ) [inline], [explicit]
```

Definition at line 140 of file [Exceptions.hpp](#).

References [message](#).

## 9.7.3 Member Function Documentation

### 9.7.3.1 what()

```
const char * exceptions::InvalidKeyException::what ( ) const [inline], [override], [noexcept]
```

Definition at line 149 of file [Exceptions.hpp](#).

References [message](#).

## 9.7.4 Member Data Documentation

### 9.7.4.1 message

```
std::string exceptions::InvalidKeyException::message = "Invalid key found!" [private]
```

Definition at line 137 of file [Exceptions.hpp](#).

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

- [src/include/Exceptions.hpp](#)

## 9.8 exceptions::InvalidTypeException Class Reference

Exception for invalid types.

```
#include <Exceptions.hpp>
```

Inheritance diagram for exceptions::InvalidTypeException:



Collaboration diagram for exceptions::InvalidTypeException:



### Public Member Functions

- [InvalidTypeException](#) (const std::string &[type](#), int line)
- const char \* [what](#) () const noexcept override

### Public Member Functions inherited from [exceptions::CustomException](#)

- const char \* [what](#) () const noexcept override

### Private Attributes

- const std::string [type](#)
- std::string [message](#)

## 9.8.1 Detailed Description

Exception for invalid types.

This exception is thrown when the value of the "type" field within the entries is invalid (not "EXE", "PATH", "ENV"). It also prints the type and the line of the invalid type.

Definition at line 162 of file [Exceptions.hpp](#).

## 9.8.2 Constructor & Destructor Documentation

### 9.8.2.1 InvalidTypeException()

```
exceptions::InvalidTypeException::InvalidTypeException (
    const std::string & type,
    int line ) [inline]
```

#### Note

I planned to use `std::format`, however it seems that the required Compiler Version is not yet available in the stable Ubuntu Repo!

Definition at line 168 of file [Exceptions.hpp](#).

References [message](#), and [type](#).

## 9.8.3 Member Function Documentation

### 9.8.3.1 what()

```
const char * exceptions::InvalidTypeException::what ( ) const [inline], [override], [noexcept]
```

Definition at line 179 of file [Exceptions.hpp](#).

References [message](#).

## 9.8.4 Member Data Documentation

### 9.8.4.1 message

```
std::string exceptions::InvalidTypeException::message [private]
```

Definition at line 165 of file [Exceptions.hpp](#).

### 9.8.4.2 type

```
const std::string exceptions::InvalidTypeException::type [private]
```

Definition at line 164 of file [Exceptions.hpp](#).

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

- [src/include/Exceptions.hpp](#)

## 9.9 exceptions::InvalidValueException Class Reference

Exception for an ivalid (usually empty) value field.

```
#include <Exceptions.hpp>
```

Inheritance diagram for exceptions::InvalidValueException:



Collaboration diagram for exceptions::InvalidValueException:



## Public Member Functions

- [InvalidValueException](#) (const std::string &[key](#), const std::string &issue)
- const char \* [what](#) () const noexcept override

## Public Member Functions inherited from [exceptions::CustomException](#)

- const char \* [what](#) () const noexcept override

## Private Attributes

- const std::string [key](#)
- std::string [message](#)

## 9.9.1 Detailed Description

Exception for an ivalid (usually empty) value field.

Definition at line 101 of file [Exceptions.hpp](#).

## 9.9.2 Constructor & Destructor Documentation

### 9.9.2.1 InvalidValueException()

```
exceptions::InvalidValueException::InvalidValueException (
    const std::string & key,
    const std::string & issue ) [inline]
```

#### Note

I planned to use std::format, however it seems that the required Compiler Version is not yet available in the stable Ubuntu Repo!

Definition at line 107 of file [Exceptions.hpp](#).

References [key](#), and [message](#).

## 9.9.3 Member Function Documentation

### 9.9.3.1 what()

```
const char * exceptions::InvalidValueException::what ( ) const [inline], [override], [noexcept]
```

Definition at line 119 of file [Exceptions.hpp](#).

References [message](#).

## 9.9.4 Member Data Documentation

### 9.9.4.1 key

```
const std::string exceptions::InvalidValueException::key [private]
```

Definition at line 103 of file [Exceptions.hpp](#).

### 9.9.4.2 message

```
std::string exceptions::InvalidValueException::message [private]
```

Definition at line 104 of file [Exceptions.hpp](#).

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

- [src/include/Exceptions.hpp](#)

## 9.10 parsing::JsonHandler Class Reference

This file reads all data from the json file.

```
#include <JsonHandler.hpp>
```

### Public Member Functions

- [JsonHandler](#) ()  
*Constructor without arguments.*
- [JsonHandler](#) (const std::string &filename)  
*The constructor.*
- std::shared\_ptr< [FileData](#) > [getFileData](#) ()  
*Retrieve the data from the json file.*

### Private Member Functions

- void [assignOutputFile](#) () const  
*Assigns the outputfile to this->data.*
- void [assignHideShell](#) () const  
*Assigns the hideshow value to this->data.*
- void [assignApplication](#) () const  
*Assigns application to this->data.*
- void [assignEntries](#) () const  
*Assigns entries to this->data.*
- void [assignCommand](#) (const Json::Value &entry) const  
*Assigns an command to this->data.*
- void [assignEnvironmentVariable](#) (const Json::Value &entry) const  
*Assigns an environmentVariable to this->data.*
- void [assignPathValue](#) (const Json::Value &entry) const  
*Assigns a path value to this->data.*
- std::shared\_ptr< [FileData](#) > [createFileData](#) ()  
*Creates the FileData instance.*



## Static Private Member Functions

- static std::shared\_ptr< Json::Value > [parseFile](#) (const std::string &filename)  
*Parses the given json file.*

## Private Attributes

- std::shared\_ptr< Json::Value > [root](#)
- std::shared\_ptr< [FileData](#) > [data](#)

### 9.10.1 Detailed Description

This file reads all data from the json file.

This file uses the jsoncpp library to parse all data from a json file, validate it to some degree.

See also

<https://github.com/open-source-parsers/jsoncpp>

Definition at line 47 of file [JsonHandler.hpp](#).

### 9.10.2 Constructor & Destructor Documentation

#### 9.10.2.1 JsonHandler() [1/2]

```
parsing::JsonHandler::JsonHandler ( ) [inline]
```

Constructor without arguments.

This constructor can be used to initialise an instance in an outer scope and then assign it values from an inner scope.

Definition at line 55 of file [JsonHandler.hpp](#).

#### 9.10.2.2 JsonHandler() [2/2]

```
parsing::JsonHandler::JsonHandler (
    const std::string & filename ) [explicit]
```

The constructor.

This constructor calls this->[parseFile\(\)](#) when called.

Parameters

<i>filename</i>	Name of the json file
-----------------	-----------------------

Definition at line 20 of file [JsonHandler.cpp](#).

References [parseFile\(\)](#), and [root](#).

Here is the call graph for this function:



## 9.10.3 Member Function Documentation

### 9.10.3.1 assignApplication()

```
void parsing::JsonHandler::assignApplication ( ) const [private]
```

Assigns application to this->data.

Retrieves the value of the application key from `Json::Value this->root` and defaults to an empty string.

- {ReqFunc16}

Definition at line 77 of file [JsonHandler.cpp](#).

References [data](#), and [root](#).

Here is the caller graph for this function:



### 9.10.3.2 assignCommand()

```
void parsing::JsonHandler::assignCommand (
    const Json::Value & entry ) const [private]
```

Assigns an command to this->data.

- {ReqFunc12}

## Parameters

<i>entry</i>	The entry with the command
--------------	----------------------------

Definition at line 109 of file [JsonHandler.cpp](#).

References [data](#).

Here is the caller graph for this function:



### 9.10.3.3 assignEntries()

```
void parsing::JsonHandler::assignEntries ( ) const [private]
```

Assigns entries to this->data.

Goes through each of the entries from `Json::Value this->root` and calls the relevant method depending on it's type. All "type" keys should be valid by this point.

- {ReqFunc10}

## Parameters

<i>entry</i>	Json::Value containing an array with entries
--------------	--

## Exceptions

<a href="#"><i>exceptions::UnreachableCodeException</i></a>	
---	--

Definition at line 82 of file [JsonHandler.cpp](#).

References [assignCommand\(\)](#), [assignEnvironmentVariable\(\)](#), [assignPathValue\(\)](#), and [root](#).

Here is the call graph for this function:



Here is the caller graph for this function:



#### 9.10.3.4 assignEnvironmentVariable()

```
void parsing::JsonHandler::assignEnvironmentVariable (
    const Json::Value & entry ) const [private]
```

Assigns an environmentVariable to this->data.

- {ReqFunc11}

##### Parameters

<i>entry</i>	The entry with the environmentVariable
--------------	--

Definition at line 114 of file [JsonHandler.cpp](#).

References [data](#).

Here is the caller graph for this function:



### 9.10.3.5 assignHideShell()

```
void parsing::JsonHandler::assignHideShell ( ) const [private]
```

Assigns the hideshow value to this->data.

Retrieves the value of the hideshow key from Json::Value this->root and defaults to negative.

- {ReqFunc9}

Definition at line 71 of file [JsonHandler.cpp](#).

References [data](#), and [root](#).

Here is the caller graph for this function:



### 9.10.3.6 assignOutputFile()

```
void parsing::JsonHandler::assignOutputFile ( ) const [private]
```

Assigns the outputfile to this->data.

Retrieves the outputfile from Json::Value this->root and makes sure, that the file doesn't already exist.

- {ReqFunc8}

#### Exceptions

<a href="#">exceptions::FileExistsException</a>	
---	--

Definition at line 65 of file [JsonHandler.cpp](#).

References [data](#), and [root](#).

Here is the caller graph for this function:



### 9.10.3.7 assignPathValue()

```
void parsing::JsonHandler::assignPathValue (
    const Json::Value & entry ) const [private]
```

Assigns a path value to this->data.

- {ReqFunc13}

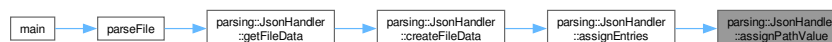
#### Parameters

<i>entry</i>	The entry with the path value
--------------	-------------------------------

Definition at line 121 of file [JsonHandler.cpp](#).

References [data](#).

Here is the caller graph for this function:



### 9.10.3.8 createFileData()

```
std::shared_ptr< FileData > parsing::JsonHandler::createFileData ( ) [private]
```

Creates the [FileData](#) instance.

Instantiates the [FileData](#) instance, calls all nessecary functions and returns a shared pointer to it.

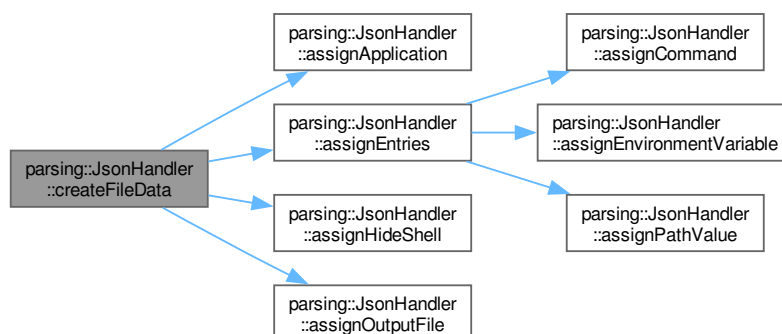
#### Returns

Pointer to the created instance of [FileData](#)

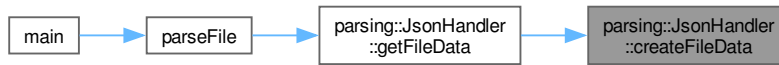
Definition at line 55 of file [JsonHandler.cpp](#).

References [assignApplication\(\)](#), [assignEntries\(\)](#), [assignHideShell\(\)](#), [assignOutputFile\(\)](#), and [data](#).

Here is the call graph for this function:



Here is the caller graph for this function:



### 9.10.3.9 getFileData()

```
std::shared_ptr< FileData > parsing::JsonHandler::getFileData ( )
```

Retrieve the data from the json file.

This method calls this->[createFileData\(\)](#) needed to retrieve the values from the `Json::Value` this->root and then returns a shared pointer to the created [FileData](#) object.

#### Returns

Pointer to the [FileData](#) Object with the parsed data from json

Definition at line 50 of file [JsonHandler.cpp](#).

References [createFileData\(\)](#).

Here is the call graph for this function:



Here is the caller graph for this function:



### 9.10.3.10 parseFile()

```
std::shared_ptr< Json::Value > parsing::JsonHandler::parseFile (
    const std::string & filename ) [static], [private]
```

Parses the given json file.

This method first creates a new `Json::Value` instance and then tries to parse the given json file. It then validates the keys of the instance using the [KeyValidator](#) class.

#### Parameters

<i>filename</i>	The name of the file wich should be parsed
-----------------	--

#### Returns

A shared pointer to the `Json::Value` instance

#### See also

[KeyValidator::validateKeys\(\)](#)

#### Exceptions

<a href="#">exceptions::ParsingException</a>	
<a href="#">exceptions::InvalidKeyException</a>	

Definition at line 25 of file [JsonHandler.cpp](#).

References [parsing::KeyValidator::getInstance\(\)](#).

Here is the call graph for this function:





Here is the caller graph for this function:



## 9.10.4 Member Data Documentation

### 9.10.4.1 data

```
std::shared_ptr<FileData> parsing::JsonHandler::data [private]
```

Definition at line 165 of file [JsonHandler.hpp](#).

### 9.10.4.2 root

```
std::shared_ptr<Json::Value> parsing::JsonHandler::root [private]
```

Definition at line 164 of file [JsonHandler.hpp](#).

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

- [src/include/JsonHandler.hpp](#)
- [src/sources/JsonHandler.cpp](#)

## 9.11 parsing::KeyValidator Class Reference

Validates keys of a `Json::Value` object.

```
#include <KeyValidator.hpp>
```

### Public Member Functions

- `std::vector< std::tuple< int, std::string > >` [validateKeys](#) (const `Json::Value` &root, const `std::string` &filename)

*Validate keys off a `Json::Value` object.*

### Static Public Member Functions

- static [KeyValidator](#) & [getInstance](#) ()

*Get the instance of this class.*

### Private Member Functions

- `std::vector< std::tuple< int, std::string > >` [getWrongKeys](#) (const `Json::Value` &root, const `std::string` &filename) const  
*Retrieve the wrong keys from a `Json::Value` object.*
- void [validateTypes](#) (const `std::string` &filename, const `Json::Value` &entry, const `std::unordered_set< std::string >` &entryKeys)  
*Validates types from the entries array.*
- `std::vector< std::tuple< int, std::string > >` [validateEntries](#) (const `std::string` &filename, const `std::unordered_set< std::string >` &entryKeys) const  
*Validates that keys within the entries array are valid.*

### Static Private Member Functions

- static `std::optional< int >` [getUnknownKeyLine](#) (const `std::string` &filename, const `std::string` &wrongKey)  
*Get the line of an unknown key.*

### Private Attributes

- `std::unordered_set< std::string >` [validKeys](#)
- `std::unordered_set< std::string >` [validEntryKeys](#)
- `std::unordered_map< std::string_view, std::vector< std::string > >` [typeToKeys](#)

## 9.11.1 Detailed Description

Validates keys of a `Json::Value` object.

This class is singleton. That way when multiple files are parsed with the application, the maps for valid keys and the set for the type entries field only have to be allocated once when parsing multiple files.

- {ReqFunc17}

Definition at line 31 of file [KeyValidator.hpp](#).

## 9.11.2 Member Function Documentation

### 9.11.2.1 getInstance()

```
KeyValidator & parsing::KeyValidator::getInstance ( ) [static]
```

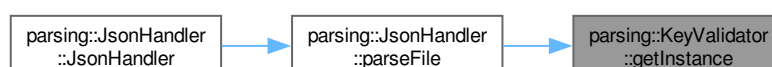
Get the instance of this class.

#### Returns

Reference to the instance of this class

Definition at line 20 of file [KeyValidator.cpp](#).

Here is the caller graph for this function:



### 9.11.2.2 getUnknownKeyLine()

```
std::optional< int > parsing::KeyValidator::getUnknownKeyLine (
    const std::string & filename,
    const std::string & wrongKey ) [static], [private]
```

Get the line of an unknown key.

This method goes through each line of the given file and checks if the line contains the given key. Returns `std::nullopt` if the file can't be opened or the key was not found.

#### Parameters

<i>filename</i>	The filename which should contain the key
<i>wrongKey</i>	The key to be searched for

#### Returns

The line of the key, if it was found

Definition at line 124 of file [KeyValidator.cpp](#).

Here is the caller graph for this function:



### 9.11.2.3 getWrongKeys()

```
std::vector< std::tuple< int, std::string > > parsing::KeyValidator::getWrongKeys (
    const Json::Value & root,
    const std::string & filename ) const [private]
```

Retrieve the wrong keys from a `Json::Value` object.

This method goes through each key of the `Json::Value` object and makes sure it's valid.

#### Parameters

<i>root</i>	The <code>Json::Value</code> object to be validated.
<i>filename</i>	The filename from which 'root' is from.

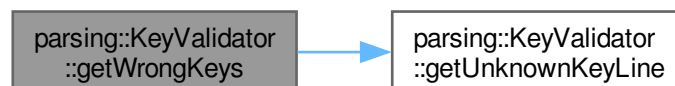
**Returns**

A vector with tuples, containing the line and name of invalid types.

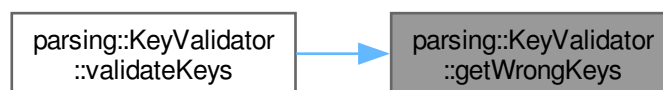
Definition at line 49 of file [KeyValidator.cpp](#).

References [getUnknownKeyLine\(\)](#), and [validKeys](#).

Here is the call graph for this function:



Here is the caller graph for this function:

**9.11.2.4 validateEntries()**

```
std::vector< std::tuple< int, std::string > > parsing::KeyValidator::validateEntries (
    const std::string & filename,
    const std::unordered_set< std::string > & entryKeys ) const [private]
```

Validates that keys within the entries array are valid.

This mehthod goes through each of the entries, and validates, that the keys are part of the `validEntryKeys` attribute.

**Parameters**

<i>filename</i>	The filename from which the entries are from
<i>entryKeys</i>	The keys of the entries

**Returns**

A vector with tuples, containing the line and name of invalid entrie keys

Definition at line 71 of file [KeyValidator.cpp](#).

References [getUnknownKeyLine\(\)](#), and [validEntryKeys](#).

Here is the call graph for this function:



Here is the caller graph for this function:



#### 9.11.2.5 validateKeys()

```
std::vector< std::tuple< int, std::string > > parsing::KeyValidator::validateKeys (
    const Json::Value & root,
    const std::string & filename )
```

Validate keys off a `Json::Value` object.

This method goes through the `MemberNames` of a `Json::Value` object and validates, that they are part of the valid↵  
Key attribute. It calls the nessecary methods to validate the keys within the entries array.

##### Parameters

<i>root</i>	The <code>Json::Value</code> object to be validated.
<i>filename</i>	The filename from which 'root' is from.

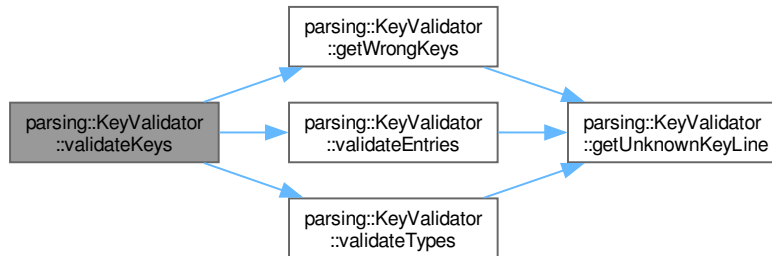
##### Returns

A vector with tuples, containing the line and name of invalid types.

Definition at line 26 of file [KeyValidator.cpp](#).

References [getWrongKeys\(\)](#), [validateEntries\(\)](#), and [validateTypes\(\)](#).

Here is the call graph for this function:



### 9.11.2.6 validateTypes()

```

void parsing::KeyValidator::validateTypes (
    const std::string & filename,
    const Json::Value & entry,
    const std::unordered_set< std::string > & entryKeys ) [private]
  
```

Validates types from the entries array.

This method goes makes sure, that the type of the given entry is valid and that it contains it's necessary keys. It will throw an exception if the type is missing, if the type is invalid or if the type is missing a key.

#### Note

Unnecessary keys within a type entry, don't cause an exception and are ignored.

#### Parameters

<i>filename</i>	The filename from which 'entry' is from
<i>entry</i>	The entry to be validated
<i>entryKeys</i>	The keys of the entry

#### Exceptions

<a href="#">exceptions::MissingTypeException</a>	
<a href="#">exceptions::InvalidTypeException</a>	
<a href="#">exceptions::MissingKeyException</a>	

Definition at line 92 of file [KeyValidator.cpp](#).

References [getUnknownKeyLine\(\)](#), and [typeToKeys](#).

Here is the call graph for this function:



Here is the caller graph for this function:



### 9.11.3 Member Data Documentation

#### 9.11.3.1 typeToKeys

```
std::unordered_map<std::string_view, std::vector<std::string> > parsing::KeyValidator::typeToKeys [private]
```

##### Initial value:

```
= {
    {"EXE", {"command"}}, {"PATH", {"path"}}, {"ENV", {"key", "value"}}
}
```

##### Note

Changed from if/else clause within function to map in 0.2.1

Definition at line 145 of file [KeyValidator.hpp](#).

#### 9.11.3.2 validEntryKeys

```
std::unordered_set<std::string> parsing::KeyValidator::validEntryKeys [private]
```

##### Initial value:

```
= { "type", "key", "value",
    "path", "command"
}
```

##### Note

Changed from vector to unordered\_set in 0.2.1 - as this should improve lookup performance from O(n) to O(1)

Definition at line 138 of file [KeyValidator.hpp](#).

### 9.11.3.3 validKeys

```
std::unordered_set<std::string> parsing::KeyValidator::validKeys [private]
```

**Initial value:**

```
= { "outputfile", "hideshell",  
    "entries", "application"  
}
```

**Note**

Changed from vector to unordered\_set in 0.2.1 - as this should improve lookup performance from  $O(n)$  to  $O(1)$

Definition at line 131 of file [KeyValidator.hpp](#).

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

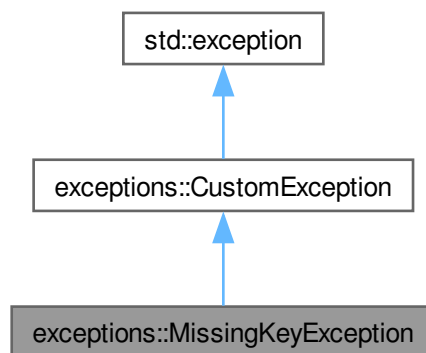
- [src/include/KeyValidator.hpp](#)
- [src/sources/KeyValidator.cpp](#)

## 9.12 exceptions::MissingKeyException Class Reference

Exception for missing keys within entries.

```
#include <Exceptions.hpp>
```

Inheritance diagram for exceptions::MissingKeyException:





Collaboration diagram for exceptions::MissingKeyException:



#### Public Member Functions

- [MissingKeyException](#) (const std::string &[key](#), const std::string &[type](#))
- const char \* [what](#) () const noexcept override

#### Public Member Functions inherited from [exceptions::CustomException](#)

- const char \* [what](#) () const noexcept override

#### Private Attributes

- std::string [message](#)
- std::string [type](#)
- std::string [key](#)

### 9.12.1 Detailed Description

Exception for missing keys within entries.

This exception is thrown when a key (such as "path" or "command") is missing from an entry. It also prints the type and which key it is missing.

Definition at line 191 of file [Exceptions.hpp](#).

## 9.12.2 Constructor & Destructor Documentation

### 9.12.2.1 MissingKeyException()

```
exceptions::MissingKeyException::MissingKeyException (
    const std::string & key,
    const std::string & type ) [inline]
```

#### Note

I planned to use `std::format`, however it seems that the required Compiler Version is not yet available in the stable Ubuntu Repo!

Definition at line 198 of file [Exceptions.hpp](#).

References [key](#), [message](#), and [type](#).

## 9.12.3 Member Function Documentation

### 9.12.3.1 what()

```
const char * exceptions::MissingKeyException::what ( ) const [inline], [override], [noexcept]
```

Definition at line 210 of file [Exceptions.hpp](#).

References [message](#).

## 9.12.4 Member Data Documentation

### 9.12.4.1 key

```
std::string exceptions::MissingKeyException::key [private]
```

Definition at line 195 of file [Exceptions.hpp](#).

### 9.12.4.2 message

```
std::string exceptions::MissingKeyException::message [private]
```

Definition at line 193 of file [Exceptions.hpp](#).

### 9.12.4.3 type

```
std::string exceptions::MissingKeyException::type [private]
```

Definition at line 194 of file [Exceptions.hpp](#).

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

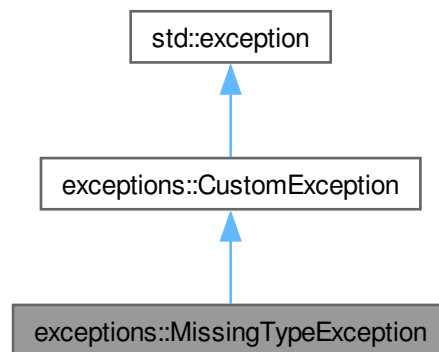
- [src/include/Exceptions.hpp](#)

## 9.13 exceptions::MissingTypeException Class Reference

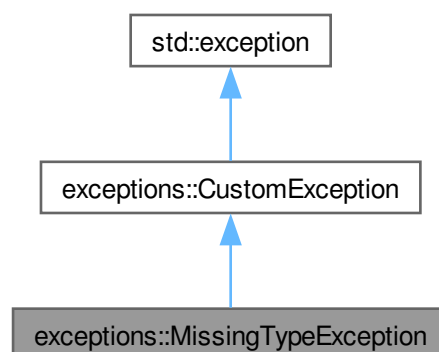
Exception for missing types of entries.

```
#include <Exceptions.hpp>
```

Inheritance diagram for exceptions::MissingTypeException:



Collaboration diagram for exceptions::MissingTypeException:



### Public Member Functions

- [MissingTypeException](#) ()
- const char \* [what](#) () const noexcept override

## Public Member Functions inherited from [exceptions::CustomException](#)

- `const char * what () const` noexcept override

## Private Attributes

- `std::string message = "Missing \"type\" key for at least one entry!"`

### 9.13.1 Detailed Description

Exception for missing types of entries.

This exception is thrown, when an entry is missing it's "type" key.

Definition at line 221 of file [Exceptions.hpp](#).

### 9.13.2 Constructor & Destructor Documentation

#### 9.13.2.1 MissingTypeException()

```
exceptions::MissingTypeException::MissingTypeException ( ) [inline]
```

Definition at line 226 of file [Exceptions.hpp](#).

References [message](#).

### 9.13.3 Member Function Documentation

#### 9.13.3.1 what()

```
const char * exceptions::MissingTypeException::what ( ) const [inline], [override], [noexcept]
```

Definition at line 229 of file [Exceptions.hpp](#).

References [message](#).

### 9.13.4 Member Data Documentation

#### 9.13.4.1 message

```
std::string exceptions::MissingTypeException::message = "Missing \"type\" key for at least one entry!" [private]
```

Definition at line 223 of file [Exceptions.hpp](#).

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

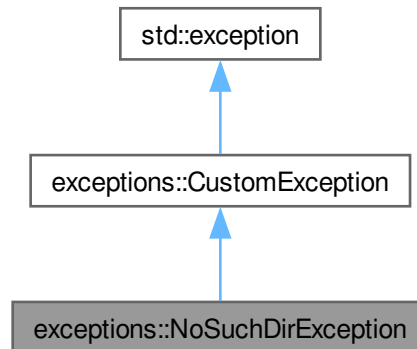
- `src/include/Exceptions.hpp`

## 9.14 exceptions::NoSuchDirException Class Reference

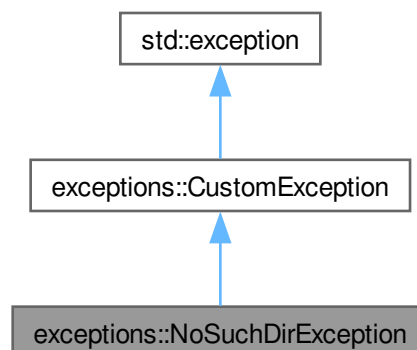
Exception for when a directory does not exist.

```
#include <Exceptions.hpp>
```

Inheritance diagram for exceptions::NoSuchDirException:



Collaboration diagram for exceptions::NoSuchDirException:



### Public Member Functions

- [NoSuchDirException](#) (const std::string &dir)
- const char \* [what](#) () const noexcept override

## Public Member Functions inherited from [exceptions::CustomException](#)

- `const char * what ()` `const` `noexcept` override

## Private Attributes

- `std::string message`

### 9.14.1 Detailed Description

Exception for when a directory does not exist.

Definition at line [277](#) of file [Exceptions.hpp](#).

### 9.14.2 Constructor & Destructor Documentation

#### 9.14.2.1 NoSuchDirException()

```
exceptions::NoSuchDirException::NoSuchDirException (  
    const std::string & dir ) [inline], [explicit]
```

Definition at line [282](#) of file [Exceptions.hpp](#).

References [message](#).

### 9.14.3 Member Function Documentation

#### 9.14.3.1 what()

```
const char * exceptions::NoSuchDirException::what ( ) const [inline], [override], [noexcept]
```

Definition at line [286](#) of file [Exceptions.hpp](#).

References [message](#).

### 9.14.4 Member Data Documentation

#### 9.14.4.1 message

```
std::string exceptions::NoSuchDirException::message [private]
```

Definition at line [279](#) of file [Exceptions.hpp](#).

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

- `src/include/Exceptions.hpp`

## 9.15 options Struct Reference

The struct containing all possible options.

```
#include <CommandLineHandler.hpp>
```

### 9.15.1 Detailed Description

The struct containing all possible options.

This struct contains all long and short options which can be used and will be parsed using "getopt.h"

- {ReqNonFunc4}

See also

CommandLineHandler

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

- src/include/[CommandLineHandler.hpp](#)

## 9.16 exceptions::ParsingException Class Reference

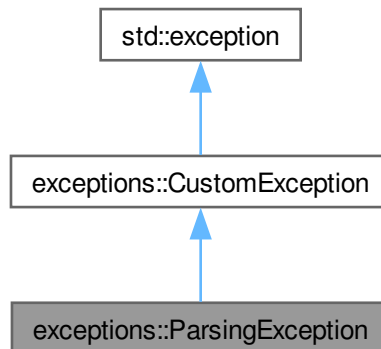
Exception for syntax errors within the json file.

```
#include <Exceptions.hpp>
```

Inheritance diagram for exceptions::ParsingException:



Collaboration diagram for exceptions::ParsingException:



#### Public Member Functions

- [ParsingException](#) (const std::string &[file](#))
- const char \* [what](#) () const noexcept override

#### Public Member Functions inherited from [exceptions::CustomException](#)

- const char \* [what](#) () const noexcept override

#### Private Attributes

- const std::string [file](#)
- std::string [message](#)

### 9.16.1 Detailed Description

Exception for syntax errors within the json file.

Definition at line 46 of file [Exceptions.hpp](#).

### 9.16.2 Constructor & Destructor Documentation

#### 9.16.2.1 ParsingException()

```
exceptions::ParsingException::ParsingException (  
    const std::string & file ) [inline], [explicit]
```

#### Note

I planned to use std::format, however it seems that the required Compiler Version is not yet available in the stable Ubuntu Repo!

Definition at line 52 of file [Exceptions.hpp](#).

References [file](#), and [message](#).



### 9.16.3 Member Function Documentation

#### 9.16.3.1 what()

```
const char * exceptions::ParsingException::what ( ) const [inline], [override], [noexcept]
```

Definition at line 65 of file [Exceptions.hpp](#).

References [message](#).

### 9.16.4 Member Data Documentation

#### 9.16.4.1 file

```
const std::string exceptions::ParsingException::file [private]
```

Definition at line 48 of file [Exceptions.hpp](#).

#### 9.16.4.2 message

```
std::string exceptions::ParsingException::message [private]
```

Definition at line 49 of file [Exceptions.hpp](#).

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

- [src/include/Exceptions.hpp](#)

## 9.17 exceptions::UnreachableCodeException Class Reference

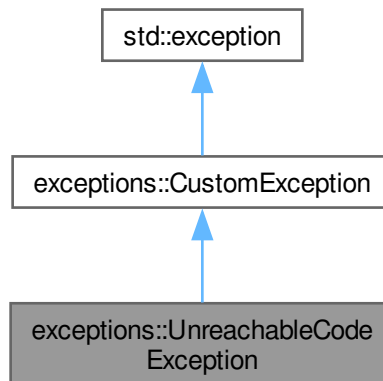
Exception for when the application reaches code it shouldn't reach.

```
#include <Exceptions.hpp>
```

Inheritance diagram for exceptions::UnreachableCodeException:



Collaboration diagram for exceptions::UnreachableCodeException:



#### Public Member Functions

- [UnreachableCodeException](#) (const std::string &[message](#))
- const char \* [what](#) () const noexcept override

#### Public Member Functions inherited from [exceptions::CustomException](#)

- const char \* [what](#) () const noexcept override

#### Private Attributes

- std::string [message](#)

### 9.17.1 Detailed Description

Exception for when the application reaches code it shouldn't reach.

Definition at line 238 of file [Exceptions.hpp](#).

### 9.17.2 Constructor & Destructor Documentation

#### 9.17.2.1 UnreachableCodeException()

```
exceptions::UnreachableCodeException::UnreachableCodeException (  
    const std::string & message ) [inline], [explicit]
```

Definition at line 243 of file [Exceptions.hpp](#).

References [config::EXECUTABLE\\_NAME](#), and [message](#).

### 9.17.3 Member Function Documentation

#### 9.17.3.1 what()

```
const char * exceptions::UnreachableCodeException::what ( ) const [inline], [override], [noexcept]
```

Definition at line 250 of file [Exceptions.hpp](#).

References [message](#).

### 9.17.4 Member Data Documentation

#### 9.17.4.1 message

```
std::string exceptions::UnreachableCodeException::message [private]
```

Definition at line 240 of file [Exceptions.hpp](#).

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

- [src/include/Exceptions.hpp](#)

## 9.18 utilities::Utils Class Reference

Responsible for utility function.

```
#include <Utils.hpp>
```

### Static Public Member Functions

- static void [setupEasyLogging](#) (const std::string &configFile)  
*Set up easylogging.*
- static bool [handleParseException](#) (const [exceptions::CustomException](#) &e, const std::vector< std::string >↵  
::iterator &file, const std::vector< std::string > &files)  
*Handle an exception within the main parsing loop.*
- static bool [askToContinue](#) (const std::string &prompt="Do you want to continue? (Y/N)\n")  
*Asks if the user wants to continue.*
- static void [checkConfigFile](#) (const std::string &configFile)  
*Checks if the easylogging-config file exists.*
- static const std::string & [checkDirectory](#) (std::string &directory)  
*Checks if the given directory exists and is valid.*

### 9.18.1 Detailed Description

Responsible for utility function.

This class is responsible for handling miscellaneous utility functions which be used throughout the whole project.

Definition at line 42 of file [Utils.hpp](#).

### 9.18.2 Member Function Documentation

#### 9.18.2.1 askToContinue()

```
bool utilities::Utils::askToContinue (
    const std::string & prompt = "Do you want to continue? (Y/N)\n" ) [static]
```

Asks if the user wants to continue.

Asks the user if they want to continue and prompts them for a response.

**Parameters**

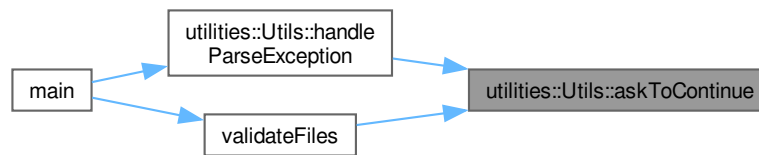
<i>prompt</i>	(Optional) A custom prompt to be used.
---------------	--

**Returns**

Returns true if the user wants to continue and false otherwise.

Definition at line 34 of file [Utils.cpp](#).

Here is the caller graph for this function:

**9.18.2.2 checkConfigFile()**

```
void utilities::Utils::checkConfigFile (  
    const std::string & configFile ) [static]
```

Checks if the easylogging-config file exists.

**Parameters**

<i>configFile</i>	The config file to be checked
-------------------	-------------------------------

Definition at line 55 of file [Utils.cpp](#).

Here is the caller graph for this function:



### 9.18.2.3 checkDirectory()

```
const std::string & utilities::Utils::checkDirectory (
    std::string & directory ) [static]
```

Checks if the given directory exists and is valid.

This function checks if the given directory exists and is valid. If the directory does not end with a '/' or a '\', it will be added.

#### Parameters

<i>directory</i>	The directory to be checked
------------------	-----------------------------

#### Returns

The checked directory

Definition at line 65 of file [Utils.cpp](#).

Here is the caller graph for this function:



### 9.18.2.4 handleParseException()

```
bool utilities::Utils::handleParseException (
    const exceptions::CustomException & e,
    const std::vector< std::string >::iterator & file,
    const std::vector< std::string > & files ) [static]
```

Handle an exception within the main parsing loop.

This function handles an exception within the main parsing loop. It displays the error message and asks the user if they want to continue.

- Moved to [Utils](#) in 0.2.2 to improve readability in [main.cpp](#)

#### Parameters

<i>e</i>	The exception to be handled
<i>file</i>	The file which caused the exception
<i>files</i>	The list of files

**Returns**

Returns true if the user wants to continue and false otherwise

Definition at line 77 of file [Utils.cpp](#).

References [askToContinue\(\)](#), and [exceptions::CustomException::what\(\)](#).

Here is the call graph for this function:



Here is the caller graph for this function:

**9.18.2.5 setupEasyLogging()**

```
void utilities::Utils::setupEasyLogging (
    const std::string & configFile ) [static]
```

Set up easylogging.

This function sets up the easylogging library based on the given config file.

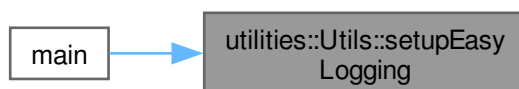
**Parameters**

<i>configFile</i>	The config file which is used
-------------------	-------------------------------

Definition at line 25 of file [Utils.cpp](#).

References [config::HOMEPAGE\\_URL](#), [config::MAJOR\\_VERSION](#), [config::MINOR\\_VERSION](#), [config::PATCH\\_VERSION](#), and [config::PROJECT\\_NAME](#).

Here is the caller graph for this function:



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

- [src/include/Utils.hpp](#)
- [src/sources/Utils.cpp](#)





# Chapter 10

## File Documentation

### 10.1 README.md File Reference

### 10.2 src/include/BatchCreator.hpp File Reference

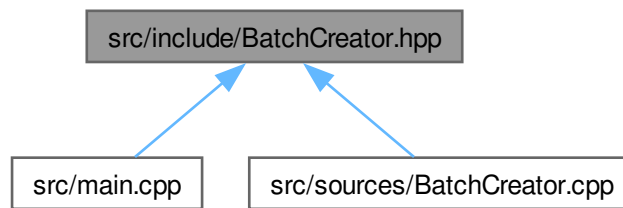
Contains the [BatchCreator](#) class.

```
#include "FileData.hpp"  
#include <memory>  
#include <sstream>
```

Include dependency graph for BatchCreator.hpp:



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



## Classes

- class [BatchCreator](#)  
*Creates a batch file from a `FileData` object.*

### 10.2.1 Detailed Description

Contains the [BatchCreator](#) class.

#### Author

Maximilian Rodler

#### Date

2024-04-22

#### Version

0.2.1

#### See also

[BatchCreator](#)  
[src/sources/BatchCreator.cpp](#)

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Definition in file [BatchCreator.hpp](#).

## 10.3 BatchCreator.hpp

[Go to the documentation of this file.](#)

```

00001
00016 #include "FileData.hpp"
00017 #include <memory>
00018 #include <sstream>
00019
00029 class BatchCreator {
00030 public:
00039     explicit BatchCreator(std::shared_ptr<parsing::FileData> fileData);
00040
00046     [[nodiscard]] std::shared_ptr<std::stringstream> getDataStream() const {
00047         return dataStream;
00048     }
00049
00050 private:
00051     std::shared_ptr<std::stringstream>
00052     dataStream;
00054     std::shared_ptr<parsing::FileData> fileData;
00063     void createBatch() const;
00064
00073     void writeStart() const;
00074
00082     void writeHideShell() const;
00083
00093     void writeCommands() const;
00094
00106     void writeEnvVariables() const;
00107
00116     void writePathVariables() const;
00117
00127     void writeApplication() const;
00128
00136     void writeEnd() const;
00137 };

```

## 10.4 src/include/CommandLineHandler.hpp File Reference

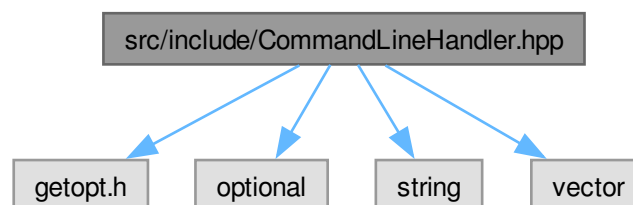
Responsible for the Command Line Interface.

```

#include <getopt.h>
#include <optional>
#include <string>
#include <vector>

```

Include dependency graph for CommandLineHandler.hpp:



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



## Classes

- class [cli::CommandLineHandler](#)  
*Responsible for the Command Line Interface.*

## Namespaces

- namespace [cli](#)  
*Includes everything regarding the CLI.*

## Variables

- static const struct option [cli::options](#) []

## 10.4.1 Detailed Description

Responsible for the Command Line Interface.

### Author

Simon Blum

### Date

2024-04-26

### Version

0.2.2

This file is responsible for the Command Line Interface. As such it includes things such as the [CommandLineHandler](#) class, possible options and style helpers.

### See also

[cli](#)  
[CommandLineHandler](#)  
[options](#)  
[StyleHelpers](#)  
[src/sources/CommandLineHandler.cpp](#)

### Copyright

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Definition in file [CommandLineHandler.hpp](#).

## 10.5 CommandLineHandler.hpp

[Go to the documentation of this file.](#)

```

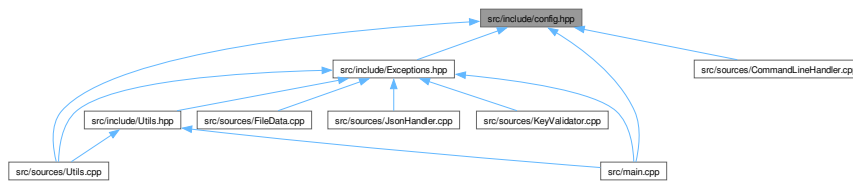
00001
00021 #ifndef COMMANDLINEHANDLER_HPP
00022 #define COMMANDLINEHANDLER_HPP
00023
00024 #include <getopt.h>
00025 #include <optional>
00026 #include <string>
00027 #include <vector>
00028
00041 namespace cli {
00042
00055 class CommandLineHandler {
00056     public:
00065         [[noreturn]] static void printHelp();
00071         [[noreturn]] static void printVersion();
00079         [[noreturn]] static void printCredits();
00094         static std::tuple<std::optional<std::string>, std::vector<std::string>>
00095         parseArguments(int argc, char* argv[]);
00101         CommandLineHandler() = delete;
00107         ~CommandLineHandler() = delete;
00108 };
00109
00120 static const struct option options[] = {
00121     {"help", no_argument, nullptr, 'h'},
00122     {"version", no_argument, nullptr, 'v'},
00123     {"credits", no_argument, nullptr, 'c'},
00124     {"verbose", no_argument, nullptr, 0},
00125     {"outdir", required_argument, nullptr, 'o'},
00126     nullptr
00127 };
00128
00140 #ifdef IS_UNIX // CLI Formatting for Linux
00141 static const std::string CLEAR_TERMINAL = "\033[2J\033[1;1H";
00142 static const std::string RESET = "\033[0m";
00143 static const std::string RED = "\033[0;31m";
00144 static const std::string GREEN = "\033[0;32m";
00145 static const std::string YELLOW = "\033[0;33m";
00146 static const std::string BLUE = "\033[0;34m";
00147 static const std::string MAGENTA = "\033[0;35m";
00148 static const std::string CYAN = "\033[0;36m";
00149 static const std::string WHITE = "\033[0;37m";
00150 static const std::string BOLD = "\033[1m";
00151 static const std::string UNDERLINE = "\033[4m";
00152 static const std::string ITALIC = "\033[3m";
00153 //@note Windows doesn't support ANSI escape codes the same way
00154 #elif defined(IS_WINDOWS)
00155 static const std::string CLEAR_TERMINAL = "";
00156 static const std::string RESET = "";
00157 static const std::string RED = "";
00158 static const std::string GREEN = "";
00159 static const std::string YELLOW = "";
00160 static const std::string BLUE = "";
00161 static const std::string MAGENTA = "";
00162 static const std::string CYAN = "";
00163 static const std::string WHITE = "";
00164 static const std::string BOLD = "";
00165 static const std::string UNDERLINE = "";
00166 static const std::string ITALIC = "";
00167 #endif
00169 // end of group StyleHelpers
00170 } // namespace cli
00171
00172 #endif // COMMANDLINEHANDLER_HPP

```

## 10.6 src/include/config.hpp File Reference

Configures general project information.

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



## Namespaces

- namespace [config](#)  
*Namespace used for general project information.*

## Variables

- constexpr auto [config::LOG\\_CONFIG](#)
- constexpr auto [config::EXECUTABLE\\_NAME](#) = "json2batch"
- constexpr auto [config::MAJOR\\_VERSION](#) = "0"
- constexpr auto [config::MINOR\\_VERSION](#) = "2"
- constexpr auto [config::PATCH\\_VERSION](#) = "3"
- constexpr auto [config::DESCRIPTION](#) = "A simple tool to convert json to batch."
- constexpr auto [config::PROJECT\\_NAME](#) = "JSON2Batch"
- constexpr auto [config::AUTHORS](#) = "@AUTHORS"
- constexpr auto [config::HOMEPAGE\\_URL](#)

### 10.6.1 Detailed Description

Configures general project information.

#### Author

Simon Blum

#### Date

2024-04-18

#### Version

0.1.5

This file is used by CMake to configure general information which can be used throughout the project.

#### Note

This file is automatically configured by CMake. The original file can be found in `conf/config.hpp.in` @license GNU GPLv3

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Definition in file [config.hpp](#).

## 10.7 config.hpp

[Go to the documentation of this file.](#)

```

00001
00016 // This file is autogenerated. Changes will be overwritten
00017
00018 #ifndef CONFIG_HPP
00019 #define CONFIG_HPP
00020
00025 namespace config {
00026     inline constexpr auto LOG_CONFIG =
00027         "/home/simon/1_Coding/cpp/JsonToBat/build/Debug/config/easylogging.conf";
00028     inline constexpr auto EXECUTABLE_NAME = "json2batch";
00029     inline constexpr auto MAJOR_VERSION = "0";
00030     inline constexpr auto MINOR_VERSION = "2";
00031     inline constexpr auto PATCH_VERSION = "3";
00032     inline constexpr auto DESCRIPTION = "A simple tool to convert json to batch.";
00033     inline constexpr auto PROJECT_NAME = "JSON2Batch";
00034     inline constexpr auto AUTHORS = "@AUTHORS";
00035     inline constexpr auto HOMEPAGE_URL =
00036         "https://dhwprojectsit23.github.io/JSON2Bat";
00037 } // namespace config
00038
00039 #endif

```

## 10.8 src/include/Exceptions.hpp File Reference

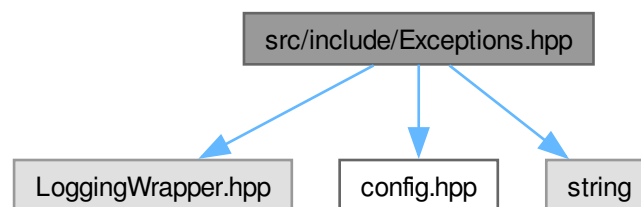
Contains all the custom exceptions used in the project.

```
#include "LoggingWrapper.hpp"
```

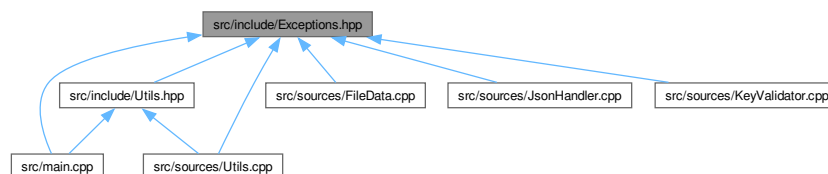
```
#include "config.hpp"
```

```
#include <string>
```

Include dependency graph for Exceptions.hpp:



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



## Classes

- class [exceptions::CustomException](#)  
*Base class for all custom exceptions.*
- class [exceptions::ParsingException](#)  
*Exception for syntax errors within the json file.*
- class [exceptions::FileExistsException](#)  
*Exception for an already existing outputfile.*
- class [exceptions::InvalidValueException](#)  
*Exception for an invalid (usually empty) value field.*
- class [exceptions::InvalidKeyException](#)  
*Exception for invalid keys.*
- class [exceptions::InvalidTypeException](#)  
*Exception for invalid types.*
- class [exceptions::MissingKeyException](#)  
*Exception for missing keys within entries.*
- class [exceptions::MissingTypeException](#)  
*Exception for missing types of entries.*
- class [exceptions::UnreachableCodeException](#)  
*Exception for when the application reaches code it shouldn't reach.*
- class [exceptions::FailedToOpenFileException](#)  
*Exception for when a file can't be opened.*
- class [exceptions::NoSuchDirException](#)  
*Exception for when a directory does not exist.*

## Namespaces

- namespace [exceptions](#)  
*Namespace used for customized exceptions.*

### 10.8.1 Detailed Description

Contains all the custom exceptions used in the project.

#### Author

Simon Blum

#### Date

2024-04-26

#### Version

0.2.2

The error handling within this project is exception based. This allows us to throw custom exceptions throughout any part of the process and allow us to deal with them when necessary.

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Definition in file [Exceptions.hpp](#).



## 10.9 Exceptions.hpp

[Go to the documentation of this file.](#)

```

00001
00014 #ifndef EXCEPTIONS_HPP
00015 #define EXCEPTIONS_HPP
00016
00017 #include "LoggingWrapper.hpp"
00018 #include "config.hpp"
00019 #include <string>
00020
00025 namespace exceptions {
00035 class CustomException : public std::exception {
00036 public:
00037     [[nodiscard]] const char* what() const noexcept override {
00038         return "Base Exception";
00039     }
00040 };
00041
00046 class ParsingException : public CustomException {
00047 private:
00048     const std::string file;
00049     std::string message;
00050
00051 public:
00052     explicit ParsingException(const std::string &file) : file(file) {
00058         std::stringstream ss;
00059         ss << "Error while trying to parse \"" << file << "\"!\n"
00060             << "There most likely is a syntax error within the \".json\" file.";
00061         this->message = ss.str();
00062         LOG_INFO << "ParsingException: " << message;
00063     }
00064
00065     [[nodiscard]] const char* what() const noexcept override {
00066         return message.c_str();
00067     }
00068 };
00069
00074 class FileExistsException : public CustomException {
00075 private:
00076     const std::string file;
00077     std::string message;
00078
00079 public:
00080     explicit FileExistsException(const std::string &file) : file(file) {
00086         std::stringstream ss;
00087         ss << "The outputfile \"" << file << "\" already exists!";
00088         this->message = ss.str();
00089         LOG_INFO << "BatchExistsException: " << message;
00090     }
00091
00092     [[nodiscard]] const char* what() const noexcept override {
00093         return message.c_str();
00094     }
00095 };
00096
00101 class InvalidValueException : public CustomException {
00102 private:
00103     const std::string key;
00104     std::string message;
00105
00106 public:
00107     InvalidValueException(const std::string &key, const std::string &issue)
00108         : key(key) {
00114         std::stringstream ss;
00115         ss << "Error at key \"" << key << "\"! " << issue;
00116         this->message = ss.str();
00117         LOG_INFO << "InvalidValueException: " << message;
00118     }
00119     [[nodiscard]] const char* what() const noexcept override {
00120         return message.c_str();
00121     }
00122 };
00123
00135 class InvalidKeyException : public CustomException {
00136 private:
00137     std::string message = "Invalid key found!";
00138
00139 public:
00140     explicit InvalidKeyException(
00141         const std::vector<std::tuple<int, std::string>> &keys) {
00142         LOG_INFO << "InvalidKeyException: " << message;
00143
00144         for (const auto &[line, key] : keys) {
00145             LOG_WARNING << "Invalid key found at line " << line << ": \"" << key

```

```

00146         « "\!";
00147     }
00148 }
00149 [[nodiscard]] const char* what() const noexcept override {
00150     return message.c_str();
00151 }
00152 };
00153
00162 class InvalidTypeException : public CustomException {
00163 private:
00164     const std::string type;
00165     std::string message;
00166 public:
00167     InvalidTypeException(const std::string &type, int line) : type(type) {
00174         std::stringstream ss;
00175         ss << "Invalid type found at line " << line << ": \" " << type << "\"";
00176         this->message = ss.str();
00177         LOG_INFO << "InvalidTypeException: " << message;
00178     }
00179 [[nodiscard]] const char* what() const noexcept override {
00180     return message.c_str();
00181 }
00182 };
00183
00191 class MissingKeyException : public CustomException {
00192 private:
00193     std::string message;
00194     std::string type;
00195     std::string key;
00196 public:
00197     MissingKeyException(const std::string &key, const std::string &type)
00198         : type(type), key(key) {
00205         std::stringstream ss;
00206         ss << "Missing key \" " << key << "\" for type \" " << type << "\"!";
00207         this->message = ss.str();
00208         LOG_INFO << "MissingKeyException: " << message;
00209     }
00210 [[nodiscard]] const char* what() const noexcept override {
00211     return message.c_str();
00212 }
00213 };
00214
00221 class MissingTypeException : public CustomException {
00222 private:
00223     std::string message = "Missing \"type\" key for at least one entry!";
00224 public:
00225     MissingTypeException() {
00227         LOG_INFO << "MissingTypeException: " << message;
00228     }
00229 [[nodiscard]] const char* what() const noexcept override {
00230     return message.c_str();
00231 }
00232 };
00233
00238 class UnreachableCodeException : public CustomException {
00239 private:
00240     std::string message;
00241 public:
00242     explicit UnreachableCodeException(const std::string &message)
00243         : message(message) {
00245         OUTPUT << "This exception happened due to a bug in the application!\n"
00246             << "Please report this bug! See " << config::EXECUTABLE_NAME
00247             << " -c for contact information.\n";
00248         LOG_INFO << "UnreachableCodeException: " << message;
00249     }
00250 [[nodiscard]] const char* what() const noexcept override {
00251     return message.c_str();
00252 }
00253 };
00254
00259 class FailedToOpenFileException : public CustomException {
00260 private:
00261     std::string message;
00262 public:
00263     explicit FailedToOpenFileException(const std::string &file) {
00265         message = "Failed to open file: " + file;
00266         LOG_INFO << "FailedToOpenFileException: " << message;
00267     }
00268 [[nodiscard]] const char* what() const noexcept override {
00269     return message.c_str();
00270 }
00271 };

```

```

00272
00277 class NoSuchDirException : public CustomException {
00278     private:
00279         std::string message;
00280
00281     public:
00282         explicit NoSuchDirException(const std::string &dir) {
00283             message = "No such directory: " + dir;
00284             LOG_INFO << "NoSuchDirException: " << message;
00285         }
00286         [[nodiscard]] const char* what() const noexcept override {
00287             return message.c_str();
00288         }
00289     };
00290
00291 } // namespace exceptions
00292
00293 #endif

```

## 10.10 src/include/FileData.hpp File Reference

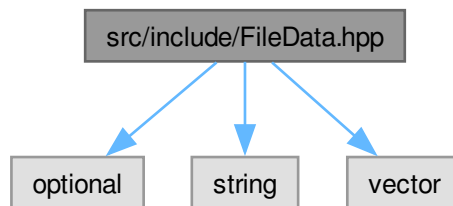
This file contains the FileData class.

```

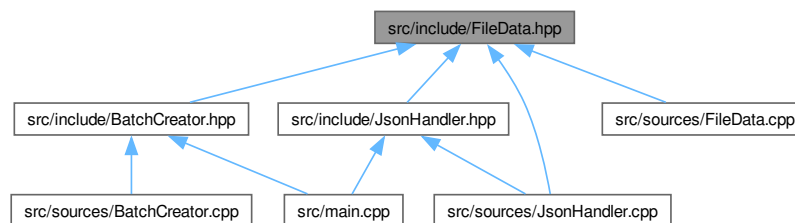
#include <optional>
#include <string>
#include <vector>

```

Include dependency graph for FileData.hpp:



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



### Classes

- class `parsing::FileData`

*This class contains all data from the json file.*

## Namespaces

- namespace [parsing](#)

*The namespace containing everything relevant to parsing.*

### 10.10.1 Detailed Description

This file contains the FileData class.

#### Author

Sonia Sinacci, Elena Schwartzbach

#### Date

16.04.2024

#### Version

0.1.5

#### See also

[parsing::FileData](#)

[src/sources/FileData.cpp](#)

#### Copyright

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Definition in file [FileData.hpp](#).

## 10.11 FileData.hpp

[Go to the documentation of this file.](#)

```
00001
00015 #ifndef FILEDATA_HPP
00016 #define FILEDATA_HPP
00017
00018 #include <optional>
00019 #include <string>
00020 #include <vector>
00021
00022 namespace parsing {
00032 class FileData {
00033     public:
00044         void setOutputFile(std::string &newOutputfile);
00045
00050         void setHideShell(bool newHideShell) {
00051             this->hideShell = newHideShell;
00052         }
00053
00062         void setApplication(const std::string &newApplication);
00063
00074         void addCommand(const std::string &command);
00075
00087         void addEnvironmentVariable(const std::string &name,
```

```

00088                                     const std::string &value);
00089
00100 void addPathValue(const std::string &pathValue);
00101
00106 [[nodiscard]] const std::string &getOutputFile() const {
00107     return outputfile;
00108 }
00109
00114 [[nodiscard]] bool getHideShell() const {
00115     return hideShell;
00116 }
00117
00122 [[nodiscard]] const std::optional<std::string> &getApplication() const {
00123     return application;
00124 }
00125
00130 [[nodiscard]] const std::vector<std::string> &getCommands() const {
00131     return commands;
00132 }
00133
00138 [[nodiscard]] const std::vector<std::tuple<std::string, std::string> &
00139 getEnvironmentVariables() const {
00140     return environmentVariables;
00141 }
00142
00147 [[nodiscard]] const std::vector<std::string> &getPathValues() const {
00148     return pathValues;
00149 }
00150
00151 private:
00152     std::string outputfile;
00153     bool hideShell;
00154     std::optional<std::string> application;
00155     // {ReqFunc15}
00156     std::vector<std::string> commands;
00157     // Tuple<key, value> - {ReqFunc15}
00158     std::vector<std::tuple<std::string, std::string> > environmentVariables;
00159     // {ReqFunc15}
00160     std::vector<std::string> pathValues;
00161 };
00162 } // namespace parsing
00163
00164 #endif // FILEDATA_HPP

```

## 10.12 src/include/JsonHandler.hpp File Reference

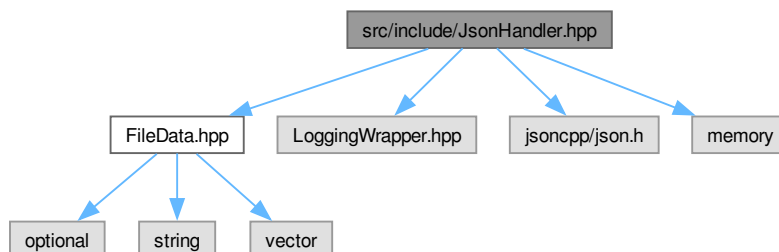
This file contains the JsonHandler class.

```

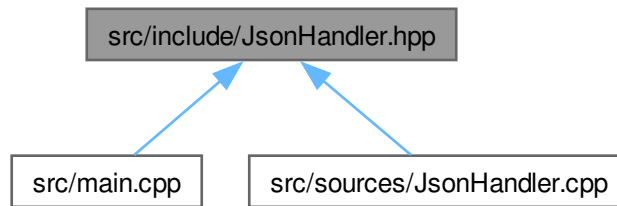
#include "FileData.hpp"
#include "LoggingWrapper.hpp"
#include <jsoncpp/json.h>
#include <memory>

```

Include dependency graph for JsonHandler.hpp:



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



## Classes

- class [parsing::JsonHandler](#)

*This file reads all data from the json file.*

## Namespaces

- namespace [parsing](#)

*The namespace containing everything relevant to parsing.*

### 10.12.1 Detailed Description

This file contains the `JsonHandler` class.

#### Author

Sonia Sinacci, Elena Schwartzbach

#### Date

23.04.2024

#### Version

0.1.5

#### See also

[parsing::JsonHandler](#)

[src/sources/JsonHandler.cpp](#)

#### Copyright

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Definition in file [JsonHandler.hpp](#).

## 10.13 JsonHandler.hpp

[Go to the documentation of this file.](#)

```

00001
00015 #ifndef JSONHANDLER_HPP
00016 #define JSONHANDLER_HPP
00017
00018 #include "FileData.hpp"
00019 #include "LoggingWrapper.hpp"
00020 #include <jsoncpp/json.h>
00021
00022 #include <memory>
00023
00036 namespace parsing {
00037
00047 class JsonHandler {
00048 public:
00055     JsonHandler() {
00056         LOG_INFO « "Initialising empty JsonHandler";
00057     }
00065     explicit JsonHandler(const std::string &filename);
00075     std::shared_ptr<FileData> getFileData();
00076
00077 private:
00093     [[nodiscard]] static std::shared_ptr<Json::Value>
00094     parseFile(const std::string &filename);
00104     void assignOutputFile() const;
00112     void assignHideShell() const;
00120     void assignApplication() const;
00133     void assignEntries() const;
00140     void assignCommand(const Json::Value &entry) const;
00147     void assignEnvironmentVariable(const Json::Value &entry) const;
00154     void assignPathValue(const Json::Value &entry) const;
00163     std::shared_ptr<FileData> createFileData();
00164     std::shared_ptr<Json::Value> root;
00165     std::shared_ptr<FileData> data;
00166 };
00167 } // namespace parsing
00168
00169 #endif // JSONHANDLER_HPP

```

## 10.14 src/include/KeyValidator.hpp File Reference

This file contains the KeyValidator class.

```

#include "jsoncpp/value.h"
#include <optional>
#include <unordered_map>
#include <unordered_set>

```

Include dependency graph for KeyValidator.hpp:



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



## Classes

- class [parsing::KeyValidator](#)  
*Validates keys of a `Json::Value` object.*

## Namespaces

- namespace [parsing](#)  
*The namespace containing everything relevant to parsing.*

### 10.14.1 Detailed Description

This file contains the KeyValidator class.

#### Author

Simon Blum

#### Date

2024-04-26

#### Version

0.2.2

#### See also

[parsing::KeyValidator](#)  
[src/sources/KeyValidator.cpp](#)

#### Copyright

See LICENSE file

Definition in file [KeyValidator.hpp](#).



## 10.15 KeyValidator.hpp

[Go to the documentation of this file.](#)

```

00001
00014 #ifndef KEYVALIDATOR_HPP
00015 #define KEYVALIDATOR_HPP
00016
00017 #include "jsoncpp/value.h"
00018 #include <optional>
00019 #include <unordered_map>
00020 #include <unordered_set>
00021 namespace parsing {
00031 class KeyValidator {
00032 public:
00038     static KeyValidator &getInstance();
00039
00054     std::vector<std::tuple<int, std::string>>
00055     validateKeys(const Json::Value &root, const std::string &filename);
00056
00057 private:
00070     std::vector<std::tuple<int, std::string>>
00071     getWrongKeys(const Json::Value &root, const std::string &filename) const;
00072
00092     void validateTypes(const std::string &filename, const Json::Value &entry,
00093                       const std::unordered_set<std::string> &entryKeys);
00094
00108     std::vector<std::tuple<int, std::string>>
00109     validateEntries(const std::string &filename,
00110                    const std::unordered_set<std::string> &entryKeys) const;
00111
00124     static std::optional<int> getUnknownKeyLine(const std::string &filename,
00125                                                  const std::string &wrongKey);
00126
00131     std::unordered_set<std::string> validKeys = {"outputfile", "hideshell",
00132         "entries", "application"};
00133
00138     std::unordered_set<std::string> validEntryKeys = {"type", "key", "value",
00139         "path", "command"};
00140
00141
00145     std::unordered_map<std::string_view, std::vector<std::string>> typeToKeys = {
00146         {"EXE", {"command"}}, {"PATH", {"path"}}, {"ENV", {"key", "value"}}
00147     };
00148 };
00149 } // namespace parsing
00150
00151 #endif

```

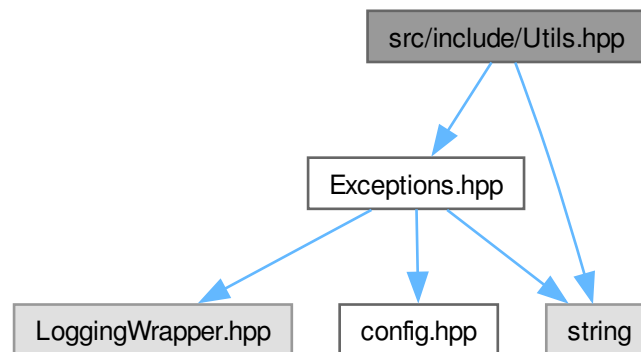
## 10.16 src/include/Utils.hpp File Reference

```

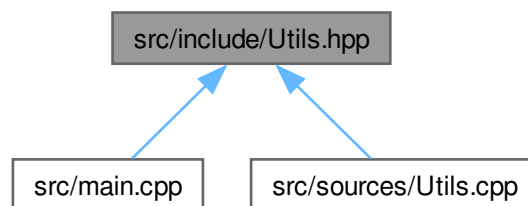
#include "Exceptions.hpp"
#include <string>

```

Include dependency graph for Utils.hpp:



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



## Classes

- class `utilities::Utils`  
*Responsible for utility function.*

## Namespaces

- namespace `utilities`  
*Includes all utilities.*

## 10.17 Utils.hpp

[Go to the documentation of this file.](#)

```

00001
00018 #ifndef UTILITIES_HPP
00019 #define UTILITIES_HPP
00020
00021 #include "Exceptions.hpp"
00022 #include <string>
00023
00033 namespace utilities {
00034
00042 class Utils {
00043 public:
00051     static void setupEasyLogging(const std::string &configFile);
00052
00066     static bool
00067     handleParseException(const exceptions::CustomException &e,
00068                          const std::vector<std::string>::iterator &file,
00069                          const std::vector<std::string> &files);
00070
00078     static bool
00079     askToContinue(const std::string &prompt = "Do you want to continue? (Y/N)\n");
00080
00085     static void checkConfigFile(const std::string &configFile);
00086
00098     static const std::string &checkDirectory(std::string &directory);
00099 };
00100 } // namespace utilities
00101
00102 #endif // UTILITIES_HPP

```

## 10.18 src/main.cpp File Reference

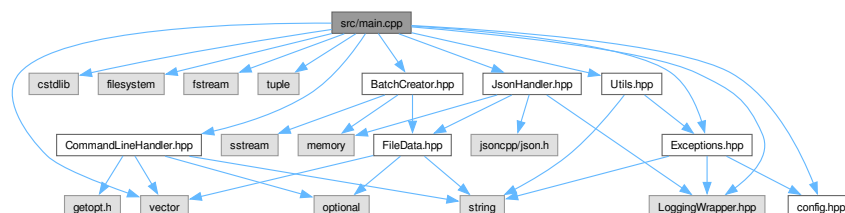
Contains the main function.

```

#include <LoggingWrapper.hpp>
#include <cstdlib>
#include <filesystem>
#include <fstream>
#include <tuple>
#include <vector>
#include "BatchCreator.hpp"
#include "CommandLineHandler.hpp"
#include "Exceptions.hpp"
#include "JsonHandler.hpp"
#include "Utils.hpp"
#include "config.hpp"

```

Include dependency graph for main.cpp:



## Functions

- `std::tuple< std::vector< std::string >, std::string > parseAndValidateArgs (int argc, char *argv[])`  
*Validates and parses arguments.*
- `std::vector< std::string > validateFiles (const std::vector< std::string > &files)`  
*Checks if the files are valid.*
- `void parseFile (const std::string &file, const std::string &outputDirectory)`  
*Parses the given file and writes the output to the output directory.*
- `int main (int argc, char *argv[])`  
*Main function of the program.*

### 10.18.1 Detailed Description

Contains the main function.

#### Author

Elena Schwarzbach, Max Rodler, Simon Blum, Sonia Sinaci

#### Date

2024-04-26

#### Version

0.2.2

The main function is responsible for connection all parts of the programm. It calls all relevant classes and finishes when everything is done.

- {ReqOptFunc3} - Documentation is done using doxygen syntax
- {ReqOptFunc3} - All Classes, methods, function, namespaces and file are documented
- {ReqNonFunc5} - Source files are found under src/sources, header under src/include
- {ReqNonFunc6} - All header files can be included without paths
- {ReqNonFunc7} - Non source files are included
- {ReqNonFunc8} - All header files include a "ifndef/define/endif" block
- {ReqOptFunc5} - Every file has a top comment including the authors
- {ReqOptFunc6} - Logging is done using easylogging++ library
  - A self written wrapper is used, to allow for parallel output to the stdout and the logfile. Though we don't consider this wrapper part of the project itself and as such is placed within the directories for external libraries
- Formatting is done via astyle
- !{ReqOptFunc7} - No unit tests are included

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Definition in file [main.cpp](#).

## 10.18.2 Function Documentation

### 10.18.2.1 main()

```
int main (
    int argc,
    char * argv[] )
```

Main function of the program.

The main function is responsible for connection all parts of the programm. It calls all relevant classes and finishes when everything is done.

#### Parameters

<i>argc</i>	The number of arguments given
<i>argv</i>	The command line arguments given

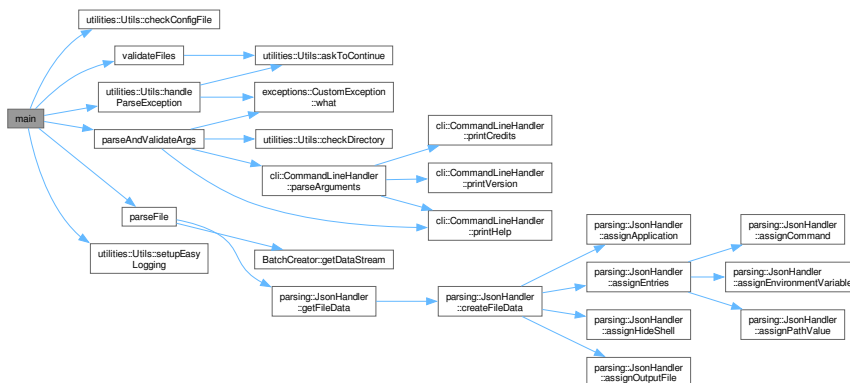
#### Returns

Returns 0 on success, 1 on failure

Definition at line 85 of file [main.cpp](#).

References [utilities::Utils::checkConfigFile\(\)](#), [utilities::Utils::handleParseException\(\)](#), [config::LOG\\_CONFIG](#), [parseAndValidateArgs\(\)](#), [parseFile\(\)](#), [utilities::Utils::setupEasyLogging\(\)](#), and [validateFiles\(\)](#).

Here is the call graph for this function:



### 10.18.2.2 parseAndValidateArgs()

```
std::tuple< std::vector< std::string >, std::string > parseAndValidateArgs (
    int argc,
    char * argv[] )
```

Validates and parses arguments.

## Parameters

<i>argc</i>	Number of arguments provided
<i>argv</i>	The arguments provided

## Returns

A tuple containing the files to be parsed and the output directory

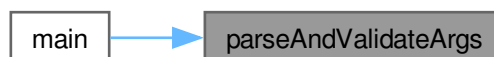
Definition at line 121 of file [main.cpp](#).

References [utilities::Utils::checkDirectory\(\)](#), [cli::CommandLineHandler::parseArguments\(\)](#), [cli::CommandLineHandler::printHelp\(\)](#), and [exceptions::CustomException::what\(\)](#).

Here is the call graph for this function:



Here is the caller graph for this function:



### 10.18.2.3 parseFile()

```

void parseFile (
    const std::string & file,
    const std::string & outputDirectory )
  
```

Parses the given file and writes the output to the output directory.

Creates the Batch file from the given file

## Parameters

<i>file</i>	The file to be parsed
-------------	-----------------------

Definition at line 191 of file [main.cpp](#).

References [BatchCreator::getDataStream\(\)](#), and [parsing::JsonHandler::getFileData\(\)](#).

Here is the call graph for this function:



Here is the caller graph for this function:



### 10.18.2.4 validateFiles()

```
std::vector< std::string > validateFiles (
    const std::vector< std::string > & files )
```

Checks if the files are valid.

Makes sures, that provided files exists and checks their file ending

## Parameters

<i>files</i>	The files to be checked
	<ul style="list-style-type: none"> <li>{ReqFunc5}</li> </ul>

**Returns**

A vector containing the valid files

Definition at line 150 of file [main.cpp](#).

References [utilities::Utils::askToContinue\(\)](#).

Here is the call graph for this function:



Here is the caller graph for this function:



## 10.19 main.cpp

[Go to the documentation of this file.](#)

```

00001
00029 #include <LoggingWrapper.hpp>
00030 #include <cstdlib>
00031 #include <filesystem>
00032 #include <fstream>
00033 #include <tuple>
00034 #include <vector>
00035
00036 #include "BatchCreator.hpp"
00037 #include "CommandLineHandler.hpp"
00038 #include "Exceptions.hpp"
00039 #include "JsonHandler.hpp"
00040 #include "Utils.hpp"
00041 #include "config.hpp"
00042
00050 std::tuple<std::vector<std::string>, std::string>
00051 parseAndValidateArgs(int argc, char* argv[]);
00052
00062 std::vector<std::string> validateFiles(const std::vector<std::string> &files);
00063
00070 void parseFile(const std::string &file, const std::string &outputDirectory);
00071
00085 int main(int argc, char* argv[]) {
00086     // Setup logging
00087     utilities::Utils::checkConfigFile(config::LOG_CONFIG);
00088     utilities::Utils::setupEasyLogging(config::LOG_CONFIG);
00089     // Parse and validate arguments
00090     auto [files, outDir] = parseAndValidateArgs(argc, argv);
00091     OUTPUT « cli::BOLD « "Parsing the following files:\n" « cli::RESET;
  
```



```

00092
00093     for (const auto &file : files) {
00094         OUTPUT << "\t - " << file << "\n";
00095     }
00096
00097     files = validateFiles(files);
00098
00099     // Loop for {ReqFunc7}
00100     for (auto file = files.begin(); file != files.end(); ++file) {
00101         OUTPUT << cli::ITALIC << "\nParsing file: " << *file << "... \n"
00102             << cli::RESET;
00103
00104         try {
00105             parseFile(*file, outDir);
00106             // Only catch custom exceptions, other exceptions are fatal
00107         }
00108         catch (const exceptions::CustomException &e) {
00109             if (utilities::Utils::handleParseException(e, file, files)) {
00110                 continue;
00111             }
00112
00113             exit(1);
00114         }
00115     }
00116
00117     LOG_INFO << "Exiting...";
00118     return 0;
00119 }
00120
00121 std::tuple<std::vector<std::string>, std::string> parseAndValidateArgs(int argc,
00122     char* argv[]) {
00123     if (argc < 2) {
00124         LOG_ERROR << "No options given!\n";
00125         cli::CommandLineHandler::printHelp();
00126     }
00127
00128     auto [outOption, files] = cli::CommandLineHandler::parseArguments(argc, argv);
00129     // Set the output directory if given
00130     std::string outDir = outOption.value_or("");
00131
00132     if (!outDir.empty()) {
00133         try {
00134             outDir = utilities::Utils::checkDirectory(outDir);
00135         }
00136         catch (const exceptions::CustomException &e) {
00137             LOG_ERROR << e.what();
00138             exit(1);
00139         }
00140     }
00141
00142     if (files.empty()) {
00143         LOG_ERROR << "No files were given as arguments!\n";
00144         exit(1);
00145     }
00146
00147     return {files, outDir};
00148 }
00149
00150 std::vector<std::string> validateFiles(const std::vector<std::string> &files) {
00151     std::vector<std::string> validFiles;
00152     // Reserve space, to avoid reallocating with each valid file
00153     validFiles.reserve(files.size());
00154
00155     for (const std::filesystem::path file : files) {
00156         // Check that the file exists
00157         // {ReqFunc5}
00158         if (!std::filesystem::is_regular_file(file)) {
00159             LOG_ERROR << "The file \"" << file << "\" does not exist!\n";
00160
00161             if (files.size() > 1 && !utilities::Utils::askToContinue()) {
00162                 OUTPUT << "Aborting...\n";
00163                 LOG_INFO << "Application ended by user Input";
00164                 exit(1);
00165             }
00166
00167             continue;
00168         }
00169
00170         // Check if the file ends in .json
00171         if (file.extension() != ".json") {
00172             LOG_WARNING << "The file \"" << file << "\" does not end in \".json\"\n";
00173             OUTPUT << "If the file is not in JSON Format, continuing may "
00174                 << "result in\nunexpected behaviour!\n";
00175
00176             if (!utilities::Utils::askToContinue()) {
00177                 OUTPUT << "Aborting...\n";
00178                 LOG_INFO << "Application ended by user Input";

```

```

00179         exit(1);
00180     }
00181 }
00182
00183     validFiles.push_back(file);
00184 }
00185
00186     // Shrinks the vector if invalid files were found
00187     validFiles.shrink_to_fit();
00188     return validFiles;
00189 }
00190
00191 void parseFile(const std::string &file, const std::string &outputDirectory) {
00192     parsing::JsonHandler jsonHandler(file);
00193     const auto fileData = jsonHandler.getFileData();
00194     BatchCreator batchCreator(fileData);
00195     const std::shared_ptr<std::stringstream> dataStream =
00196         batchCreator.getDataStream();
00197     // Full filename is output directory + output file
00198     // {ReqFunc18}
00199     const std::string outputFileName =
00200         outputDirectory + fileData->getOutputFile();
00201     std::ofstream outFile(outputFileName);
00202
00203     if (!outFile.good()) {
00204         throw exceptions::FailedToOpenFileException(outputFileName);
00205     }
00206
00207     outFile << dataStream->str();
00208     OUTPUT << "Done with files!\n";
00209 }
00210
00211 // Initialize easylogging++
00212 // Moved to bottom because it messed with doxygen
00213 INITIALIZE_EASYLOGGINGPP

```

## 10.20 src/sources/BatchCreator.cpp File Reference

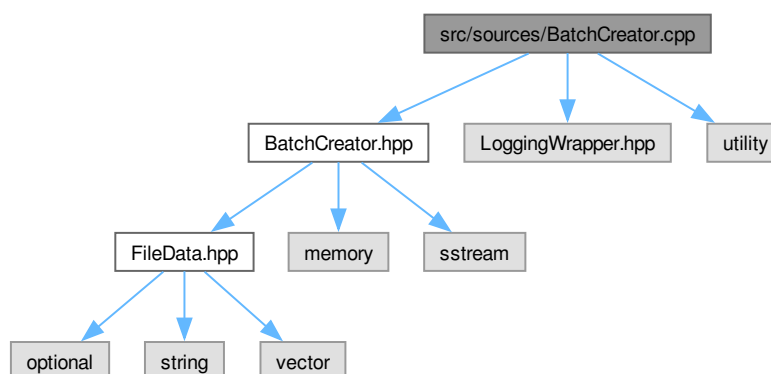
Contains the implementation of the [BatchCreator](#) class.

```

#include "BatchCreator.hpp"
#include "LoggingWrapper.hpp"
#include <utility>

```

Include dependency graph for BatchCreator.cpp:



### 10.20.1 Detailed Description

Contains the implementation of the [BatchCreator](#) class.

**Author**

Maximilian Rodler

**Date**

22.04.2024

**Version**

0.2.2

**See also**[src/include/BatchCreator.hpp](#)**Copyright**

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Definition in file [BatchCreator.cpp](#).

## 10.21 BatchCreator.cpp

[Go to the documentation of this file.](#)

```
00001
00013 #include "BatchCreator.hpp"
00014
00015 #include "LoggingWrapper.hpp"
00016 #include <utility>
00017
00018 BatchCreator::BatchCreator(std::shared_ptr<parsing::FileData> fileData)
00019     : fileData(std::move(fileData)) {
00020     LOG_INFO << "Initializing BatchCreator";
00021     this->dataStream = std::make_shared<std::stringstream>();
00022     this->createBatch();
00023 }
00024
00025 void BatchCreator::createBatch() const {
00026     LOG_INFO << "Creating Batch file";
00027     this->writeStart();
00028     this->writeHideShell();
00029     this->writeCommands();
00030     this->writeEnvVariables();
00031     this->writePathVariables();
00032     this->writeApplication();
00033     this->writeEnd();
00034 }
00035
00036 void BatchCreator::writeStart() const {
00037     LOG_INFO << "writing Start of Batch";
00038     // {ReqFunc24} - \r\n
00039     *this->dataStream << "@ECHO OFF\r\nC:\\Windows\\System32\\cmd.exe ";
00040 }
00041
00042 void BatchCreator::writeHideShell() const {
00043     if (this->fileData->getHideShell()) {
00044         LOG_INFO << "writing hide Shell";
00045         *this->dataStream << "/c ";
00046     }
00047     else {
00048         LOG_INFO << "writing show Shell";
00049         *this->dataStream << "/k ";
00050     }
00051 }
00052
00053 void BatchCreator::writeCommands() const {
```

```

00054     LOG_INFO << "writing Commands";
00055     *this->dataStream << "\"";
00056
00057     for (const std::string &command : this->fileData->getCommands()) {
00058         *this->dataStream << command << " && ";
00059     }
00060 }
00061
00062 void BatchCreator::writeEnvVariables() const {
00063     LOG_INFO << "writing Environment Variables";
00064
00065     for (const auto &[key, value] : this->fileData->getEnvironmentVariables()) {
00066         *this->dataStream << "set " << key << "=" << value << " && ";
00067     }
00068 }
00069
00070 void BatchCreator::writePathVariables() const {
00071     LOG_INFO << "writing Path Variables";
00072     *this->dataStream << "set path=";
00073
00074     for (const std::string &path : this->fileData->getPathValues()) {
00075         *this->dataStream << path << ";";
00076     }
00077
00078     *this->dataStream << "%path%";
00079 }
00080
00081 void BatchCreator::writeApplication() const {
00082     std::string appName = this->fileData->getOutputFile();
00083     appName = appName.substr(0, appName.find('.'));
00084
00085     if (this->fileData->getApplication().has_value()) {
00086         LOG_INFO << "writing start Application";
00087         *this->dataStream << " && start \"" << appName
00088             << "\" "
00089             << // {ReqFunc24} - \r\n
00090             << this->fileData->getApplication().value() << "\"\r\n";
00091     }
00092     else {
00093         LOG_INFO << "writing not start Application";
00094         // {ReqFunc24} - \r\n
00095         *this->dataStream << "\"\r\n";
00096     }
00097 }
00098
00099 void BatchCreator::writeEnd() const {
00100     *this->dataStream << "@ECHO ON";
00101 }

```

## 10.22 src/sources/CommandLineHandler.cpp File Reference

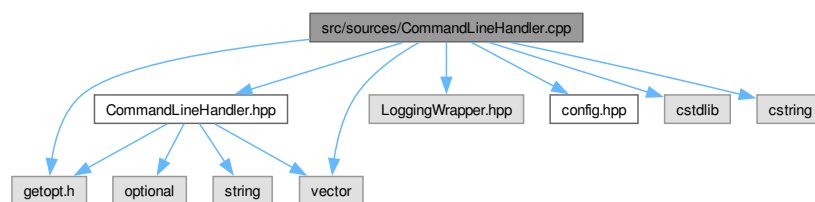
Implementation for the Command Line Interface.

```

#include "CommandLineHandler.hpp"
#include "LoggingWrapper.hpp"
#include "config.hpp"
#include <cstdlib>
#include <cstring>
#include <getopt.h>
#include <vector>

```

Include dependency graph for CommandLineHandler.cpp:



## Namespaces

- namespace `cli`

*Includes everything regarding the CLI.*

### 10.22.1 Detailed Description

Implementation for the Command Line Interface.

#### Author

Simon Blum

#### Date

2024-04-26

#### Version

0.2.2

#### See also

`src/include/utility/CommandLineHandler.hpp`

#### Copyright

See LICENSE file

Definition in file [CommandLineHandler.cpp](#).

## 10.23 CommandLineHandler.cpp

[Go to the documentation of this file.](#)

```
00001
00013 #include "CommandLineHandler.hpp"
00014 #include "LoggingWrapper.hpp"
00015 #include "config.hpp"
00016 #include <cstdlib>
00017 #include <cstring>
00018 #include <getopt.h>
00019 #include <vector>
00020
00021 namespace cli {
00022 void CommandLineHandler::printHelp() {
00023     LOG_INFO << "Printing help message...";
00024     OUTPUT << BOLD << "Usage:\n"
00025           << RESET << "-----\n"
00026           << config::EXECUTABLE_NAME << " [options] [filenames]\n"
00027           << "\n"
00028           << BOLD << "Options:\n"
00029           << RESET << "-----\n"
00030           << "-o, --outdir\t[path]\t\tOutput the batch file to the given "
00031           << "dir\n"
00032           << "-h, --help\t\t\tPrint this help message\n"
00033           << "-v, --version\t\t\tPrint the version number\n"
00034           << "-c, --credits\t\t\tPrint the credits\n\n"
00035           << "    --verbose\t\t\tStart the application in verbose mode\n"
```

```

00036         « ITALIC
00037         « " \t\t\tNote: Verbose flag should be passed first!\n\n"
00038         « RESET « BOLD « "FileNames:\n"
00039         « RESET « "-----\n"
00040         « "The json files to be processed into batch files.\n"
00041         « "Multiple files should be seperated by spaces!\n\n";
00042     exit(0);
00043 }
00044 void CommandLineHandler::printVersion() {
00045     LOG_INFO « "Printing version number...";
00046     OUTPUT « config::PROJECT_NAME « " v" « config::MAJOR_VERSION « "."
00047           « config::MINOR_VERSION « "." « config::PATCH_VERSION « "\n";
00048     exit(0);
00049 }
00050 void CommandLineHandler::printCredits() {
00051     LOG_INFO « "Printing credits...";
00052     OUTPUT « BOLD « "Project information:\n"
00053           « RESET « "-----\n"
00054           « CYAN « BOLD « config::PROJECT_NAME « RESET « " v"
00055           « config::MAJOR_VERSION « "." « config::MINOR_VERSION « "."
00056           « config::PATCH_VERSION « "\n"
00057           « "\n"
00058           « config::DESCRIPTION « "\n"
00059           « "\n"
00060           « GREEN « "Authors: " « RESET « ITALIC « config::AUTHORS « RESET
00061           « "\n"
00062           « GREEN « "Documentation: " « RESET « ITALIC
00063           « config::HOMEPAGE_URL « RESET « GREEN « "\nContact: " « RESET
00064           « ITALIC « "simon21.blum@gmail.com" « "\n";
00065     exit(0);
00066 }
00067
00068 std::tuple<std::optional<std::string>, std::vector<std::string> CommandLineHandler::parseArguments(
00069     int argc, char* argv[]) {
00070     LOG_INFO « "Parsing arguments...";
00071     std::vector<std::string> files;
00072     std::optional<std::string> outDir;
00073
00074     while (true) {
00075         int optIndex = -1;
00076         struct option longOption = {};
00077         const auto result = getopt_long(argc, argv, "hvco:", options, &optIndex);
00078
00079         if (result == -1) {
00080             LOG_INFO « "End of options reached";
00081             break;
00082         }
00083
00084         switch (result) {
00085             case '?':
00086                 LOG_ERROR « "Invalid Option (argument)\n";
00087                 CommandLineHandler::printHelp();
00088
00089             case 'h':
00090                 LOG_INFO « "Help option detected";
00091                 CommandLineHandler::printHelp();
00092
00093             case 'v':
00094                 LOG_INFO « "Version option detected";
00095                 CommandLineHandler::printVersion();
00096
00097             case 'c':
00098                 LOG_INFO « "Credit option detected";
00099                 CommandLineHandler::printCredits();
00100
00101             case 'o':
00102                 LOG_INFO « "Output option detected";
00103                 outDir = optarg;
00104                 break;
00105
00106             case 0:
00107                 LOG_INFO « "Long option without short version detected";
00108                 longOption = options[optIndex];
00109                 LOG_INFO « "Option: " « longOption.name « " given";
00110
00111                 if (strcmp(longOption.name, "verbose") == 0) {
00112                     logging::setVerboseMode(true);
00113                     LOG_INFO « "Verbose mode activated";
00114                 }
00115
00116                 break;
00117
00118             default:
00119                 LOG_ERROR « "Default case for options reached!";
00120                 break;
00121         }
00122     }

```

```

00123
00124     LOG_INFO « "Options have been parsed";
00125     LOG_INFO « "Checking for arguments...";
00126
00127     // Loop for {reqFunc5}
00128     while (optind < argc) {
00129         LOG_INFO « "Adding file: " « argv[optind];
00130         // Vector for {reqFunc7}
00131         files.emplace_back(argv[optind++]);
00132     }
00133
00134     LOG_DEBUG « files.size();
00135     LOG_INFO « "Arguments and options have been parsed";
00136     return {outDir, files};
00137 }
00138 } // namespace cli

```

## 10.24 src/sources/FileData.cpp File Reference

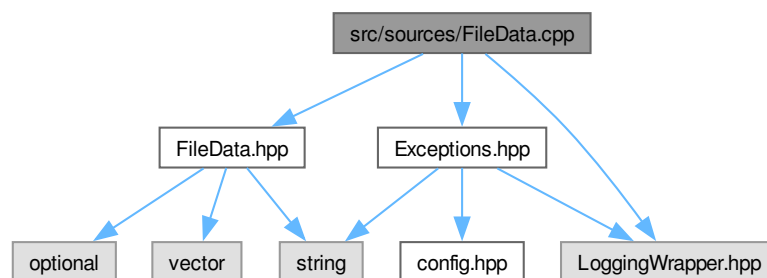
Implementation of the FileData class.

```

#include "FileData.hpp"
#include "Exceptions.hpp"
#include "LoggingWrapper.hpp"

```

Include dependency graph for FileData.cpp:



### Namespaces

- namespace [parsing](#)  
The namespace containing everything relevant to parsing.

### 10.24.1 Detailed Description

Implementation of the FileData class.

#### Author

Elena Schwarzbach, Sonia Sinacci

**Date**

2024-04-26

**Version**

0.1.6

**See also**[src/include/FileData.hpp](#)**Copyright**

See LICENSE file

Definition in file [FileData.cpp](#).

## 10.25 FileData.cpp

[Go to the documentation of this file.](#)

```
00001
00013 #include "FileData.hpp"
00014 #include "Exceptions.hpp"
00015 #include "LoggingWrapper.hpp"
00016
00017 namespace parsing {
00018 void FileData::setOutputFile(std::string &newOutputfile) {
00019     LOG_INFO « "Setting outputfile to...";
00020
00021     // If no value for key "outputfile"
00022     if (newOutputfile.empty()) {
00023         LOG_INFO « "Escalating error to ErrorHandler::invalidValue!";
00024         throw exceptions::InvalidValueException("outputfile",
00025             "Outputfile can't be empty!");
00026     }
00027
00028     // If outputfile is already set
00029     if (!this->outputfile.empty()) {
00030         LOG_INFO « "Escalating error to ErrorHandler::invalidValue!";
00031         throw exceptions::InvalidValueException("outputfile",
00032             "Outputfile is already set!");
00033     }
00034
00035     // If outputfile does not end with ".bat"
00036     if (!newOutputfile.ends_with(".bat")) {
00037         newOutputfile += ".bat";
00038         LOG_WARNING « "Outputfile does not end with \".bat\", adding it now: "
00039             « newOutputfile;
00040     }
00041
00042     this->outputfile = newOutputfile;
00043     LOG_INFO « "Outputfile set to: " « this->outputfile « "\n";
00044 }
00045
00046 void FileData::setApplication(const std::string &newApplication) {
00047     if (newApplication.empty()) {
00048         LOG_INFO « "newApplication empty, returning";
00049         return;
00050     }
00051
00052     LOG_INFO « "Setting application to: " « newApplication « "\n";
00053     this->application.emplace(newApplication);
00054 }
00055
00056 void FileData::addCommand(const std::string &command) {
00057     if (command.empty()) {
00058         LOG_INFO « "Escalating error to ErrorHandler::invalidValue!";
00059         throw exceptions::InvalidValueException("command",
00060             "Command value is empty!");
00060     }
```



```

00061     }
00062
00063     LOG_INFO << "Adding command: " << command << "\n";
00064     this->commands.push_back(command);
00065 }
00066
00067 void FileData::addEnvironmentVariable(const std::string &name,
00068                                     const std::string &value) {
00069     if (name.empty()) {
00070         LOG_INFO << "Escalating error to ErrorHandler::invalidValue!";
00071         throw exceptions::InvalidValueException("name", "Name value is empty!");
00072     }
00073
00074     if (value.empty()) {
00075         LOG_INFO << "Escalating error to ErrorHandler::invalidValue!";
00076         throw exceptions::InvalidValueException("key", "Key value is empty!");
00077     }
00078
00079     LOG_INFO << "Adding environment variable: " << name << "=" << value << "\n";
00080     this->environmentVariables.emplace_back(name, value);
00081 }
00082
00083 void FileData::addPathValue(const std::string &pathValue) {
00084     if (pathValue.empty()) {
00085         LOG_INFO << "Escalating error to ErrorHandler::invalidValue!";
00086         throw exceptions::InvalidValueException("path", "Path value is empty!");
00087     }
00088
00089     LOG_INFO << "Adding path value: " << pathValue << "\n";
00090     this->pathValues.push_back(pathValue);
00091 }
00092 } // namespace parsing

```

## 10.26 src/sources/JsonHandler.cpp File Reference

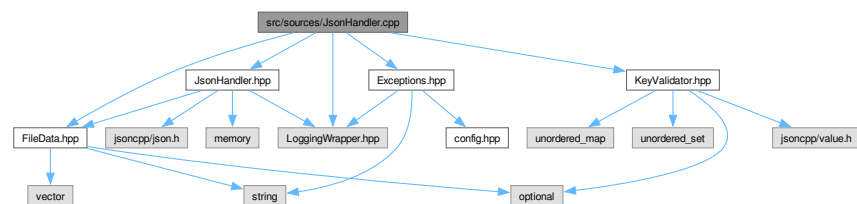
Implementation of the JsonHandler class.

```

#include "JsonHandler.hpp"
#include "Exceptions.hpp"
#include "FileData.hpp"
#include "KeyValidator.hpp"
#include "LoggingWrapper.hpp"

```

Include dependency graph for JsonHandler.cpp:



### Namespaces

- namespace [parsing](#)

*The namespace containing everything relevant to parsing.*

## 10.26.1 Detailed Description

Implementation of the JsonHandler class.

### Author

Elena Schwarzbach, Sonia Sinacci

### Date

2024-04-16

### Version

0.1.6

### See also

[src/include/JsonHandler.hpp](#)

### Copyright

See LICENSE file

Definition in file [JsonHandler.cpp](#).

## 10.27 JsonHandler.cpp

[Go to the documentation of this file.](#)

```
00001
00013 #include "JsonHandler.hpp"
00014 #include "Exceptions.hpp"
00015 #include "FileData.hpp"
00016 #include "KeyValidator.hpp"
00017 #include "LoggingWrapper.hpp"
00018
00019 namespace parsing {
00020 JsonHandler::JsonHandler(const std::string &filename) {
00021     LOG_INFO << "Initializing JSONHandler with filename: " << filename << "\n";
00022     this->root = parseFile(filename);
00023 }
00024
00025 std::shared_ptr<Json::Value> JsonHandler::parseFile(const std::string &filename)
00026
00027 {
00028     LOG_INFO << "Parsing file: " << filename << "\n";
00029     // Can open files anywhere with relative/absolute path
00030     // - {ReqFunc5}
00031     std::ifstream file(filename);
00032     Json::Value newRoot;
00033
00034     // Json::Reader.parse() returns false if parsing fails
00035     if (Json::Reader reader; !reader.parse(file, newRoot)) {
00036         throw exceptions::ParsingException(filename);
00037     }
00038
00039     // Validate keys
00040     // Check for errors
00041     if (auto errors = KeyValidator::getInstance().validateKeys(newRoot, filename);
00042         !errors.empty()) {
00043         throw exceptions::InvalidKeyException(errors);
00044     }
00045 }
```

```

00046     LOG_INFO << "File \"\" « filename << "\" has been parsed\n";
00047     return std::make_shared<Json::Value>(newRoot);
00048 }
00049
00050 std::shared_ptr<FileData> JsonHandler::getFileData() {
00051     LOG_INFO << "Creating FileData object for return...\n";
00052     return this->createFileData();
00053 }
00054
00055 std::shared_ptr<FileData> JsonHandler::createFileData() {
00056     LOG_INFO << "Creating FileData object...\n";
00057     this->data = std::make_shared<FileData>();
00058     this->assignOutputFile();
00059     this->assignHideShell();
00060     this->assignApplication();
00061     this->assignEntries();
00062     return this->data;
00063 }
00064
00065 void JsonHandler::assignOutputFile() const {
00066     LOG_INFO << "Assigning outputfile...\n";
00067     std::string outputFile = this->root->get("outputfile", "").asString();
00068     this->data->setOutputFile(outputFile);
00069 }
00070
00071 void JsonHandler::assignHideShell() const {
00072     LOG_INFO << "Assigning hide shell...\n";
00073     // If the 'hideshell' key is not given, it defaults to false
00074     this->data->setHideShell(this->root->get("hideshell", false).asBool());
00075 }
00076
00077 void JsonHandler::assignApplication() const {
00078     LOG_INFO << "Assigning application...\n";
00079     this->data->setApplication(this->root->get("application", "").asString());
00080 }
00081
00082 void JsonHandler::assignEntries() const {
00083     LOG_INFO << "Assigning entries...\n";
00084
00085     for (const auto &entry : this->root->get("entries", "")) {
00086         std::string entryType = entry.get("type", "").asString();
00087
00088         if (entryType == "EXE") {
00089             LOG_INFO << "Calling function to assign command...\n";
00090             this->assignCommand(entry);
00091         }
00092         else if (entryType == "ENV") {
00093             LOG_INFO << "Calling function to assign environment variable...\n";
00094             this->assignEnvironmentVariable(entry);
00095         }
00096         else if (entryType == "PATH") {
00097             LOG_INFO << "Calling function to assign path value...\n";
00098             this->assignPathValue(entry);
00099         }
00100         else {
00101             // Due to validation beforehand - this should never be reached!
00102             throw exceptions::UnreachableCodeException(
00103                 "Unknown entries should be caught by KeyValidator!\nPlease report "
00104                 "this bug!");
00105         }
00106     }
00107 }
00108
00109 void JsonHandler::assignCommand(const Json::Value &entry) const {
00110     LOG_INFO << "Assigning command...\n";
00111     this->data->addCommand(entry.get("command", "").asString());
00112 }
00113
00114 void JsonHandler::assignEnvironmentVariable(const Json::Value &entry) const {
00115     LOG_INFO << "Assigning environment variable...\n";
00116     std::string key = entry.get("key", "").asString();
00117     std::string value = entry.get("value", "").asString();
00118     this->data->addEnvironmentVariable(key, value);
00119 }
00120
00121 void JsonHandler::assignPathValue(const Json::Value &entry) const {
00122     LOG_INFO << "Assigning path value...\n";
00123     this->data->addPathValue(entry.get("path", "").asString());
00124 }
00125 } // namespace parsing

```

## 10.28 src/sources/KeyValidator.cpp File Reference

Implementation for the KeyValidator class.

```
#include "KeyValidator.hpp"
#include "Exceptions.hpp"
#include "LoggingWrapper.hpp"
#include <optional>
#include <regex>
#include <vector>
```

Include dependency graph for KeyValidator.cpp:



### Namespaces

- namespace [parsing](#)  
*The namespace containing everything relevant to parsing.*

### 10.28.1 Detailed Description

Implementation for the KeyValidator class.

#### Author

Simon Blum

#### Date

2024-04-26

#### Version

0.2.2

#### See also

[src/include/KeyValidator.hpp](#)

#### Copyright

See LICENSE file

Definition in file [KeyValidator.cpp](#).

## 10.29 KeyValidator.cpp

[Go to the documentation of this file.](#)

```

00001
00012 #include "KeyValidator.hpp"
00013 #include "Exceptions.hpp"
00014 #include "LoggingWrapper.hpp"
00015 #include <optional>
00016 #include <regex>
00017 #include <vector>
00018
00019 namespace parsing {
00020 KeyValidator &KeyValidator::getInstance() {
00021     static KeyValidator keyValidator;
00022     LOG_INFO « "Returning KeyValidator instance!";
00023     return keyValidator;
00024 }
00025
00026 std::vector<std::tuple<int, std::string>> KeyValidator::validateKeys(
00027     const Json::Value &root,
00028     const std::string &filename) {
00029     std::vector<std::tuple<int, std::string>> wrongKeys =
00030         getWrongKeys(root, filename);
00031
00032     // Inline declaration to prevent leaking in outer scope
00033     for (Json::Value entries = root.get("entries", "");
00034         const auto &entry : entries) {
00035         const auto entryKeys = entry.getMemberNames();
00036         // Create a set of the entry keys for faster lookup (O(1) instead of O(n))
00037         std::unordered_set<std::string> entryKeysSet(entryKeys.begin(),
00038             entryKeys.end());
00039         const auto wrongEntries = validateEntries(filename, entryKeysSet);
00040         // Combine wrong keys
00041         wrongKeys.insert(wrongKeys.end(), wrongEntries.begin(), wrongEntries.end());
00042         // Validate that each entry has it's necessary keys
00043         validateTypes(filename, entry, entryKeysSet);
00044     }
00045
00046     return wrongKeys;
00047 }
00048
00049 std::vector<std::tuple<int, std::string>> KeyValidator::getWrongKeys(
00050     const Json::Value &root,
00051     const std::string &filename) const {
00052     std::vector<std::tuple<int, std::string>> wrongKeys = {};
00053
00054     for (const auto &key : root.getMemberNames()) {
00055         if (!validKeys.contains(key)) {
00056             const auto error = getUnknownKeyLine(filename, key);
00057
00058             if (!error.has_value()) {
00059                 LOG_ERROR « "Unable to find line of wrong key!";
00060                 continue;
00061             }
00062
00063             // If the line can't be found, add -1 as line number
00064             wrongKeys.emplace_back(error.value_or(-1), key);
00065         }
00066     }
00067
00068     return wrongKeys;
00069 }
00070
00071 std::vector<std::tuple<int, std::string>> KeyValidator::validateEntries(
00072     const std::string &filename,
00073     const std::unordered_set<std::string> &entryKeys) const {
00074     std::vector<std::tuple<int, std::string>> wrongKeys = {};
00075
00076     for (const auto &key : entryKeys) {
00077         if (!validEntryKeys.contains(key)) {
00078             const auto error = getUnknownKeyLine(filename, key);
00079
00080             if (!error.has_value()) {
00081                 LOG_ERROR « "Unable to find line of wrong key!";
00082                 continue;
00083             }
00084
00085             wrongKeys.emplace_back(error.value_or(-1), key);
00086         }
00087     }
00088
00089     return wrongKeys;
00090 }
00091
00092 void KeyValidator::validateTypes(

```

```

00093         const std::string &filename, const Json::Value &entry,
00094         const std::unordered_set<std::string> &entryKeys) {
00095     // Gett the type of the entry - error if not found
00096     const std::string type = entry.get("type", "ERROR").asString();
00097
00098     // If the type is not found, throw an exception
00099     if (type == "ERROR") {
00100         throw exceptions::MissingTypeException();
00101         // If the type is not known, throw an exception
00102         // @note This should already have been checked
00103     }
00104     else if (typeToKeys.contains(type)) {
00105         const std::optional<int> line =
00106             getUnknownKeyLine(filename, std::string(type));
00107
00108         if (!line.has_value()) {
00109             LOG_INFO « "Unable to find line of wrong type!";
00110         }
00111
00112         throw exceptions::InvalidTypeException(std::string(type), line.value());
00113         // If the type is known, check if all necessary keys are present
00114     }
00115     else {
00116         for (const auto &key : typeToKeys[type]) {
00117             if (entryKeys.contains(key)) {
00118                 throw exceptions::MissingKeyException(key, std::string(type));
00119             }
00120         }
00121     }
00122 }
00123
00124 std::optional<int> KeyValidator::getUnknownKeyLine(const std::string &filename,
00125                                                    const std::string &wrongKey) {
00126     std::ifstream file(filename);
00127
00128     if (!file.is_open()) {
00129         LOG_ERROR « "File not open!";
00130         return std::nullopt;
00131     }
00132
00133     std::string line;
00134     // Create a regex pattern that matches the wrong key whole word
00135     const std::regex wrongKeyPattern("\\b" + wrongKey + "\\b");
00136
00137     for (int lineNumber = 1; std::getline(file, line); ++lineNumber) {
00138         if (std::regex_search(line, wrongKeyPattern)) {
00139             return lineNumber;
00140         }
00141     }
00142
00143     return std::nullopt;
00144 }
00145
00146 } // namespace parsing

```

## 10.30 src/sources/Utils.cpp File Reference

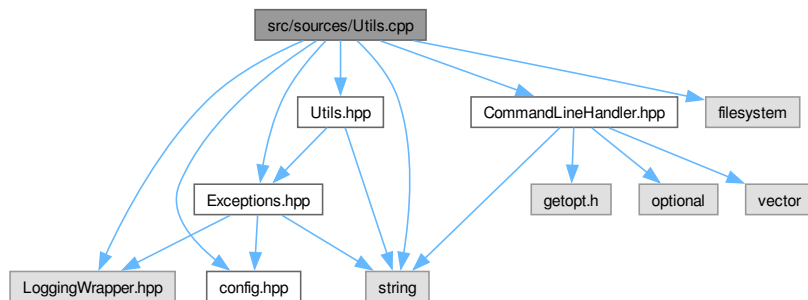
Implementation for the Utils class.

```

#include "Utils.hpp"
#include "CommandLineHandler.hpp"
#include "Exceptions.hpp"
#include "config.hpp"
#include <LoggingWrapper.hpp>
#include <filesystem>
#include <string>

```

Include dependency graph for Utils.cpp:



## Namespaces

- namespace [utilities](#)  
*Includes all utilities.*

### 10.30.1 Detailed Description

Implementation for the Utils class.

#### Author

Simon Blum

#### Date

2024-04-26

#### Version

0.2.2

This file includes the implementation for the Utils class.

#### See also

`src/include/utility/Utilities.hpp`

#### Copyright

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Definition in file [Utils.cpp](#).

## 10.31 Utils.cpp

[Go to the documentation of this file.](#)

```

00001
00015 #include "Utils.hpp"
00016 #include "CommandLineHandler.hpp"
00017 #include "Exceptions.hpp"
00018 #include "config.hpp"
00019
00020 #include <LoggingWrapper.hpp>
00021 #include <filesystem>
00022 #include <string>
00023
00024 namespace utilities {
00025 void Utils::setupEasyLogging(const std::string &configFile) {
00026     el::Configurations conf(configFile);
00027     el::Loggers::reconfigureAllLoggers(conf);
00028     LOG_INFO << "Running " << config::PROJECT_NAME << " v"
00029             << config::MAJOR_VERSION << "." << config::MINOR_VERSION << "."
00030             << config::PATCH_VERSION;
00031     LOG_INFO << "For more Information checkout " << config::HOMEPAGE_URL;
00032     LOG_INFO << "EasyLogging has been setup!";
00033 }
00034 bool Utils::askToContinue(const std::string &prompt) {
00035     std::string userInput;
00036     LOG_INFO << "Asking for user Confirmation to continue...";
00037     OUTPUT << cli::BOLD << prompt << cli::RESET;
00038
00039     do {
00040         std::cin >> userInput;
00041         std::ranges::transform(userInput, userInput.begin(), ::tolower);
00042
00043         if (userInput != "y" && userInput != "yes" && userInput != "n" &&
00044             userInput != "no") {
00045             LOG_INFO << "Wrong user input!";
00046             OUTPUT << cli::ITALIC << "Please enter Y/Yes or N/No!\n" << cli::RESET;
00047             continue;
00048         }
00049
00050         break;
00051     } while (true);
00052
00053     return userInput == "y" || userInput == "yes";
00054 }
00055 void Utils::checkConfigFile(const std::string &configFile) {
00056     if (!std::filesystem::is_regular_file(configFile)) {
00057         std::cerr << cli::RED << cli::BOLD
00058             << "Fatal: Easylogging configuration file not found at:\n"
00059             << cli::RESET << cli::ITALIC << "\n\t\"" << configFile << "\"\n\n"
00060             << cli::RESET;
00061         std::cout << "Aborting...\n";
00062         exit(1);
00063     }
00064 }
00065 const std::string &Utils::checkDirectory(std::string &directory) {
00066     if (!directory.empty() && directory.back() != '/' &&
00067         directory.back() != '\\') {
00068         directory += '/';
00069     }
00070
00071     if (!std::filesystem::exists(directory)) {
00072         throw exceptions::NoSuchDirException(directory);
00073     }
00074
00075     return directory;
00076 }
00077 bool Utils::handleParseException(const exceptions::CustomException &e,
00078     const std::vector<std::string>::iterator &file,
00079     const std::vector<std::string> &files) {
00080     OUTPUT << "\nThere has been a error while trying to parse \"" << *file
00081         << ":\n";
00082     LOG_ERROR << e.what();
00083
00084     if (std::next(file) != files.end() &&
00085         !utilities::Utils::askToContinue(
00086             "Do you want to continue with the other files? (y/n) "
00087             "")) {
00088         OUTPUT << "Aborting...";
00089         LOG_INFO << "Application ended by user Input";
00090         return false;
00091     }
00092
00093     std::cout << std::endl;
00094     return true;
00095 }

```



```
00096  
00097 } // namespace utilities
```



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