Writing Regexps 2021-22 / Regex Executor

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Namespace Index

1.1 Namespace List

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wr22::regex_executor::algorithms::backtracking 10
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wr22::regex_executor::algorithms::backtracking::failure_reasons 12
wr22::regex_executor::algorithms::backtracking::instruction 13
wr22::regex_executor::algorithms::backtracking::step 13
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Chapter 2

Hierarchical Index

2.1 Class Hierarchy

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

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wr22::regex_executor::algorithms::backtracking::DecisionApplicator< AlternativesDecision > 21
wr22::regex_executor::algorithms::backtracking::DecisionApplicator< QuantifierDecision< Quantifier > > 22
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Chapter 3

Class Index

3.1 Class List

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Chapter 5

Namespace Documentation

5.1 wr22 Namespace Reference

Namespaces

- namespace regex_executor

5.2 wr22::regex_executor Namespace Reference

Namespaces

- namespace algorithms
- namespace utils

Classes

- class Executor
- class Regex

Enumerations

- enum class QuantifierType { Optional , Star , Plus }

5.2.1 Enumeration Type Documentation

5.2.1.1 QuantifierType

```
enum class wr22::regex_executor::QuantifierType  [strong]
```

Enumerator

Optional	
Star	
Plus	

5.3 wr22::regex_executor::algorithms Namespace Reference

Namespaces

- namespace backtracking

5.4 wr22::regex_executor::algorithms::backtracking Namespace Reference

Namespaces

- namespace detail
- namespace failure_reasons
- namespace instruction
- namespace step

Classes

- struct AlternativesDecision
- struct DecisionApplicator
- struct DecisionApplicator< AlternativesDecision >
- struct DecisionApplicator< QuantifierDecision< Quantifier > >
- struct DecisionRef
- struct DecisionSnapshot
- struct ErrorHook
- class Executor
- struct FailureReason
- class Interpreter
- struct InterpreterState
- struct InterpreterStateMiniSnapshot
- struct InterpreterStateSnapshot
- struct MatchResult
- class PartExecutor
- struct QuantifierDecision
- class QuantifierExecutor
- class SpecificPartExecutor
- class SpecificPartExecutor< regex_parser::regex::part::Alternatives >
- class SpecificPartExecutor< regex_parser::regex::part::CharacterClass >
- class SpecificPartExecutor< regex_parser::regex::part::Empty >
- class SpecificPartExecutor< regex_parser::regex::part::Group >
- class SpecificPartExecutor< regex_parser::regex::part::Literal >
- class SpecificPartExecutor< regex_parser::regex::part::Optional >
- class SpecificPartExecutor< regex_parser::regex::part::Plus >
- class SpecificPartExecutor< regex_parser::regex::part::Sequence >
- class SpecificPartExecutor< regex_parser::regex::part::Star >
- class SpecificPartExecutor< regex_parser::regex::part::Wildcard >
- struct Step

Typedefs

- template<typename Quantifier >
  using QuantifierExecutorBase = QuantifierExecutor< SpecificPartExecutor< Quantifier >, Quantifier >
- using Decision = wr22::utils::Adt< AlternativesDecision, QuantifierDecision< regex_parser::regex::part::Star >, QuantifierDecision< regex_parser::regex::part::Plus >, QuantifierDecision< regex_parser::regex::part::Optional > >
- using Instruction = instruction::Adt

Functions

- std::ostream & operator<< (std::ostream &out, const Instruction &instruction)
- void to_json (nlohmann::json &j, const Step &step)
- template<typename... Reasons>
  void to_json (nlohmann::json &j, const FailureReason< Reasons... > &failure_reason)

5.4.1 Typedef Documentation

5.4.1.1 Decision

```
using wr22::regex_executor::algorithms::backtracking::Decision = typedef wr22::utils::Adt<
AlternativesDecision, QuantifierDecision<regex_parser::regex::part::Star>, QuantifierDecision<regex↩
_parser::regex::part::Plus>, QuantifierDecision<regex_parser::regex::part::Optional> >
```

5.4.1.2 Instruction

```
using wr22::regex_executor::algorithms::backtracking::Instruction = typedef instruction::Adt
```

5.4.1.3 QuantifierExecutorBase

```
template<typename Quantifier >
using wr22::regex_executor::algorithms::backtracking::QuantifierExecutorBase = typedef QuantifierExecutor<Spe
Quantifier>
```

5.4.2 Function Documentation

5.4.2.1 operator<<()

```
std::ostream & wr22::regex_executor::algorithms::backtracking::operator<< (
            std::ostream & out,
            const Instruction & instruction )
```

5.4.2.2 to_json() [1/2]

```
template<typename... Reasons>
void wr22::regex_executor::algorithms::backtracking::to_json (
            nlohmann::json & j,
            const FailureReason< Reasons... > & failure_reason )
```

5.4.2.3 to_json() [2/2]

```
void wr22::regex_executor::algorithms::backtracking::to_json (
            nlohmann::json & j,
            const Step & step )
```

5.5 wr22::regex_executor::algorithms::backtracking::detail Namespace Reference

Namespaces

- namespace step

5.6 wr22::regex_executor::algorithms::backtracking::detail::step Namespace Reference

Classes

- struct FailureBase
- struct SuccessBase

5.7 wr22::regex_executor::algorithms::backtracking::failure_reasons Namespace Reference

Classes

- struct EndOfInput
- struct ExcludedChar
- struct OptionsExhausted
- struct OtherChar

5.8 wr22::regex_executor::algorithms::backtracking::instruction Namespace Reference

Classes

- struct AddStep
- struct Execute
- struct Run

Typedefs

- using Adt = wr22::utils::Adt< Execute, AddStep, Run >

5.8.1 Typedef Documentation

5.8.1.1 Adt

```
using wr22::regex_executor::algorithms::backtracking::instruction::Adt = typedef wr22::utils↩
::Adt<Execute, AddStep, Run>
```

5.9 wr22::regex_executor::algorithms::backtracking::step Namespace Reference

Classes

- struct Backtrack
- struct BeginGroup
- struct End
- struct EndGroup
- struct FinishAlternatives
- struct FinishQuantifier
- struct MatchAlternatives
- struct MatchCharClass
- struct MatchLiteral
- struct MatchQuantifier
- struct MatchWildcard

Typedefs

- using Adt = wr22::utils::Adt< MatchQuantifier, FinishQuantifier, MatchCharClass, MatchLiteral, MatchWildcard, BeginGroup, EndGroup, MatchAlternatives, FinishAlternatives, Backtrack, End >

Functions

- void to_json (nlohmann::json &j, const MatchQuantifier &step)
- void to_json (nlohmann::json &j, const FinishQuantifier &step)
- void to_json (nlohmann::json &j, const MatchCharClass &step)
- void to_json (nlohmann::json &j, const MatchWildcard &step)
- void to_json (nlohmann::json &j, const BeginGroup &step)
- void to_json (nlohmann::json &j, const EndGroup &step)
- void to_json (nlohmann::json &j, const MatchLiteral &step)
- void to_json (nlohmann::json &j, const MatchAlternatives &step)
- void to_json (nlohmann::json &j, const FinishAlternatives &step)
- void to_json (nlohmann::json &j, const Backtrack &step)
- void to_json (nlohmann::json &j, const End &step)

5.9.1 Typedef Documentation

5.9.1.1 Adt

```
using wr22::regex_executor::algorithms::backtracking::step::Adt = typedef wr22::utils::Adt<
MatchQuantifier, FinishQuantifier, MatchCharClass, MatchLiteral, MatchWildcard, BeginGroup,
EndGroup, MatchAlternatives, FinishAlternatives, Backtrack, End>
```

5.9.2 Function Documentation

5.9.2.1 to_json() [1/11]

```
void wr22::regex_executor::algorithms::backtracking::step::to_json (
            nlohmann::json & j,
            const Backtrack & step )
```

5.9.2.2 to_json() [2/11]

```
void wr22::regex_executor::algorithms::backtracking::step::to_json (
            nlohmann::json & j,
            const BeginGroup & step )
```

5.9.2.3 to_json() [3/11]

```
void wr22::regex_executor::algorithms::backtracking::step::to_json (
            nlohmann::json & j,
            const End & step )
```

5.9.2.4 to_json() [4/11]

```
void wr22::regex_executor::algorithms::backtracking::step::to_json (
            nlohmann::json & j,
            const EndGroup & step )
```

5.9.2.5 to_json() [5/11]

```
void wr22::regex_executor::algorithms::backtracking::step::to_json (
            nlohmann::json & j,
            const FinishAlternatives & step )
```

5.9.2.6 to_json() [6/11]

```
void wr22::regex_executor::algorithms::backtracking::step::to_json (
            nlohmann::json & j,
            const FinishQuantifier & step )
```

5.9.2.7 to_json() [7/11]

```
void wr22::regex_executor::algorithms::backtracking::step::to_json (
            nlohmann::json & j,
            const MatchAlternatives & step )
```

5.9.2.8 to_json() [8/11]

```
void wr22::regex_executor::algorithms::backtracking::step::to_json (
            nlohmann::json & j,
            const MatchCharClass & step )
```

5.9.2.9 to_json() [9/11]

```
void wr22::regex_executor::algorithms::backtracking::step::to_json (
            nlohmann::json & j,
            const MatchLiteral & step )
```

5.9.2.10 to_json() [10/11]

```
void wr22::regex_executor::algorithms::backtracking::step::to_json (
            nlohmann::json & j,
            const MatchQuantifier & step )
```

5.9.2.11 to_json() [11/11]

```
void wr22::regex_executor::algorithms::backtracking::step::to_json (
            nlohmann::json & j,
            const MatchWildcard & step )
```

5.10 wr22::regex_executor::utils Namespace Reference

Classes

- class SpannedRef

Chapter 6

Class Documentation

6.1 wr22::regex_executor::algorithms::backtracking::instruction::Add↩ Step Struct Reference

`#include <instruction.hpp>`

Public Attributes

- Step step

6.1.1 Member Data Documentation

6.1.1.1 step

`Step wr22::regex_executor::algorithms::backtracking::instruction::AddStep::step`

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

- include/wr22/regex_executor/algorithms/backtracking/instruction.hpp

6.2 wr22::regex_executor::algorithms::backtracking::Alternatives↩ Decision Struct Reference

`#include <decision.hpp>`

Public Types

- using PartType = regex_parser::regex::part::Alternatives

Public Member Functions

- std::optional< AlternativesDecision > reconsider (Interpreter &interpreter, InterpreterStateSnapshot snapshot) const

Public Attributes

- std::reference_wrapper< const PartType > part_ref
- size_t decision_index = 0

6.2.1 Member Typedef Documentation

6.2.1.1 PartType

```
using wr22::regex_executor::algorithms::backtracking::AlternativesDecision::PartType = regex↩
_parser::regex::part::Alternatives
```

6.2.2 Member Function Documentation

6.2.2.1 reconsider()

```
std::optional< AlternativesDecision > wr22::regex_executor::algorithms::backtracking::Alternatives↩
Decision::reconsider (
            Interpreter & interpreter,
            InterpreterStateSnapshot snapshot ) const
```

6.2.3 Member Data Documentation

6.2.3.1 decision_index

```
size_t wr22::regex_executor::algorithms::backtracking::AlternativesDecision::decision_index =
0
```

6.2.3.2 part_ref

```
std::reference_wrapper<const PartType> wr22::regex_executor::algorithms::backtracking::↩
AlternativesDecision::part_ref
```

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

- include/wr22/regex_executor/algorithms/backtracking/decision.hpp
- src/algorithms/backtracking/decision.cpp

6.3 wr22::regex_executor::algorithms::backtracking::step::Backtrack Struct Reference

```
#include <step.hpp>
```

Public Member Functions

- constexpr const char * type_code () const
- bool operator== (const Backtrack &other) const =default

Public Attributes

- size_t string_pos
- size_t continue_after_step

6.3.1 Member Function Documentation

6.3.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::step::Backtrack::operator== (
            const Backtrack & other ) const  [default]
```

6.3.1.2 type_code()

```
constexpr const char * wr22::regex_executor::algorithms::backtracking::step::Backtrack::type_↩
code ( ) const  [inline], [constexpr]
```

6.3.2 Member Data Documentation

6.3.2.1 continue_after_step

```
size_t wr22::regex_executor::algorithms::backtracking::step::Backtrack::continue_after_step
```

6.3.2.2 string_pos

```
size_t wr22::regex_executor::algorithms::backtracking::step::Backtrack::string_pos
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.4 wr22::regex_executor::algorithms::backtracking::step::BeginGroup Struct Reference

```
#include <step.hpp>
```

Public Member Functions

- constexpr const char * type_code () const
- bool operator== (const BeginGroup &other) const =default

Public Attributes

- regex_parser::span::Span regex_span
- size_t string_pos

6.4.1 Member Function Documentation

6.4.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::step::BeginGroup::operator== (
            const BeginGroup & other ) const  [default]
```

6.4.1.2 type_code()

```
constexpr const char * wr22::regex_executor::algorithms::backtracking::step::BeginGroup::type↩
_code ( ) const  [inline], [constexpr]
```

6.4.2 Member Data Documentation

6.4.2.1 regex_span

```
regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::BeginGroup↩
::regex_span
```

6.4.2.2 string_pos

```
size_t wr22::regex_executor::algorithms::backtracking::step::BeginGroup::string_pos
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.5 wr22::regex_executor::algorithms::backtracking::Decision↩ Applicator< T > Struct Template Reference

```
#include <decision_applicator.hpp>
```

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

- include/wr22/regex_executor/algorithms/backtracking/decision_applicator.hpp

6.6 wr22::regex_executor::algorithms::backtracking::Decision↩ Applicator< AlternativesDecision > Struct Reference

```
#include <decision_applicator.hpp>
```

Public Types

- using PartType = regex_parser::regex::part::Alternatives
- using ExecutorType = SpecificPartExecutor< PartType >

Static Public Member Functions

- static ExecutorType construct_executor (utils::SpannedRef< PartType > part_ref, AlternativesDecision decision)

6.6.1 Member Typedef Documentation

6.6.1.1 ExecutorType

```
using wr22::regex_executor::algorithms::backtracking::DecisionApplicator< AlternativesDecision
>::ExecutorType = SpecificPartExecutor<PartType>
```

6.6.1.2 PartType

```
using wr22::regex_executor::algorithms::backtracking::DecisionApplicator< AlternativesDecision
>::PartType = regex_parser::regex::part::Alternatives
```

6.6.2 Member Function Documentation

6.6.2.1 construct_executor()

```
static ExecutorType wr22::regex_executor::algorithms::backtracking::DecisionApplicator< AlternativesDecision
>::construct_executor (
            utils::SpannedRef< PartType > part_ref,
            AlternativesDecision decision )  [inline], [static]
```

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

- include/wr22/regex_executor/algorithms/backtracking/decision_applicator.hpp

6.7 wr22::regex_executor::algorithms::backtracking::DecisionApplicator< QuantifierDecision< Quantifier > > Struct Template Reference

```
#include <decision_applicator.hpp>
```

Public Types

- using PartType = Quantifier
- using ExecutorType = SpecificPartExecutor< PartType >

Static Public Member Functions

- static ExecutorType construct_executor (utils::SpannedRef< PartType > part_ref, QuantifierDecision< PartType > decision)

6.7.1 Member Typedef Documentation

6.7.1.1 ExecutorType

```
template<typename Quantifier >
using wr22::regex_executor::algorithms::backtracking::DecisionApplicator< QuantifierDecision<
Quantifier > >::ExecutorType = SpecificPartExecutor<PartType>
```

6.7.1.2 PartType

```
template<typename Quantifier >
using wr22::regex_executor::algorithms::backtracking::DecisionApplicator< QuantifierDecision<
Quantifier > >::PartType = Quantifier
```

6.7.2 Member Function Documentation

6.7.2.1 construct_executor()

```
template<typename Quantifier >
static ExecutorType wr22::regex_executor::algorithms::backtracking::DecisionApplicator< QuantifierDecision<
Quantifier > >::construct_executor (
            utils::SpannedRef< PartType > part_ref,
            QuantifierDecision< PartType > decision )  [inline], [static]
```

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

- include/wr22/regex_executor/algorithms/backtracking/decision_applicator.hpp

6.8 wr22::regex_executor::algorithms::backtracking::DecisionRef Struct Reference

```
#include <decision_ref.hpp>
```

Public Attributes

- size_t index

6.8.1 Member Data Documentation

6.8.1.1 index

```
size_t wr22::regex_executor::algorithms::backtracking::DecisionRef::index
```

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

- include/wr22/regex_executor/algorithms/backtracking/decision_ref.hpp

6.9 wr22::regex_executor::algorithms::backtracking::DecisionSnapshot Struct Reference

```
#include <decision_snapshot.hpp>
```

Public Attributes

- InterpreterStateSnapshot snapshot
- Decision decision

6.9.1 Member Data Documentation

6.9.1.1 decision

```
Decision wr22::regex_executor::algorithms::backtracking::DecisionSnapshot::decision
```

6.9.1.2 snapshot

```
InterpreterStateSnapshot wr22::regex_executor::algorithms::backtracking::DecisionSnapshot↩
::snapshot
```

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

- include/wr22/regex_executor/algorithms/backtracking/decision_snapshot.hpp

6.10 wr22::regex_executor::algorithms::backtracking::step::End Struct Reference

`#include <step.hpp>`

Classes

- struct Failure
- struct Success

Public Member Functions

- constexpr const char * type_code () const
- bool operator== (const End &other) const =default

Public Attributes

- size_t string_pos
- wr22::utils::Adt< Success, Failure > result

6.10.1 Member Function Documentation

6.10.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::step::End::operator== (
            const End & other ) const  [default]
```

6.10.1.2 type_code()

```
constexpr const char * wr22::regex_executor::algorithms::backtracking::step::End::type_code (
) const  [inline], [constexpr]
```

6.10.2 Member Data Documentation

6.10.2.1 result

```
wr22::utils::Adt<Success, Failure> wr22::regex_executor::algorithms::backtracking::step::End↩
::result
```

6.10.2.2 string_pos

```
size_t wr22::regex_executor::algorithms::backtracking::step::End::string_pos
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.11 wr22::regex_executor::algorithms::backtracking::step::EndGroup Struct Reference

```
#include <step.hpp>
```

Public Member Functions

- constexpr const char * type_code () const
- bool operator== (const EndGroup &other) const =default

Public Attributes

- size_t string_pos

6.11.1 Member Function Documentation

6.11.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::step::EndGroup::operator== (
            const EndGroup & other ) const  [default]
```

6.11.1.2 type_code()

```
constexpr const char * wr22::regex_executor::algorithms::backtracking::step::EndGroup::type_↩
code ( ) const  [inline], [constexpr]
```

6.11.2 Member Data Documentation

6.11.2.1 string_pos

```
size_t wr22::regex_executor::algorithms::backtracking::step::EndGroup::string_pos
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.12 wr22::regex_executor::algorithms::backtracking::failure_reasons::EndOfInput Struct Reference

```
#include <failure_reason.hpp>
```

Public Member Functions

- bool operator== (const EndOfInput &other) const =default

Static Public Member Functions

- static constexpr const char * code ()

6.12.1 Member Function Documentation

6.12.1.1 code()

```
static constexpr const char * wr22::regex_executor::algorithms::backtracking::failure_reasons
::EndOfInput::code ( )  [inline], [static], [constexpr]
```

6.12.1.2 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::failure_reasons::EndOfInput::operator== (
            const EndOfInput & other ) const  [default]
```

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

- include/wr22/regex_executor/algorithms/backtracking/failure_reason.hpp

6.13 wr22::regex_executor::algorithms::backtracking::ErrorHook Struct Reference

`#include <error_hook.hpp>`

Public Types

- using Context = wr22::utils::Adt< std::monostate, DecisionRef >
- using Fn = void(*)(const Context &context, Interpreter &interpreter)

Public Member Functions

- void operator() (Interpreter &interpreter) const

Public Attributes

- Context ctx
- Fn fn

6.13.1 Member Typedef Documentation

6.13.1.1 Context

```
using wr22::regex_executor::algorithms::backtracking::ErrorHook::Context = wr22::utils::↩
Adt<std::monostate, DecisionRef>
```

6.13.1.2 Fn

```
using wr22::regex_executor::algorithms::backtracking::ErrorHook::Fn = void (*)(const Context&
context, Interpreter& interpreter)
```

6.13.2 Member Function Documentation

6.13.2.1 operator()()

```
void wr22::regex_executor::algorithms::backtracking::ErrorHook::operator() (
            Interpreter & interpreter ) const  [inline]
```

6.13.3 Member Data Documentation

6.13.3.1 ctx

```
Context wr22::regex_executor::algorithms::backtracking::ErrorHook::ctx
```

6.13.3.2 fn

```
Fn wr22::regex_executor::algorithms::backtracking::ErrorHook::fn
```

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

- include/wr22/regex_executor/algorithms/backtracking/error_hook.hpp

6.14 wr22::regex_executor::algorithms::backtracking::failure_reasons::ExcludedChar Struct Reference

```
#include <failure_reason.hpp>
```

Public Member Functions

- bool operator== (const ExcludedChar &other) const =default

Static Public Member Functions

- static constexpr const char * code ()

6.14.1 Member Function Documentation

6.14.1.1 code()

```
static constexpr const char * wr22::regex_executor::algorithms::backtracking::failure_reasons
::ExcludedChar::code ( )  [inline], [static], [constexpr]
```

6.14.1.2 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::failure_reasons::ExcludedChar::operator==
(
            const ExcludedChar & other ) const  [default]
```

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

- include/wr22/regex_executor/algorithms/backtracking/failure_reason.hpp

6.15 wr22::regex_executor::algorithms::backtracking::instruction::Execute Struct Reference

```
#include <instruction.hpp>
```

Public Attributes

- utils::SpannedRef< regex_parser::regex::Part > part
- std::optional< Decision > forced_decision

6.15.1 Member Data Documentation

6.15.1.1 forced_decision

```
std::optional<Decision> wr22::regex_executor::algorithms::backtracking::instruction::Execute
::forced_decision
```

6.15.1.2 part

```
utils::SpannedRef<regex_parser::regex::Part> wr22::regex_executor::algorithms::backtracking
::instruction::Execute::part
```

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

- include/wr22/regex_executor/algorithms/backtracking/instruction.hpp

6.16 wr22::regex_executor::algorithms::backtracking::Executor Class Reference

```
#include <executor.hpp>
```

Public Member Functions

- Executor (const Regex &regex_ref)
- const Regex & regex_ref () const
- MatchResult execute (const std::u32string_view &string) const

6.16.1 Constructor & Destructor Documentation

6.16.1.1 Executor()

```
wr22::regex_executor::algorithms::backtracking::Executor::Executor (
            const Regex & regex_ref )  [explicit]
```

6.16.2 Member Function Documentation

6.16.2.1 execute()

```
MatchResult wr22::regex_executor::algorithms::backtracking::Executor::execute (
            const std::u32string_view & string ) const
```

6.16.2.2 regex_ref()

```
const Regex & wr22::regex_executor::algorithms::backtracking::Executor::regex_ref ( ) const
```

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

- include/wr22/regex_executor/algorithms/backtracking/executor.hpp
- src/algorithms/backtracking/executor.cpp

6.17 wr22::regex_executor::Executor Class Reference

```
#include <executor.hpp>
```

Public Types

- using BacktrackingResult = algorithms::backtracking::MatchResult

Public Member Functions

- Executor (const Regex &regex_ref)
- const Regex & regex_ref () const
- BacktrackingResult execute (const std::u32string_view &string)

6.17.1 Member Typedef Documentation

6.17.1.1 BacktrackingResult

```
using wr22::regex_executor::Executor::BacktrackingResult = algorithms::backtracking::MatchResult
```

6.17.2 Constructor & Destructor Documentation

6.17.2.1 Executor()

```
wr22::regex_executor::Executor::Executor (
            const Regex & regex_ref )  [explicit]
```

6.17.3 Member Function Documentation

6.17.3.1 execute()

```
Executor::BacktrackingResult wr22::regex_executor::Executor::execute (
            const std::u32string_view & string )
```

6.17.3.2 regex_ref()

```
const Regex & wr22::regex_executor::Executor::regex_ref ( ) const
```

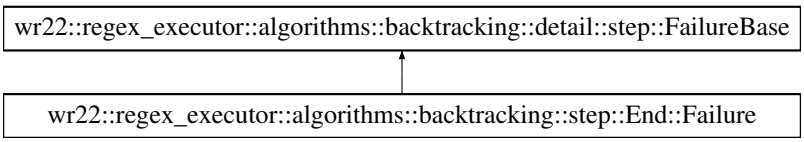
The documentation for this class was generated from the following files:

- include/wr22/regex_executor/executor.hpp
- src/executor.cpp

6.18 wr22::regex_executor::algorithms::backtracking::step::End::Failure Struct Reference

`#include <step.hpp>`

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::End::Failure:



Additional Inherited Members

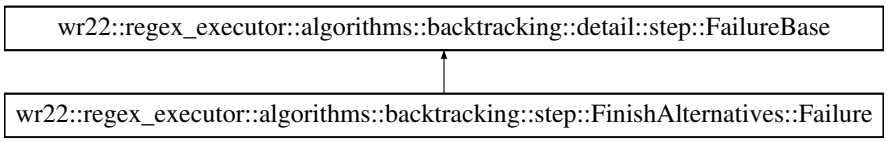
The documentation for this struct was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.19 wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives::Failure Struct Reference

`#include <step.hpp>`

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives::Failure:



Public Attributes

- size_t string_pos
- FailureReason< failure_reasons::OptionsExhausted > failure_reason

Additional Inherited Members

6.19.1 Member Data Documentation

6.19.1.1 failure_reason

```
FailureReason<failure_reasons::OptionsExhausted> wr22::regex_executor::algorithms::backtracking↩
::step::FinishAlternatives::Failure::failure_reason
```

6.19.1.2 string_pos

```
size_t wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives::Failure↩
::string_pos
```

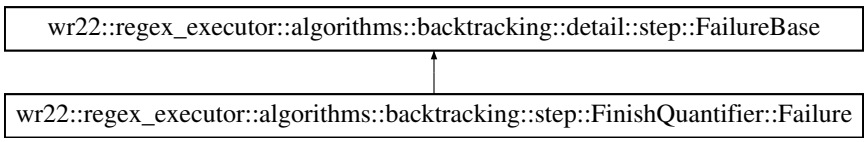
The documentation for this struct was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.20 wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::Failure Struct Reference

```
#include <step.hpp>
```

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::Failure:



Public Attributes

- size_t string_pos
- FailureReason< failure_reasons::OptionsExhausted > failure_reason

Additional Inherited Members

6.20.1 Member Data Documentation

6.20.1.1 failure_reason

```
FailureReason<failure_reasons::OptionsExhausted> wr22::regex_executor::algorithms::backtracking↩
::step::FinishQuantifier::Failure::failure_reason
```

6.20.1.2 string_pos

```
size_t wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::Failure::string↩
_pos
```

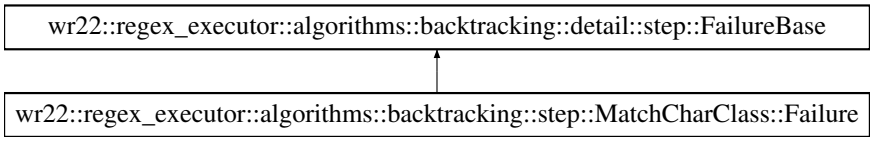
The documentation for this struct was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.21 wr22::regex_executor::algorithms::backtracking::step::MatchChar↩ Class::Failure Struct Reference

```
#include <step.hpp>
```

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::MatchCharClass::Failure:



Public Attributes

- size_t string_pos
- FailureReason< failure_reasons::ExcludedChar, failure_reasons::EndOfInput > failure_reason

Additional Inherited Members

6.21.1 Member Data Documentation

6.21.1.1 failure_reason

```
FailureReason<failure_reasons::ExcludedChar, failure_reasons::EndOfInput> wr22::regex_executor↩
::algorithms::backtracking::step::MatchCharClass::Failure::failure_reason
```

6.21.1.2 string_pos

```
size_t wr22::regex_executor::algorithms::backtracking::step::MatchCharClass::Failure::string↩
_pos
```

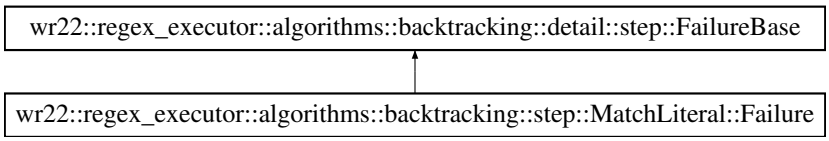
The documentation for this struct was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.22 wr22::regex_executor::algorithms::backtracking::step::MatchLiteral::Failure Struct Reference

`#include <step.hpp>`

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::MatchLiteral::Failure:



Public Attributes

- size_t string_pos
- FailureReason< failure_reasons::OtherChar, failure_reasons::EndOfInput > failure_reason

Additional Inherited Members

6.22.1 Member Data Documentation

6.22.1.1 failure_reason

`FailureReason<failure_reasons::OtherChar, failure_reasons::EndOfInput> wr22::regex_executor::algorithms::backtracking::step::MatchLiteral::Failure::failure_reason`

6.22.1.2 string_pos

`size_t wr22::regex_executor::algorithms::backtracking::step::MatchLiteral::Failure::string_pos`

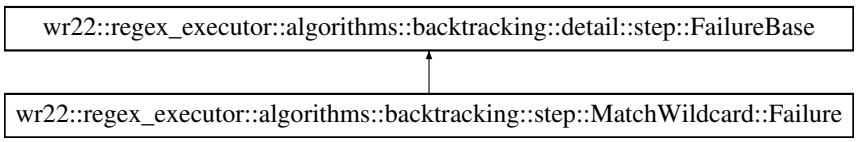
The documentation for this struct was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.23 wr22::regex_executor::algorithms::backtracking::step::MatchWildcard::Failure Struct Reference

`#include <step.hpp>`

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::MatchWildcard::Failure:



Public Attributes

- size_t string_pos
- FailureReason< failure_reasons::EndOfInput > failure_reason

Additional Inherited Members

6.23.1 Member Data Documentation

6.23.1.1 failure_reason

```
FailureReason<failure_reasons::EndOfInput> wr22::regex_executor::algorithms::backtracking↩
::step::MatchWildcard::Failure::failure_reason
```

6.23.1.2 string_pos

```
size_t wr22::regex_executor::algorithms::backtracking::step::MatchWildcard::Failure::string_↩
pos
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.24 wr22::regex_executor::algorithms::backtracking::detail::step↩ ::FailureBase Struct Reference

```
#include <step.hpp>
```

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::detail::step::FailureBase:

Public Member Functions

- bool operator== (const FailureBase &other) const =default

Static Public Attributes

- static constexpr bool success = false

6.24.1 Member Function Documentation

6.24.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::detail::step::FailureBase::operator== (
            const FailureBase & other ) const  [default]
```

6.24.2 Member Data Documentation

6.24.2.1 success

```
constexpr bool wr22::regex_executor::algorithms::backtracking::detail::step::FailureBase↩
::success = false  [static], [constexpr]
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.25 wr22::regex_executor::algorithms::backtracking::FailureReason< Reasons > Struct Template Reference

```
#include <failure_reason.hpp>
```

Public Types

- using Adt = wr22::utils::Adt< Reasons... >

Public Member Functions

- template<typename Reason >
  FailureReason (Reason reason)
- bool operator== (const FailureReason< Reasons... > &other) const =default

Public Attributes

- Adt reason

6.25.1 Member Typedef Documentation

6.25.1.1 Adt

```
template<typename... Reasons>
using wr22::regex_executor::algorithms::backtracking::FailureReason< Reasons >::Adt = wr22↩
::utils::Adt<Reasons...>
```

6.25.2 Constructor & Destructor Documentation

6.25.2.1 FailureReason()

```
template<typename... Reasons>
template<typename Reason >
wr22::regex_executor::algorithms::backtracking::FailureReason< Reasons >::FailureReason (
            Reason reason ) [inline]
```

6.25.3 Member Function Documentation

6.25.3.1 operator==()

```
template<typename... Reasons>
bool wr22::regex_executor::algorithms::backtracking::FailureReason< Reasons >::operator== (
            const FailureReason< Reasons... > & other ) const [default]
```

6.25.4 Member Data Documentation

6.25.4.1 reason

```
template<typename... Reasons>
Adt wr22::regex_executor::algorithms::backtracking::FailureReason< Reasons >::reason
```

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

- include/wr22/regex_executor/algorithms/backtracking/failure_reason.hpp

6.26 wr22::regex_executor::algorithms::backtracking::step::Finish↩ Alternatives Struct Reference

```
#include <step.hpp>
```

Classes

- struct Failure
- struct Success

Public Member Functions

- constexpr const char * type_code () const
- bool operator== (const FinishAlternatives &other) const =default

Public Attributes

- regex_parser::span::Span regex_span
- wr22::utils::Adt< Success, Failure > result

6.26.1 Member Function Documentation

6.26.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives::operator== (
            const FinishAlternatives & other ) const  [default]
```

6.26.1.2 type_code()

```
constexpr const char * wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives↩
::type_code ( ) const  [inline], [constexpr]
```

6.26.2 Member Data Documentation

6.26.2.1 regex_span

```
regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives↩
::regex_span
```

6.26.2.2 result

```
wr22::utils::Adt<Success, Failure> wr22::regex_executor::algorithms::backtracking::step::↩
FinishAlternatives::result
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.27 wr22::regex_executor::algorithms::backtracking::step::Finish↩ Quantifier Struct Reference

```
#include <step.hpp>
```

Classes

- struct Failure
- struct Success

Public Member Functions

- const char * type_code () const
- bool operator== (const FinishQuantifier &other) const =default

Public Attributes

- QuantifierType quantifier_type
- regex_parser::span::Span regex_span
- wr22::utils::Adt< Success, Failure > result

6.27.1 Member Function Documentation

6.27.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::operator== (
            const FinishQuantifier & other ) const  [default]
```

6.27.1.2 type_code()

```
const char * wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::type_code
( ) const
```

6.27.2 Member Data Documentation

6.27.2.1 quantifier_type

```
QuantifierType wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::quantifier↩
_type
```

6.27.2.2 regex_span

```
regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier↩
::regex_span
```

6.27.2.3 result

```
wr22::utils::Adt<Success, Failure> wr22::regex_executor::algorithms::backtracking::step::↩
FinishQuantifier::result
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp
- src/algorithms/backtracking/step.cpp

6.28 wr22::regex_executor::algorithms::backtracking::Interpreter Class Reference

```
#include <interpreter.hpp>
```

Public Member Functions

- Interpreter (const Regex &regex, const std::u32string_view &string_ref)
- std::optional< char32_t > current_char () const
- void advance ()
- DecisionRef add_decision (Decision decision)
- const DecisionSnapshot & decision_snapshot_at (DecisionRef ref) const
- DecisionSnapshot & decision_snapshot_at (DecisionRef ref)
- std::optional< DecisionRef > last_decision_ref () const
- void restore_from_snapshot (InterpreterStateSnapshot snapshot)
- void push_mini_snapshot ()
- void pop_mini_snapshot ()
- std::optional< std::reference_wrapper< const InterpreterStateMiniSnapshot > > last_mini_snapshot () const
- void add_instruction (Instruction instruction)
- void add_step (Step step)
- void push_error_hook (ErrorHook hook)
- void pop_error_hook ()
- const ErrorHook & last_error_hook () const
- ErrorHook & last_error_hook ()
- void push_counter (size_t initial)
- void pop_counter ()
- size_t & counter_at_offset (size_t offset)
- size_t counter_at_offset (size_t offset) const
- size_t cursor () const
- bool finished () const
- void run_instruction ()
- void finalize ()
- std::vector< Step > into_steps () &&
- const InterpreterState & current_state () const
- InterpreterState & current_state ()

6.28.1 Constructor & Destructor Documentation

6.28.1.1 Interpreter()

```
wr22::regex_executor::algorithms::backtracking::Interpreter::Interpreter (
            const Regex & regex,
            const std::u32string_view & string_ref )
```

6.28.2 Member Function Documentation

6.28.2.1 add_decision()

```
DecisionRef wr22::regex_executor::algorithms::backtracking::Interpreter::add_decision (
            Decision decision )
```

6.28.2.2 add_instruction()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::add_instruction (
            Instruction instruction )
```

6.28.2.3 add_step()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::add_step (
            Step step )
```

6.28.2.4 advance()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::advance ( )
```

6.28.2.5 counter_at_offset() [1/2]

```
size_t & wr22::regex_executor::algorithms::backtracking::Interpreter::counter_at_offset (
            size_t offset )
```

6.28.2.6 counter_at_offset() [2/2]

```
size_t wr22::regex_executor::algorithms::backtracking::Interpreter::counter_at_offset (
            size_t offset ) const
```

6.28.2.7 current_char()

```
std::optional< char32_t > wr22::regex_executor::algorithms::backtracking::Interpreter::current↩
_char ( ) const
```

6.28.2.8 current_state() [1/2]

```
InterpreterState & wr22::regex_executor::algorithms::backtracking::Interpreter::current_state
( )
```

6.28.2.9 current_state() [2/2]

```
const InterpreterState & wr22::regex_executor::algorithms::backtracking::Interpreter::current↩
_state ( ) const
```

6.28.2.10 cursor()

```
size_t wr22::regex_executor::algorithms::backtracking::Interpreter::cursor ( ) const
```

6.28.2.11 decision_snapshot_at() [1/2]

```
DecisionSnapshot & wr22::regex_executor::algorithms::backtracking::Interpreter::decision_↩
snapshot_at (
            DecisionRef ref )
```

6.28.2.12 decision_snapshot_at() [2/2]

```
const DecisionSnapshot & wr22::regex_executor::algorithms::backtracking::Interpreter::decision↩
_snapshot_at (
            DecisionRef ref ) const
```

6.28.2.13 finalize()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::finalize ( )
```

6.28.2.14 finished()

```
bool wr22::regex_executor::algorithms::backtracking::Interpreter::finished ( ) const
```

6.28.2.15 into_steps()

```
std::vector< Step > wr22::regex_executor::algorithms::backtracking::Interpreter::into_steps (
) &&
```

6.28.2.16 last_decision_ref()

```
std::optional< DecisionRef > wr22::regex_executor::algorithms::backtracking::Interpreter↩
::last_decision_ref ( ) const
```

6.28.2.17 last_error_hook() [1/2]

```
ErrorHook & wr22::regex_executor::algorithms::backtracking::Interpreter::last_error_hook ( )
```

6.28.2.18 last_error_hook() [2/2]

```
const ErrorHook & wr22::regex_executor::algorithms::backtracking::Interpreter::last_error_hook
( ) const
```

6.28.2.19 last_mini_snapshot()

```
std::optional< std::reference_wrapper< const InterpreterStateMiniSnapshot > > wr22::regex_↩
executor::algorithms::backtracking::Interpreter::last_mini_snapshot ( ) const
```

6.28.2.20 pop_counter()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::pop_counter ( )
```

6.28.2.21 pop_error_hook()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::pop_error_hook ( )
```

6.28.2.22 pop_mini_snapshot()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::pop_mini_snapshot ( )
```

6.28.2.23 push_counter()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::push_counter (
            size_t initial )
```

6.28.2.24 push_error_hook()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::push_error_hook (
            ErrorHook hook )
```

6.28.2.25 push_mini_snapshot()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::push_mini_snapshot ( )
```

6.28.2.26 restore_from_snapshot()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::restore_from_snapshot (
            InterpreterStateSnapshot snapshot )
```

6.28.2.27 run_instruction()

```
void wr22::regex_executor::algorithms::backtracking::Interpreter::run_instruction ( )
```

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

- include/wr22/regex_executor/algorithms/backtracking/interpreter.hpp
- src/algorithms/backtracking/interpreter.cpp

6.29 wr22::regex_executor::algorithms::backtracking::InterpreterState Struct Reference

```
#include <interpreter_state.hpp>
```

Public Attributes

- size_t cursor = 0
- std::vector< Instruction > instructions
- std::stack< ErrorHook > error_hooks
- std::vector< size_t > counters

6.29.1 Member Data Documentation

6.29.1.1 counters

```
std::vector<size_t> wr22::regex_executor::algorithms::backtracking::InterpreterState::counters
```

6.29.1.2 cursor

```
size_t wr22::regex_executor::algorithms::backtracking::InterpreterState::cursor = 0
```

6.29.1.3 error_hooks

```
std::stack<ErrorHook> wr22::regex_executor::algorithms::backtracking::InterpreterState::error↩
_hooks
```

6.29.1.4 instructions

```
std::vector<Instruction> wr22::regex_executor::algorithms::backtracking::InterpreterState↩
::instructions
```

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

- include/wr22/regex_executor/algorithms/backtracking/interpreter_state.hpp

6.30 wr22::regex_executor::algorithms::backtracking::InterpreterState↩ MiniSnapshot Struct Reference

```
#include <interpreter_state.hpp>
```

Public Attributes

- size_t cursor
- size_t before_step

6.30.1 Member Data Documentation

6.30.1.1 before_step

```
size_t wr22::regex_executor::algorithms::backtracking::InterpreterStateMiniSnapshot::before_↩
step
```

6.30.1.2 cursor

```
size_t wr22::regex_executor::algorithms::backtracking::InterpreterStateMiniSnapshot::cursor
```

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

- include/wr22/regex_executor/algorithms/backtracking/interpreter_state.hpp

6.31 wr22::regex_executor::algorithms::backtracking::InterpreterState↩ Snapshot Struct Reference

```
#include <interpreter_state.hpp>
```

Public Attributes

- InterpreterState state
- Instruction current_instruction
- size_t before_step

6.31.1 Member Data Documentation

6.31.1.1 before_step

```
size_t wr22::regex_executor::algorithms::backtracking::InterpreterStateSnapshot::before_step
```

6.31.1.2 current_instruction

```
Instruction wr22::regex_executor::algorithms::backtracking::InterpreterStateSnapshot::current↩
_instruction
```

6.31.1.3 state

```
InterpreterState wr22::regex_executor::algorithms::backtracking::InterpreterStateSnapshot↩
::state
```

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

- include/wr22/regex_executor/algorithms/backtracking/interpreter_state.hpp

6.32 wr22::regex_executor::algorithms::backtracking::step::Match↩ Alternatives Struct Reference

```
#include <step.hpp>
```

Public Member Functions

- constexpr const char * type_code () const
- bool operator== (const MatchAlternatives &other) const =default

Public Attributes

- regex_parser::span::Span regex_span
- size_t string_pos

6.32.1 Member Function Documentation

6.32.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::step::MatchAlternatives::operator== (
            const MatchAlternatives & other ) const  [default]
```

6.32.1.2 type_code()

```
constexpr const char * wr22::regex_executor::algorithms::backtracking::step::MatchAlternatives↩
::type_code ( ) const  [inline], [constexpr]
```

6.32.2 Member Data Documentation

6.32.2.1 regex_span

```
regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::MatchAlternatives↩
::regex_span
```

6.32.2.2 string_pos

```
size_t wr22::regex_executor::algorithms::backtracking::step::MatchAlternatives::string_pos
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.33 wr22::regex_executor::algorithms::backtracking::step::MatchChar↩ Class Struct Reference

```
#include <step.hpp>
```

Classes

- struct Failure
- struct Success

Public Member Functions

- constexpr const char * type_code () const
- bool operator== (const MatchCharClass &other) const =default

Public Attributes

- regex_parser::span::Span regex_span
- wr22::utils::Adt< Success, Failure > result

6.33.1 Member Function Documentation

6.33.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::step::MatchCharClass::operator== (
            const MatchCharClass & other ) const  [default]
```

6.33.1.2 type_code()

```
constexpr const char * wr22::regex_executor::algorithms::backtracking::step::MatchCharClass↩
::type_code ( ) const  [inline], [constexpr]
```

6.33.2 Member Data Documentation

6.33.2.1 regex_span

```
regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::MatchChar↩
Class::regex_span
```

6.33.2.2 result

```
wr22::utils::Adt<Success, Failure> wr22::regex_executor::algorithms::backtracking::step::↩
MatchCharClass::result
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.34 wr22::regex_executor::algorithms::backtracking::step::MatchLiteral Struct Reference

```
#include <step.hpp>
```

Classes

- struct Failure
- struct Success

Public Member Functions

- constexpr const char * type_code () const
- bool operator== (const MatchLiteral &other) const =default

Public Attributes

- regex_parser::span::Span regex_span
- char32_t literal
- wr22::utils::Adt< Success, Failure > result

6.34.1 Member Function Documentation

6.34.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::step::MatchLiteral::operator== (
            const MatchLiteral & other ) const  [default]
```

6.34.1.2 type_code()

```
constexpr const char * wr22::regex_executor::algorithms::backtracking::step::MatchLiteral↩
::type_code ( ) const  [inline], [constexpr]
```

6.34.2 Member Data Documentation

6.34.2.1 literal

```
char32_t wr22::regex_executor::algorithms::backtracking::step::MatchLiteral::literal
```

6.34.2.2 regex_span

```
regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::MatchLiteral↩
::regex_span
```

6.34.2.3 result

```
wr22::utils::Adt<Success, Failure> wr22::regex_executor::algorithms::backtracking::step::↩
MatchLiteral::result
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.35 wr22::regex_executor::algorithms::backtracking::step::MatchQuantifier Struct Reference

`#include <step.hpp>`

Public Member Functions

- const char * type_code () const
- bool operator== (const MatchQuantifier &other) const =default

Public Attributes

- regex_parser::span::Span regex_span
- size_t string_pos
- QuantifierType quantifier_type

6.35.1 Member Function Documentation

6.35.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::step::MatchQuantifier::operator== (
            const MatchQuantifier & other ) const  [default]
```

6.35.1.2 type_code()

```
const char * wr22::regex_executor::algorithms::backtracking::step::MatchQuantifier::type_code
( ) const
```

6.35.2 Member Data Documentation

6.35.2.1 quantifier_type

```
QuantifierType wr22::regex_executor::algorithms::backtracking::step::MatchQuantifier::quantifier
_type
```

6.35.2.2 regex_span

```
regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::MatchQuantifier↩
::regex_span
```

6.35.2.3 string_pos

```
size_t wr22::regex_executor::algorithms::backtracking::step::MatchQuantifier::string_pos
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp
- src/algorithms/backtracking/step.cpp

6.36 wr22::regex_executor::algorithms::backtracking::MatchResult Struct Reference

```
#include <match_result.hpp>
```

Public Attributes

- std::vector< Step > steps

6.36.1 Member Data Documentation

6.36.1.1 steps

```
std::vector<Step> wr22::regex_executor::algorithms::backtracking::MatchResult::steps
```

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

- include/wr22/regex_executor/algorithms/backtracking/match_result.hpp

6.37 wr22::regex_executor::algorithms::backtracking::step::Match↩ Wildcard Struct Reference

```
#include <step.hpp>
```

Classes

- struct Failure
- struct Success

Public Member Functions

- constexpr const char * type_code () const
- bool operator== (const MatchWildcard &other) const =default

Public Attributes

- regex_parser::span::Span regex_span
- wr22::utils::Adt< Success, Failure > result

6.37.1 Member Function Documentation

6.37.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::step::MatchWildcard::operator== (
            const MatchWildcard & other ) const  [default]
```

6.37.1.2 type_code()

```
constexpr const char * wr22::regex_executor::algorithms::backtracking::step::MatchWildcard↩
::type_code ( ) const  [inline], [constexpr]
```

6.37.2 Member Data Documentation

6.37.2.1 regex_span

```
regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::MatchWildcard↩
::regex_span
```

6.37.2.2 result

```
wr22::utils::Adt<Success, Failure> wr22::regex_executor::algorithms::backtracking::step::↩
MatchWildcard::result
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.38 wr22::regex_executor::algorithms::backtracking::failure_reasons↩ ::OptionsExhausted Struct Reference

```
#include <failure_reason.hpp>
```

Public Member Functions

- bool operator== (const OptionsExhausted &other) const =default

Static Public Member Functions

- static constexpr const char * code ()

6.38.1 Member Function Documentation

6.38.1.1 code()

```
static constexpr const char * wr22::regex_executor::algorithms::backtracking::failure_reasons↩
::OptionsExhausted::code ( )  [inline], [static], [constexpr]
```

6.38.1.2 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::failure_reasons::OptionsExhausted::operator==
(
            const OptionsExhausted & other ) const  [default]
```

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

- include/wr22/regex_executor/algorithms/backtracking/failure_reason.hpp

6.39 wr22::regex_executor::algorithms::backtracking::failure_reasons::OtherChar Struct Reference

`#include <failure_reason.hpp>`

Public Member Functions

- bool operator== (const OtherChar &other) const =default

Static Public Member Functions

- static constexpr const char * code ()

6.39.1 Member Function Documentation

6.39.1.1 code()

```
static constexpr const char * wr22::regex_executor::algorithms::backtracking::failure_reasons
::OtherChar::code ( )  [inline], [static], [constexpr]
```

6.39.1.2 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::failure_reasons::OtherChar::operator== (
            const OtherChar & other ) const  [default]
```

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

- include/wr22/regex_executor/algorithms/backtracking/failure_reason.hpp

6.40 wr22::regex_executor::algorithms::backtracking::PartExecutor Class Reference

`#include <part_executor.hpp>`

Public Member Functions

- PartExecutor (utils::SpannedRef< regex_parser::regex::Part > part_ref)
- bool execute (Interpreter &interpreter) const

6.40.1 Constructor & Destructor Documentation

6.40.1.1 PartExecutor()

```
wr22::regex_executor::algorithms::backtracking::PartExecutor::PartExecutor (
            utils::SpannedRef< regex_parser::regex::Part > part_ref )  [explicit]
```

6.40.2 Member Function Documentation

6.40.2.1 execute()

```
bool wr22::regex_executor::algorithms::backtracking::PartExecutor::execute (
            Interpreter & interpreter ) const
```

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

- include/wr22/regex_executor/algorithms/backtracking/part_executor.hpp
- src/algorithms/backtracking/part_executor.cpp

6.41 wr22::regex_executor::algorithms::backtracking::QuantifierDecision< PartT > Struct Template Reference

```
#include <decision.hpp>
```

Public Types

- using PartType = PartT

Public Member Functions

- std::optional< QuantifierDecision< PartT > > reconsider (Interpreter &interpreter, InterpreterStateSnapshot snapshot) const

Public Attributes

- std::optional< size_t > num_repetitions
- std::optional< size_t > actual_num_repetitions

6.41.1 Member Typedef Documentation

6.41.1.1 PartType

```
template<typename PartT >
using wr22::regex_executor::algorithms::backtracking::QuantifierDecision< PartT >::PartType =
PartT
```

6.41.2 Member Function Documentation

6.41.2.1 reconsider()

```
template<typename PartT >
template std::optional< QuantifierDecision< part::Optional > > wr22::regex_executor::algorithms::backtrackin
PartT >::reconsider (
            Interpreter & interpreter,
            InterpreterStateSnapshot snapshot ) const
```

6.41.3 Member Data Documentation

6.41.3.1 actual_num_repetitions

```
template<typename PartT >
std::optional<size_t> wr22::regex_executor::algorithms::backtracking::QuantifierDecision<
PartT >::actual_num_repetitions
```

6.41.3.2 num_repetitions

```
template<typename PartT >
std::optional<size_t> wr22::regex_executor::algorithms::backtracking::QuantifierDecision<
PartT >::num_repetitions
```

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

- include/wr22/regex_executor/algorithms/backtracking/decision.hpp
- src/algorithms/backtracking/decision.cpp

6.42 wr22::regex_executor::algorithms::backtracking::QuantifierExecutor< Derived, Quantifier > Class Template Reference

`#include <specific_part_executor.hpp>`

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::QuantifierExecutor< Derived, Quantifier >:

Public Member Functions

- QuantifierExecutor (utils::SpannedRef< Quantifier > part_ref)
- QuantifierExecutor (utils::SpannedRef< Quantifier > part_ref, QuantifierDecision< Quantifier > decision, size_t already_matched)
- bool execute (Interpreter &interpreter)

6.42.1 Constructor & Destructor Documentation

6.42.1.1 QuantifierExecutor() [1/2]

```
template<typename Derived , typename Quantifier >
wr22::regex_executor::algorithms::backtracking::QuantifierExecutor< Derived, Quantifier >::↩
QuantifierExecutor (
            utils::SpannedRef< Quantifier > part_ref )  [explicit]
```

6.42.1.2 QuantifierExecutor() [2/2]

```
template<typename Derived , typename Quantifier >
wr22::regex_executor::algorithms::backtracking::QuantifierExecutor< Derived, Quantifier >::↩
QuantifierExecutor (
            utils::SpannedRef< Quantifier > part_ref,
            QuantifierDecision< Quantifier > decision,
            size_t already_matched )  [explicit]
```

6.42.2 Member Function Documentation

6.42.2.1 execute()

```
template<typename Derived , typename Quantifier >
bool wr22::regex_executor::algorithms::backtracking::QuantifierExecutor< Derived, Quantifier
>::execute (
            Interpreter & interpreter )
```

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

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp
- src/algorithms/backtracking/specific_part_executor.cpp

6.43 wr22::regex_executor::Regex Class Reference

```
#include <regex.hpp>
```

Public Member Functions

- Regex (regex_parser::regex::SpannedPart root_part)
- const regex_parser::regex::SpannedPart & root_part () const

6.43.1 Constructor & Destructor Documentation

6.43.1.1 Regex()

```
wr22::regex_executor::Regex::Regex (
            regex_parser::regex::SpannedPart root_part )  [explicit]
```

6.43.2 Member Function Documentation

6.43.2.1 root_part()

```
const regex_parser::regex::SpannedPart & wr22::regex_executor::Regex::root_part ( ) const
```

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

- include/wr22/regex_executor/regex.hpp
- src/regex.cpp

6.44 wr22::regex_executor::algorithms::backtracking::instruction::Run Struct Reference

`#include <instruction.hpp>`

Public Types

- using Context = wr22::utils::Adt< std::monostate, DecisionRef, utils::SpannedRef< regex_parser::regex::part::Star >, utils::SpannedRef< regex_parser::regex::part::Plus >, utils::SpannedRef< regex_parser::regex::part::Optional > >
- using Fn = void(*)(const Context &ctx, Interpreter &interpreter)

Public Member Functions

- void operator() (Interpreter &interpreter) const

Public Attributes

- Context ctx
- Fn fn

6.44.1 Member Typedef Documentation

6.44.1.1 Context

```
using wr22::regex_executor::algorithms::backtracking::instruction::Run::Context = wr22::utils::Adt< std::monostate, DecisionRef, utils::SpannedRef<regex_parser::regex::part::Star>, utils::SpannedRef<regex_parser::regex::part::Plus>, utils::SpannedRef<regex_parser::regex::part::Optional> >
```

6.44.1.2 Fn

```
using wr22::regex_executor::algorithms::backtracking::instruction::Run::Fn = void (*)(const Context& ctx, Interpreter& interpreter)
```

6.44.2 Member Function Documentation

6.44.2.1 operator()()

```
void wr22::regex_executor::algorithms::backtracking::instruction::Run::operator() (
            Interpreter & interpreter ) const
```

6.44.3 Member Data Documentation

6.44.3.1 ctx

```
Context wr22::regex_executor::algorithms::backtracking::instruction::Run::ctx
```

6.44.3.2 fn

```
Fn wr22::regex_executor::algorithms::backtracking::instruction::Run::fn
```

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

- include/wr22/regex_executor/algorithms/backtracking/instruction.hpp
- src/algorithms/backtracking/instruction.cpp

6.45 wr22::regex_executor::utils::SpannedRef< T > Class Template Reference

```
#include <spanned_ref.hpp>
```

Public Member Functions

- SpannedRef (const T &item, regex_parser::span::Span span)
- const T & item () const
- regex_parser::span::Span span () const

6.45.1 Constructor & Destructor Documentation

6.45.1.1 SpannedRef()

```
template<typename T >
wr22::regex_executor::utils::SpannedRef< T >::SpannedRef (
            const T & item,
            regex_parser::span::Span span )  [inline]
```

6.45.2 Member Function Documentation

6.45.2.1 item()

```
template<typename T >
const T & wr22::regex_executor::utils::SpannedRef< T >::item ( ) const  [inline]
```

6.45.2.2 span()

```
template<typename T >
regex_parser::span::Span wr22::regex_executor::utils::SpannedRef< T >::span ( ) const  [inline]
```

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

- include/wr22/regex_executor/utils/spanned_ref.hpp

6.46 wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< T > Class Template Reference

```
#include <specific_part_executor.hpp>
```

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

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp

6.47 wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Alternatives > Class Reference

```
#include <specific_part_executor.hpp>
```

Public Member Functions

- SpecificPartExecutor (utils::SpannedRef< regex_parser::regex::part::Alternatives > part_ref)
- SpecificPartExecutor (utils::SpannedRef< regex_parser::regex::part::Alternatives > part_ref, AlternativesDecision decision)
- bool execute (Interpreter &interpreter) const

6.47.1 Constructor & Destructor Documentation

6.47.1.1 SpecificPartExecutor() [1/2]

```
wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex↩
::part::Alternatives >::SpecificPartExecutor (
            utils::SpannedRef< regex_parser::regex::part::Alternatives > part_ref )  [explicit]
```

6.47.1.2 SpecificPartExecutor() [2/2]

```
wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex↩
::part::Alternatives >::SpecificPartExecutor (
            utils::SpannedRef< regex_parser::regex::part::Alternatives > part_ref,
            AlternativesDecision decision )  [explicit]
```

6.47.2 Member Function Documentation

6.47.2.1 execute()

```
bool wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser↩
::regex::part::Alternatives >::execute (
            Interpreter & interpreter ) const
```

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

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp

6.48 wr22::regex_executor::algorithms::backtracking::SpecificPart↩ Executor< regex_parser::regex::part::CharacterClass > Class Reference

```
#include <specific_part_executor.hpp>
```

Public Member Functions

- SpecificPartExecutor (utils::SpannedRef< regex_parser::regex::part::CharacterClass > part_ref)
- bool execute (Interpreter &interpreter) const

6.48.1 Constructor & Destructor Documentation

6.48.1.1 SpecificPartExecutor()

```
wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex↩
::part::CharacterClass >::SpecificPartExecutor (
            utils::SpannedRef< regex_parser::regex::part::CharacterClass > part_ref )  [explicit]
```

6.48.2 Member Function Documentation

6.48.2.1 execute()

```
bool wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser↩
::regex::part::CharacterClass >::execute (
            Interpreter & interpreter ) const
```

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

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp

6.49 wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Empty > Class Reference

```
#include <specific_part_executor.hpp>
```

Public Member Functions

- SpecificPartExecutor (utils::SpannedRef< regex_parser::regex::part::Empty > part_ref)
- bool execute (Interpreter &interpreter) const

6.49.1 Constructor & Destructor Documentation

6.49.1.1 SpecificPartExecutor()

```
wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex↩
::part::Empty >::SpecificPartExecutor (
            utils::SpannedRef< regex_parser::regex::part::Empty > part_ref )  [explicit]
```

6.49.2 Member Function Documentation

6.49.2.1 execute()

```
bool wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser↩
::regex::part::Empty >::execute (
            Interpreter & interpreter ) const
```

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

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp

6.50 wr22::regex_executor::algorithms::backtracking::SpecificPart↩ Executor< regex_parser::regex::part::Group > Class Reference

```
#include <specific_part_executor.hpp>
```

Public Member Functions

- SpecificPartExecutor (utils::SpannedRef< regex_parser::regex::part::Group > part_ref)
- bool execute (Interpreter &interpreter) const

6.50.1 Constructor & Destructor Documentation

6.50.1.1 SpecificPartExecutor()

```
wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex↩
::part::Group >::SpecificPartExecutor (
            utils::SpannedRef< regex_parser::regex::part::Group > part_ref )  [explicit]
```

6.50.2 Member Function Documentation

6.50.2.1 execute()

```
bool wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser↩
::regex::part::Group >::execute (
            Interpreter & interpreter ) const
```

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

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp

6.51 wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Literal > Class Reference

`#include <specific_part_executor.hpp>`

Public Member Functions

- SpecificPartExecutor (utils::SpannedRef< regex_parser::regex::part::Literal > part_ref)
- bool execute (Interpreter &interpreter) const

6.51.1 Constructor & Destructor Documentation

6.51.1.1 SpecificPartExecutor()

```
wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex
::part::Literal >::SpecificPartExecutor (
            utils::SpannedRef< regex_parser::regex::part::Literal > part_ref )  [explicit]
```

6.51.2 Member Function Documentation

6.51.2.1 execute()

```
bool wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser
::regex::part::Literal >::execute (
            Interpreter & interpreter ) const
```

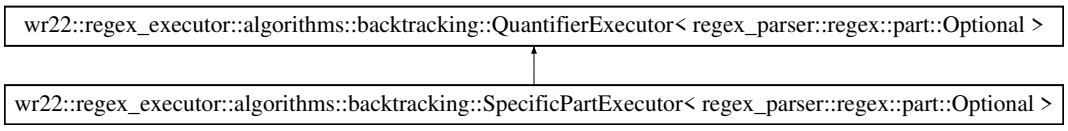
The documentation for this class was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp

6.52 wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Optional > Class Reference

`#include <specific_part_executor.hpp>`

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Optional >:



Public Member Functions

- QuantifierType impl_quantifier_type () const
- size_t impl_min_repetitions () const
- std::optional< size_t > impl_max_repetitions () const

6.52.1 Member Function Documentation

6.52.1.1 impl_max_repetitions()

```
std::optional< size_t > wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor<
regex_parser::regex::part::Optional >::impl_max_repetitions ( ) const
```

6.52.1.2 impl_min_repetitions()

```
size_t wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser↩
::regex::part::Optional >::impl_min_repetitions ( ) const
```

6.52.1.3 impl_quantifier_type()

```
QuantifierType wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_↩
parser::regex::part::Optional >::impl_quantifier_type ( ) const
```

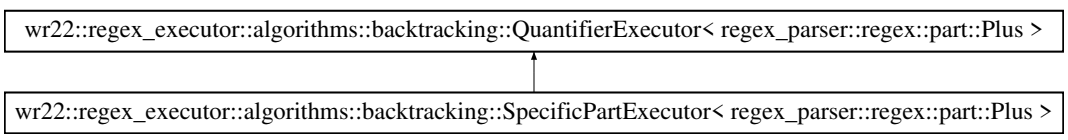
The documentation for this class was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp

6.53 wr22::regex_executor::algorithms::backtracking::SpecificPart↩ Executor< regex_parser::regex::part::Plus > Class Reference

```
#include <specific_part_executor.hpp>
```

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser↩ ::regex::part::Plus >:



Public Member Functions

- QuantifierType impl_quantifier_type () const
- size_t impl_min_repetitions () const
- std::optional< size_t > impl_max_repetitions () const

6.53.1 Member Function Documentation

6.53.1.1 impl_max_repetitions()

```
std::optional< size_t > wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor<
regex_parser::regex::part::Plus >::impl_max_repetitions ( ) const
```

6.53.1.2 impl_min_repetitions()

```
size_t wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser↩
::regex::part::Plus >::impl_min_repetitions ( ) const
```

6.53.1.3 impl_quantifier_type()

```
QuantifierType wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_↩
parser::regex::part::Plus >::impl_quantifier_type ( ) const
```

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

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp

6.54 wr22::regex_executor::algorithms::backtracking::SpecificPart↩ Executor< regex_parser::regex::part::Sequence > Class Reference

```
#include <specific_part_executor.hpp>
```

Public Member Functions

- SpecificPartExecutor (utils::SpannedRef< regex_parser::regex::part::Sequence > part_ref)
- bool execute (Interpreter &interpreter) const

6.54.1 Constructor & Destructor Documentation

6.54.1.1 SpecificPartExecutor()

```
wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex↩
::part::Sequence >::SpecificPartExecutor (
            utils::SpannedRef< regex_parser::regex::part::Sequence > part_ref )  [explicit]
```

6.54.2 Member Function Documentation

6.54.2.1 execute()

```
bool wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser↩
::regex::part::Sequence >::execute (
            Interpreter & interpreter ) const
```

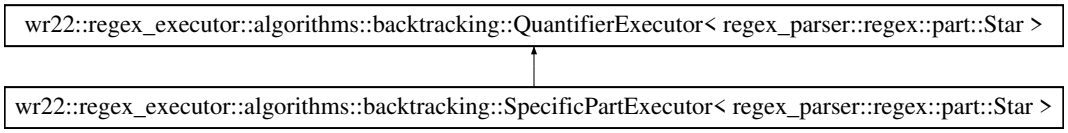
The documentation for this class was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp

6.55 wr22::regex_executor::algorithms::backtracking::SpecificPart↩ Executor< regex_parser::regex::part::Star > Class Reference

```
#include <specific_part_executor.hpp>
```

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser↩ ::regex::part::Star >:



Public Member Functions

- QuantifierType impl_quantifier_type () const
- size_t impl_min_repetitions () const
- std::optional< size_t > impl_max_repetitions () const

6.55.1 Member Function Documentation

6.55.1.1 impl_max_repetitions()

```
std::optional< size_t > wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor<
regex_parser::regex::part::Star >::impl_max_repetitions ( ) const
```

6.55.1.2 impl_min_repetitions()

```
size_t wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser↩
::regex::part::Star >::impl_min_repetitions ( ) const
```

6.55.1.3 impl_quantifier_type()

```
QuantifierType wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_↩
parser::regex::part::Star >::impl_quantifier_type ( ) const
```

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

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp

6.56 wr22::regex_executor::algorithms::backtracking::SpecificPart↩ Executor< regex_parser::regex::part::Wildcard > Class Reference

```
#include <specific_part_executor.hpp>
```

Public Member Functions

- SpecificPartExecutor (utils::SpannedRef< regex_parser::regex::part::Wildcard > part_ref)
- bool execute (Interpreter &interpreter) const

6.56.1 Constructor & Destructor Documentation

6.56.1.1 SpecificPartExecutor()

```
wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex↩
::part::Wildcard >::SpecificPartExecutor (
            utils::SpannedRef< regex_parser::regex::part::Wildcard > part_ref )  [explicit]
```

6.56.2 Member Function Documentation

6.56.2.1 execute()

```
bool wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser↩
::regex::part::Wildcard >::execute (
            Interpreter & interpreter ) const
```

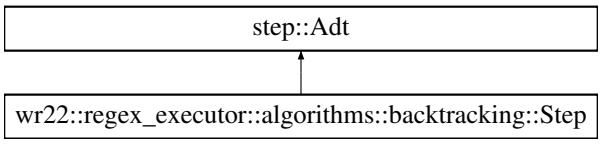
The documentation for this class was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp

6.57 wr22::regex_executor::algorithms::backtracking::Step Struct Reference

```
#include <step.hpp>
```

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::Step:



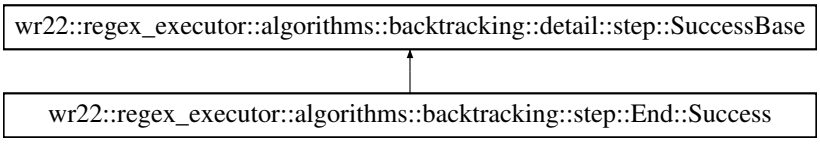
The documentation for this struct was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.58 wr22::regex_executor::algorithms::backtracking::step::End↩ ::Success Struct Reference

```
#include <step.hpp>
```

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::End::Success:



Additional Inherited Members

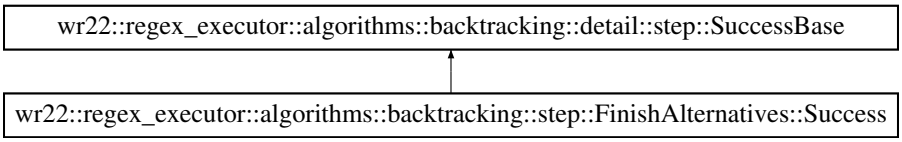
The documentation for this struct was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.59 wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives::Success Struct Reference

`#include <step.hpp>`

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives::Success:



Public Attributes

- regex_parser::span::Span string_span
- size_t alternative_chosen

Additional Inherited Members

6.59.1 Member Data Documentation

6.59.1.1 alternative_chosen

`size_t wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives::Success::alternative_chosen`

6.59.1.2 string_span

`regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives::Success::string_span`

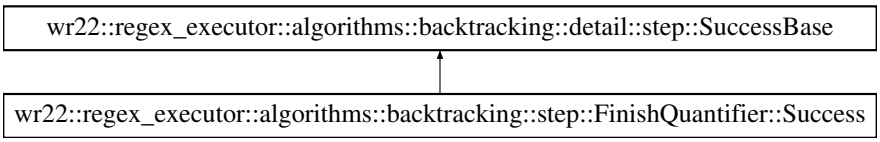
The documentation for this struct was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.60 wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::Success Struct Reference

`#include <step.hpp>`

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::Success:



Public Attributes

- regex_parser::span::Span string_span
- size_t num_repetitions

Additional Inherited Members

6.60.1 Member Data Documentation

6.60.1.1 num_repetitions

`size_t wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::Success::num_repetitions`

6.60.1.2 string_span

`regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::Success::string_span`

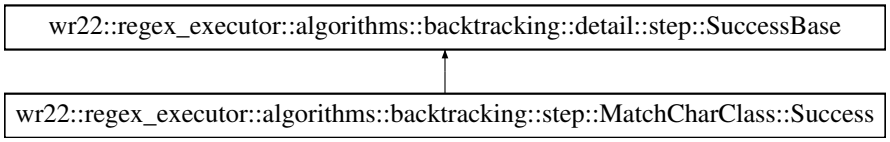
The documentation for this struct was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.61 wr22::regex_executor::algorithms::backtracking::step::MatchCharClass::Success Struct Reference

`#include <step.hpp>`

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::MatchCharClass::Success:



Public Attributes

- regex_parser::span::Span string_span

Additional Inherited Members

6.61.1 Member Data Documentation

6.61.1.1 string_span

`regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::MatchCharClass::Success::string_span`

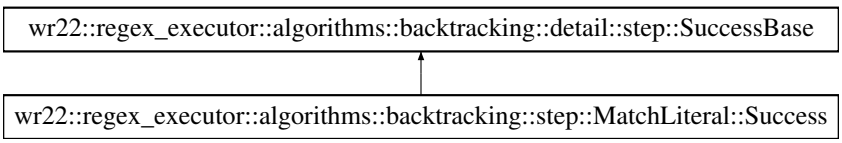
The documentation for this struct was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.62 wr22::regex_executor::algorithms::backtracking::step::MatchLiteral::Success Struct Reference

`#include <step.hpp>`

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::MatchLiteral::Success:



Public Attributes

- regex_parser::span::Span string_span

Additional Inherited Members

6.62.1 Member Data Documentation

6.62.1.1 string_span

```
regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::MatchLiteral↩
::Success::string_span
```

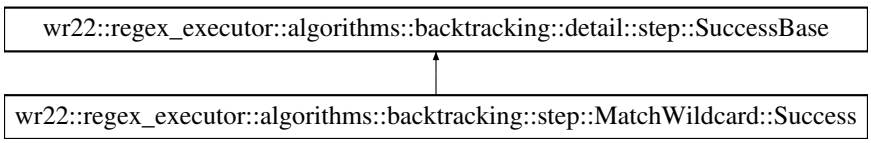
The documentation for this struct was generated from the following file:

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.63 wr22::regex_executor::algorithms::backtracking::step::MatchWildcard::Success Struct Reference

```
#include <step.hpp>
```

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::step::MatchWildcard::Success:



Public Attributes

- regex_parser::span::Span string_span

Additional Inherited Members

6.63.1 Member Data Documentation

6.63.1.1 string_span

```
regex_parser::span::Span wr22::regex_executor::algorithms::backtracking::step::MatchWildcard↩
::Success::string_span
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

6.64 wr22::regex_executor::algorithms::backtracking::detail::step↩ ::SuccessBase Struct Reference

```
#include <step.hpp>
```

Inheritance diagram for wr22::regex_executor::algorithms::backtracking::detail::step::SuccessBase:

Public Member Functions

- bool operator== (const SuccessBase &other) const =default

Static Public Attributes

- static constexpr bool success = true

6.64.1 Member Function Documentation

6.64.1.1 operator==()

```
bool wr22::regex_executor::algorithms::backtracking::detail::step::SuccessBase::operator== (
            const SuccessBase & other ) const  [default]
```

6.64.2 Member Data Documentation

6.64.2.1 success

```
constexpr bool wr22::regex_executor::algorithms::backtracking::detail::step::SuccessBase↩
::success = true  [static], [constexpr]
```

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

- include/wr22/regex_executor/algorithms/backtracking/step.hpp

Chapter 7

File Documentation

7.1 include/wr22/regex_executor/algorithms/backtracking/decision.hpp File Reference

```
#include <wr22/regex_parser/regex/part.hpp>
#include <functional>
#include <optional>
```

Classes

- struct wr22::regex_executor::algorithms::backtracking::AlternativesDecision
- struct wr22::regex_executor::algorithms::backtracking::QuantifierDecision< PartT >

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

Typedefs

- using wr22::regex_executor::algorithms::backtracking::Decision = wr22::utils::Adt< AlternativesDecision, QuantifierDecision< regex_parser::regex::part::Star >, QuantifierDecision< regex_parser::regex::part::Plus >, QuantifierDecision< regex_parser::regex::part::Optional > >

7.2 decision.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 //#include <wr22/regex_executor/algorithms/backtracking/interpreter_state.hpp>
5 #include <wr22/regex_parser/regex/part.hpp>
6
7 // stl
8 #include <functional>
9 #include <optional>
10
11 namespace wr22::regex_executor::algorithms::backtracking {
12
13 struct Interpreter;
14 struct InterpreterStateSnapshot;
15
16 struct AlternativesDecision {
17     using PartType = regex_parser::regex::part::Alternatives;
18
19     // SAFETY: comes from borrowed `regex`, safe to keep as long
20     // as the `Executor` is alive, provided its safety assumptions
21     // are met.
22     std::reference_wrapper<const PartType> part_ref;
23     size_t decision_index = 0;
24
25     std::optional<AlternativesDecision> reconsider(
26         Interpreter& interpreter,
27         InterpreterStateSnapshot snapshot) const;
28 };
29
30 template <typename PartT>
31 struct QuantifierDecision {
32     using PartType = PartT;
33     std::optional<size_t> num_repetitions;
34     std::optional<size_t> actual_num_repetitions;
35
36     std::optional<QuantifierDecision<PartT>> reconsider(
37         Interpreter& interpreter,
38         InterpreterStateSnapshot snapshot) const;
39 };
40
41 using Decision = wr22::utils::Adt<
42     AlternativesDecision,
43     QuantifierDecision<regex_parser::regex::part::Star>,
44     QuantifierDecision<regex_parser::regex::part::Plus>,
45     QuantifierDecision<regex_parser::regex::part::Optional>>;
46
47 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.3 include/wr22/regex_executor/algorithms/backtracking/decision_applicator.hpp File Reference

```
#include <algorithm>
#include <wr22/regex_executor/algorithms/backtracking/decision.hpp>
#include <wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp>
#include <wr22/regex_executor/utils/spanned_ref.hpp>
#include <wr22/regex_parser/regex/part.hpp>
#include <type_traits>
```

Classes

- struct wr22::regex_executor::algorithms::backtracking::DecisionApplicator< T >
- struct wr22::regex_executor::algorithms::backtracking::DecisionApplicator< AlternativesDecision >
- struct wr22::regex_executor::algorithms::backtracking::DecisionApplicator< QuantifierDecision< Quantifier > >

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.4 decision_applicator.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <algorithm>
5 #include <wr22/regex_executor/algorithms/backtracking/decision.hpp>
6 #include <wr22/regex_executor/algorithms/backtracking/specific_part_executor.hpp>
7 #include <wr22/regex_executor/utils/spanned_ref.hpp>
8 #include <wr22/regex_parser/regex/part.hpp>
9
10 // stl
11 #include <type_traits>
12
13 namespace wr22::regex_executor::algorithms::backtracking {
14
15 template <typename T>
16 struct DecisionApplicator {};
17
18 template <>
19 struct DecisionApplicator<AlternativesDecision> {
20     using PartType = regex_parser::regex::part::Alternatives;
21     using ExecutorType = SpecificPartExecutor<PartType>;
22
23     static ExecutorType construct_executor(
24         utils::SpannedRef<PartType> part_ref,
25         AlternativesDecision decision) {
26         return ExecutorType(part_ref, std::move(decision));
27     }
28 };
29
30 template <typename Quantifier>
31 // Formatting disabled because clang-format fails terribly with requires-clauses.
32 // clang-format off
33 requires
34     std::is_same_v<Quantifier, regex_parser::regex::part::Star>
35     || std::is_same_v<Quantifier, regex_parser::regex::part::Plus>
36     || std::is_same_v<Quantifier, regex_parser::regex::part::Optional>
37 // clang-format on
38 struct DecisionApplicator<QuantifierDecision<Quantifier» {
39     using PartType = Quantifier;
40     using ExecutorType = SpecificPartExecutor<PartType>;
41
42     static ExecutorType construct_executor(
43         utils::SpannedRef<PartType> part_ref,
44         QuantifierDecision<PartType> decision) {
45         auto num_repetitions = decision.num_repetitions.value();
46         return ExecutorType(part_ref, std::move(decision), num_repetitions);
47     }
48 };
49
50 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.5 include/wr22/regex_executor/algorithms/backtracking/decision_↩ ref.hpp File Reference

```
#include <cstddef>
```

Classes

- struct wr22::regex_executor::algorithms::backtracking::DecisionRef

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.6 decision_ref.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // stl
4 #include <cstddef>
5
6 namespace wr22::regex_executor::algorithms::backtracking {
7
8 struct DecisionRef {
9     size_t index;
10 };
11
12 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.7 include/wr22/regex_executor/algorithms/backtracking/decision_↩ snapshot.hpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/decision.hpp>
#include <wr22/regex_executor/algorithms/backtracking/interpreter_state.↩
hpp>
```

Classes

- struct wr22::regex_executor::algorithms::backtracking::DecisionSnapshot

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.8 decision_snapshot.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_executor/algorithms/backtracking/decision.hpp>
5 #include <wr22/regex_executor/algorithms/backtracking/interpreter_state.hpp>
6
7 namespace wr22::regex_executor::algorithms::backtracking {
8
9 struct DecisionSnapshot {
10     InterpreterStateSnapshot snapshot;
11     Decision decision;
12 };
13
14 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.9 include/wr22/regex_executor/algorithms/backtracking/error_↩ hook.hpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/decision_ref.hpp>
#include <wr22/utils/adt.hpp>
```

Classes

- struct wr22::regex_executor::algorithms::backtracking::ErrorHook

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.10 error_hook.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_executor/algorithms/backtracking/decision_ref.hpp>
5 #include <wr22/utils/adt.hpp>
6
7 namespace wr22::regex_executor::algorithms::backtracking {
8 struct Interpreter;
9
10 struct ErrorHook {
11     using Context = wr22::utils::Adt<std::monostate, DecisionRef>;
12     using Fn = void (*)(const Context& context, Interpreter& interpreter);
13     Context ctx;
14     Fn fn;
15
16     void operator()(Interpreter& interpreter) const {
17         fn(ctx, interpreter);
18     }
19 };
20 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.11 include/wr22/regex_executor/algorithms/backtracking/executor.hpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/match_result.hpp>
#include <wr22/regex_executor/regex.hpp>
#include <functional>
#include <string_view>
```

Classes

- class wr22::regex_executor::algorithms::backtracking::Executor

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.12 executor.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_executor/algorithms/backtracking/match_result.hpp>
5 #include <wr22/regex_executor/regex.hpp>
6
7 // stl
8 #include <functional>
9 #include <string_view>
10
11 namespace wr22::regex_executor::algorithms::backtracking {
12
13 class Executor {
14 public:
15     explicit Executor(const Regex& regex_ref);
16
17     const Regex& regex_ref() const;
18     MatchResult execute(const std::u32string_view& string) const;
19
20 private:
21     std::reference_wrapper<const Regex> m_regex_ref;
22 };
23
24 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.13 include/wr22/regex_executor/executor.hpp File Reference

```
#include "wr22/regex_executor/algorithms/backtracking/match_result.hpp"
#include <string_view>
#include <wr22/regex_executor/regex.hpp>
#include <wr22/regex_executor/algorithms/backtracking/executor.hpp>
#include <functional>
```

Classes

- class wr22::regex_executor::Executor

Namespaces

- namespace wr22
- namespace wr22::regex_executor

7.14 executor.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include "wr22/regex_executor/algorithms/backtracking/match_result.hpp"
5 #include <string_view>
6 #include <wr22/regex_executor/regex.hpp>
7 #include <wr22/regex_executor/algorithms/backtracking/executor.hpp>
8
9 // stl
10 #include <functional>
11
12 namespace wr22::regex_executor {
13
14 class Executor {
15 public:
16     using BacktrackingResult = algorithms::backtracking::MatchResult;
17
18     explicit Executor(const Regex& regex_ref);
19
20     const Regex& regex_ref() const;
21     BacktrackingResult execute(const std::u32string_view& string);
22
23 private:
24     using BacktrackingExecutor = algorithms::backtracking::Executor;
25
26     BacktrackingExecutor m_executor;
27 };
28
29 }
```

7.15 include/wr22/regex_executor/algorithms/backtracking/failure_↩ reason.hpp File Reference

```
#include <type_traits>
#include <wr22/utils/adt.hpp>
#include <nlohmann/json.hpp>
```

Classes

- struct wr22::regex_executor::algorithms::backtracking::failure_reasons::EndOfInput
- struct wr22::regex_executor::algorithms::backtracking::failure_reasons::ExcludedChar
- struct wr22::regex_executor::algorithms::backtracking::failure_reasons::OtherChar
- struct wr22::regex_executor::algorithms::backtracking::failure_reasons::OptionsExhausted
- struct wr22::regex_executor::algorithms::backtracking::FailureReason< Reasons >

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking
- namespace wr22::regex_executor::algorithms::backtracking::failure_reasons

Functions

- template<typename... Reasons>
  void wr22::regex_executor::algorithms::backtracking::to_json (nlohmann::json &j, const FailureReason< Reasons... > &failure_reason)

7.16 failure_reason.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // stl
4 #include <type_traits>
5
6 // wr22
7 #include <wr22/utils/adt.hpp>
8
9 // nlohmann
10 #include <nlohmann/json.hpp>
11
12 namespace wr22::regex_executor::algorithms::backtracking {
13
14 namespace failure_reasons {
15     struct EndOfInput {
16         static constexpr const char* code() {
17             return "end_of_input";
18         }
19
20         bool operator==(const EndOfInput& other) const = default;
21     };
22
23     struct ExcludedChar {
24         static constexpr const char* code() {
25             return "excluded_char";
26         }
27
28         bool operator==(const ExcludedChar& other) const = default;
29     };
30
31     struct OtherChar {
32         static constexpr const char* code() {
33             return "other_char";
34         }
35
36         bool operator==(const OtherChar& other) const = default;
37     };
38
39     struct OptionsExhausted {
40         static constexpr const char* code() {
41             return "options_exhausted";
42         }
43
44         bool operator==(const OptionsExhausted& other) const = default;
45     };
46 }  // namespace failure_reasons
47
48 template <typename... Reasons>
49 struct FailureReason {
50     using Adt = wr22::utils::Adt<Reasons...>;
51
52     template <typename Reason>
53     FailureReason(Reason reason)
54         : reason(std::move(reason)) {}
55
56     Adt reason;
57
58     bool operator==(const FailureReason<Reasons...>& other) const = default;
59 };
60
61 template <typename... Reasons>
62 void to_json(nlohmann::json& j, const FailureReason<Reasons...>& failure_reason) {
63     j = nlohmann::json::object();
64     failure_reason.reason.visit([&j](const auto& reason) { j["code"] = reason.code(); });
65 }
66
67 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.17 include/wr22/regex_executor/algorithms/backtracking/instruction.hpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/decision.hpp>
#include <wr22/regex_executor/algorithms/backtracking/decision_ref.hpp>
#include <wr22/regex_executor/algorithms/backtracking/step.hpp>
```

```
#include <wr22/regex_executor/utils/spanned_ref.hpp>
#include <wr22/regex_parser/regex/part.hpp>
#include <wr22/regex_parser/span/span.hpp>
#include <wr22/utils/adt.hpp>
#include <optional>
```

Classes

- struct wr22::regex_executor::algorithms::backtracking::instruction::Execute
- struct wr22::regex_executor::algorithms::backtracking::instruction::AddStep
- struct wr22::regex_executor::algorithms::backtracking::instruction::Run

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking
- namespace wr22::regex_executor::algorithms::backtracking::instruction

Typedefs

- using wr22::regex_executor::algorithms::backtracking::instruction::Adt = wr22::utils::Adt< Execute, AddStep, Run >
- using wr22::regex_executor::algorithms::backtracking::Instruction = instruction::Adt

7.18 instruction.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_executor/algorithms/backtracking/decision.hpp>
5 #include <wr22/regex_executor/algorithms/backtracking/decision_ref.hpp>
6 #include <wr22/regex_executor/algorithms/backtracking/step.hpp>
7 #include <wr22/regex_executor/utils/spanned_ref.hpp>
8 #include <wr22/regex_parser/regex/part.hpp>
9 #include <wr22/regex_parser/span/span.hpp>
10 #include <wr22/utils/adt.hpp>
11
12 // stl
13 #include <optional>
14
15 namespace wr22::regex_executor::algorithms::backtracking {
16
17 struct Interpreter;
18
19 namespace instruction {
20     struct Execute {
21         utils::SpannedRef<regex_parser::regex::Part> part;
22         std::optional<Decision> forced_decision;
23     };
24
25     struct AddStep {
26         Step step;
27     };
28
29     struct Run {
30         using Context = wr22::utils::Adt<
31             std::monostate,
32             DecisionRef,
```

```
33             utils::SpannedRef<regex_parser::regex::part::Star>,
34             utils::SpannedRef<regex_parser::regex::part::Plus>,
35             utils::SpannedRef<regex_parser::regex::part::Optional>>;
36         using Fn = void (*)(const Context& ctx, Interpreter& interpreter);
37         Context ctx;
38         Fn fn;
39
40         void operator()(Interpreter& interpreter) const;
41     };
42
43     using Adt = wr22::utils::Adt<Execute, AddStep, Run>;
44 };  // namespace instruction
45
46 using Instruction = instruction::Adt;
47 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.19 include/wr22/regex_↩ executor/algorithms/backtracking/interpreter.hpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/decision_ref.hpp>
#include <wr22/regex_executor/algorithms/backtracking/decision_snapshot.↩
hpp>
#include <wr22/regex_executor/algorithms/backtracking/interpreter_state.↩
hpp>
#include <wr22/regex_executor/algorithms/backtracking/step.hpp>
#include <wr22/regex_executor/regex.hpp>
#include <wr22/regex_parser/regex/part.hpp>
#include <functional>
#include <stack>
#include <string_view>
#include <vector>
```

Classes

- class wr22::regex_executor::algorithms::backtracking::Interpreter

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.20 interpreter.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_executor/algorithms/backtracking/decision_ref.hpp>
5 #include <wr22/regex_executor/algorithms/backtracking/decision_snapshot.hpp>
6 #include <wr22/regex_executor/algorithms/backtracking/interpreter_state.hpp>
7 #include <wr22/regex_executor/algorithms/backtracking/step.hpp>
8 #include <wr22/regex_executor/regex.hpp>
9 #include <wr22/regex_parser/regex/part.hpp>
10
11 // stl
```

```
12 #include <functional>
13 #include <stack>
14 #include <string_view>
15 #include <vector>
16
17 namespace wr22::regex_executor::algorithms::backtracking {
18
19 class Interpreter {
20 public:
21     Interpreter(const Regex& regex, const std::u32string_view& string_ref);
22
23     std::optional<char32_t> current_char() const;
24     void advance();
25
26     DecisionRef add_decision(Decision decision);
27     const DecisionSnapshot& decision_snapshot_at(DecisionRef ref) const;
28     DecisionSnapshot& decision_snapshot_at(DecisionRef ref);
29     std::optional<DecisionRef> last_decision_ref() const;
30     void restore_from_snapshot(InterpreterStateSnapshot snapshot);
31
32     void push_mini_snapshot();
33     void pop_mini_snapshot();
34     std::optional<std::reference_wrapper<const InterpreterStateMiniSnapshot>> last_mini_snapshot()
35         const;
36
37     void add_instruction(Instruction instruction);
38     void add_step(Step step);
39
40     void push_error_hook(ErrorHook hook);
41     void pop_error_hook();
42     const ErrorHook& last_error_hook() const;
43     ErrorHook& last_error_hook();
44
45     void push_counter(size_t initial);
46     void pop_counter();
47     size_t& counter_at_offset(size_t offset);
48     size_t counter_at_offset(size_t offset) const;
49
50     size_t cursor() const;
51     bool finished() const;
52
53     void run_instruction();
54     void finalize();
55
56     std::vector<Step> into_steps() &&;
57
58     const InterpreterState& current_state() const;
59     InterpreterState& current_state();
60
61 private:
62     size_t parse_counter_offset(size_t offset) const;
63
64     std::u32string_view m_string_ref;
65     InterpreterState m_current_state;
66     std::vector<DecisionSnapshot> m_decision_snapshots;
67     std::stack<InterpreterStateMiniSnapshot> m_mini_snapshots;
68     std::vector<Step> m_steps;
69     std::optional<Instruction> m_current_instruction;
70 };
71
72 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.21 include/wr22/regex_executor/algorithms/backtracking/interpreter_↩ state.hpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/error_hook.hpp>
#include <wr22/regex_executor/algorithms/backtracking/instruction.hpp>
#include <stack>
#include <vector>
```

Classes

- struct wr22::regex_executor::algorithms::backtracking::InterpreterState
- struct wr22::regex_executor::algorithms::backtracking::InterpreterStateSnapshot
- struct wr22::regex_executor::algorithms::backtracking::InterpreterStateMiniSnapshot

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.22 interpreter_state.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_executor/algorithms/backtracking/error_hook.hpp>
5 #include <wr22/regex_executor/algorithms/backtracking/instruction.hpp>
6
7 // stl
8 #include <stack>
9 #include <vector>
10
11 namespace wr22::regex_executor::algorithms::backtracking {
12
13 struct InterpreterState {
14     // TODO: captures, if they belong here.
15     size_t cursor = 0;
16     std::vector<Instruction> instructions;
17     std::stack<ErrorHook> error_hooks;
18     std::vector<size_t> counters;
19 };
20
21 struct InterpreterStateSnapshot {
22     InterpreterState state;
23     Instruction current_instruction;
24     size_t before_step;
25 };
26
27 struct InterpreterStateMiniSnapshot {
28     size_t cursor;
29     size_t before_step;
30 };
31
32 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.23 include/wr22/regex_executor/algorithms/backtracking/match_↩ result.hpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/step.hpp>
```

Classes

- struct wr22::regex_executor::algorithms::backtracking::MatchResult

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.24 match_result.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_executor/algorithms/backtracking/step.hpp>
5
6 namespace wr22::regex_executor::algorithms::backtracking {
7
8 struct MatchResult {
9     // TODO: captures.
10     std::vector<Step> steps;
11 };
12 // TODO: json conversion.
13
14 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.25 include/wr22/regex_executor/algorithms/backtracking/part_executor.hpp File Reference

```
#include <wr22/regex_executor/utils/spanned_ref.hpp>
#include <wr22/regex_parser/regex/part.hpp>
```

Classes

- class wr22::regex_executor::algorithms::backtracking::PartExecutor

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.26 part_executor.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_executor/utils/spanned_ref.hpp>
5 #include <wr22/regex_parser/regex/part.hpp>
6
7 namespace wr22::regex_executor::algorithms::backtracking {
8
9 struct Interpreter;
10
11 class PartExecutor {
12 public:
13     explicit PartExecutor(utils::SpannedRef<regex_parser::regex::Part> part_ref);
14     bool execute(Interpreter& interpreter) const;
15
16 private:
17     utils::SpannedRef<regex_parser::regex::Part> m_part_ref;
18 };
19
20 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.27 include/wr22/regex_executor/algorithms/backtracking/specific_↩ part_executor.hpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/decision.hpp>
#include <wr22/regex_executor/algorithms/backtracking/interpreter.hpp>
#include <wr22/regex_executor/algorithms/backtracking/part_executor.hpp>
#include <wr22/regex_executor/utils/spanned_ref.hpp>
#include <wr22/regex_parser/regex/part.hpp>
#include <iostream>
```

Classes

- class wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< T >
- class wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Empty >
- class wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Literal >
- class wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Wildcard >
- class wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Sequence >
- class wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Group >
- class wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Alternatives >
- class wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::CharacterClass >
- class wr22::regex_executor::algorithms::backtracking::QuantifierExecutor< Derived, Quantifier >
- class wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Star >
- class wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Plus >
- class wr22::regex_executor::algorithms::backtracking::SpecificPartExecutor< regex_parser::regex::part::Optional >

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.28 specific_part_executor.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_executor/algorithms/backtracking/decision.hpp>
5 #include <wr22/regex_executor/algorithms/backtracking/interpreter.hpp>
6 #include <wr22/regex_executor/algorithms/backtracking/part_executor.hpp>
7 #include <wr22/regex_executor/utils/spanned_ref.hpp>
8 #include <wr22/regex_parser/regex/part.hpp>
9
10 #include <iostream>
11
12 namespace wr22::regex_executor::algorithms::backtracking {
13
14 template <typename T>
15 class SpecificPartExecutor {};
16
17 template <>
18 class SpecificPartExecutor<regex_parser::regex::part::Empty> {
19 public:
20     explicit SpecificPartExecutor(
21         [[maybe_unused]] utils::SpannedRef<regex_parser::regex::part::Empty> part_ref);
22     bool execute([[maybe_unused]] Interpreter& interpreter) const;
```

```
23 };
24
25 template <>
26 class SpecificPartExecutor<regex_parser::regex::part::Literal> {
27 public:
28     explicit SpecificPartExecutor(utils::SpannedRef<regex_parser::regex::part::Literal> part_ref);
29     bool execute(Interpreter& interpreter) const;
30
31 private:
32     utils::SpannedRef<regex_parser::regex::part::Literal> m_part_ref;
33 };
34
35 template <>
36 class SpecificPartExecutor<regex_parser::regex::part::Wildcard> {
37 public:
38     explicit SpecificPartExecutor(utils::SpannedRef<regex_parser::regex::part::Wildcard> part_ref);
39     bool execute(Interpreter& interpreter) const;
40
41 private:
42     utils::SpannedRef<regex_parser::regex::part::Wildcard> m_part_ref;
43 };
44
45 template <>
46 class SpecificPartExecutor<regex_parser::regex::part::Sequence> {
47 public:
48     explicit SpecificPartExecutor(utils::SpannedRef<regex_parser::regex::part::Sequence> part_ref);
49     bool execute(Interpreter& interpreter) const;
50
51 private:
52     utils::SpannedRef<regex_parser::regex::part::Sequence> m_part_ref;
53 };
54
55 template <>
56 class SpecificPartExecutor<regex_parser::regex::part::Group> {
57 public:
58     explicit SpecificPartExecutor(utils::SpannedRef<regex_parser::regex::part::Group> part_ref);
59     bool execute(Interpreter& interpreter) const;
60
61 private:
62     utils::SpannedRef<regex_parser::regex::part::Group> m_part_ref;
63 };
64
65 template <>
66 class SpecificPartExecutor<regex_parser::regex::part::Alternatives> {
67 public:
68     explicit SpecificPartExecutor(
69         utils::SpannedRef<regex_parser::regex::part::Alternatives> part_ref);
70     explicit SpecificPartExecutor(
71         utils::SpannedRef<regex_parser::regex::part::Alternatives> part_ref,
72         AlternativesDecision decision);
73     bool execute(Interpreter& interpreter) const;
74
75 private:
76     utils::SpannedRef<regex_parser::regex::part::Alternatives> m_part_ref;
77     AlternativesDecision m_decision;
78 };
79
80 template <>
81 class SpecificPartExecutor<regex_parser::regex::part::CharacterClass> {
82 public:
83     explicit SpecificPartExecutor(
84         utils::SpannedRef<regex_parser::regex::part::CharacterClass> part_ref);
85     bool execute(Interpreter& interpreter) const;
86
87 private:
88     utils::SpannedRef<regex_parser::regex::part::CharacterClass> m_part_ref;
89 };
90
91 template <typename Derived, typename Quantifier>
92 class QuantifierExecutor {
93 public:
94     explicit QuantifierExecutor(utils::SpannedRef<Quantifier> part_ref);
95     explicit QuantifierExecutor(
96         utils::SpannedRef<Quantifier> part_ref,
97         QuantifierDecision<Quantifier> decision,
98         size_t already_matched);
99     bool execute(Interpreter& interpreter);
100
101 private:
102     size_t min_repetitions() const;
103     std::optional<size_t> max_repetitions() const;
104     bool num_repetitions_ok(size_t num_repetitions) const;
105     static void greedy_walk_run_func(const instruction::Run::Context& ctx, Interpreter& interpreter);
106
107     utils::SpannedRef<Quantifier> m_part_ref;
108     QuantifierDecision<Quantifier> m_decision;
109     size_t m_already_matched;
```

```
110 };
111
112 template <typename Quantifier>
113 using QuantifierExecutorBase = QuantifierExecutor<SpecificPartExecutor<Quantifier>, Quantifier>;
114
115 template <>
116 class SpecificPartExecutor<regex_parser::regex::part::Star> :
117     public QuantifierExecutorBase<regex_parser::regex::part::Star> {
118 public:
119     using QuantifierExecutorBase<regex_parser::regex::part::Star>::QuantifierExecutor;
120
121     QuantifierType impl_quantifier_type() const;
122     size_t impl_min_repetitions() const;
123     std::optional<size_t> impl_max_repetitions() const;
124 };
125
126 template <>
127 class SpecificPartExecutor<regex_parser::regex::part::Plus> :
128     public QuantifierExecutorBase<regex_parser::regex::part::Plus> {
129 public:
130     using QuantifierExecutorBase<regex_parser::regex::part::Plus>::QuantifierExecutor;
131
132     QuantifierType impl_quantifier_type() const;
133     size_t impl_min_repetitions() const;
134     std::optional<size_t> impl_max_repetitions() const;
135 };
136
137 template <>
138 class SpecificPartExecutor<regex_parser::regex::part::Optional> :
139     public QuantifierExecutorBase<regex_parser::regex::part::Optional> {
140 public:
141     using QuantifierExecutorBase<regex_parser::regex::part::Optional>::QuantifierExecutor;
142
143     QuantifierType impl_quantifier_type() const;
144     size_t impl_min_repetitions() const;
145     std::optional<size_t> impl_max_repetitions() const;
146 };
147
148 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.29 include/wr22/regex_executor/algorithms/backtracking/step.hpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/failure_reason.hpp>
#include <wr22/regex_executor/quantifier_type.hpp>
#include <wr22/regex_parser/span/span.hpp>
#include <wr22/utils/adt.hpp>
#include <string>
#include <variant>
#include <nlohmann/json.hpp>
```

Classes

- struct wr22::regex_executor::algorithms::backtracking::detail::step::SuccessBase
- struct wr22::regex_executor::algorithms::backtracking::detail::step::FailureBase
- struct wr22::regex_executor::algorithms::backtracking::step::MatchQuantifier
- struct wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier
- struct wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::Success
- struct wr22::regex_executor::algorithms::backtracking::step::FinishQuantifier::Failure
- struct wr22::regex_executor::algorithms::backtracking::step::MatchCharClass
- struct wr22::regex_executor::algorithms::backtracking::step::MatchCharClass::Success
- struct wr22::regex_executor::algorithms::backtracking::step::MatchCharClass::Failure
- struct wr22::regex_executor::algorithms::backtracking::step::MatchWildcard
- struct wr22::regex_executor::algorithms::backtracking::step::MatchWildcard::Success
- struct wr22::regex_executor::algorithms::backtracking::step::MatchWildcard::Failure

- struct wr22::regex_executor::algorithms::backtracking::step::BeginGroup
- struct wr22::regex_executor::algorithms::backtracking::step::EndGroup
- struct wr22::regex_executor::algorithms::backtracking::step::MatchLiteral
- struct wr22::regex_executor::algorithms::backtracking::step::MatchLiteral::Success
- struct wr22::regex_executor::algorithms::backtracking::step::MatchLiteral::Failure
- struct wr22::regex_executor::algorithms::backtracking::step::MatchAlternatives
- struct wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives
- struct wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives::Success
- struct wr22::regex_executor::algorithms::backtracking::step::FinishAlternatives::Failure
- struct wr22::regex_executor::algorithms::backtracking::step::Backtrack
- struct wr22::regex_executor::algorithms::backtracking::step::End
- struct wr22::regex_executor::algorithms::backtracking::step::End::Success
- struct wr22::regex_executor::algorithms::backtracking::step::End::Failure
- struct wr22::regex_executor::algorithms::backtracking::Step

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking
- namespace wr22::regex_executor::algorithms::backtracking::detail
- namespace wr22::regex_executor::algorithms::backtracking::detail::step
- namespace wr22::regex_executor::algorithms::backtracking::step

Typedefs

- using wr22::regex_executor::algorithms::backtracking::step::Adt = wr22::utils::Adt< MatchQuantifier, FinishQuantifier, MatchCharClass, MatchLiteral, MatchWildcard, BeginGroup, EndGroup, MatchAlternatives, FinishAlternatives, Backtrack, End >

Functions

- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const MatchQuantifier &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const FinishQuantifier &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const MatchCharClass &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const MatchWildcard &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const BeginGroup &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const EndGroup &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const MatchLiteral &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const MatchAlternatives &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const FinishAlternatives &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const Backtrack &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const End &step)
- void wr22::regex_executor::algorithms::backtracking::to_json (nlohmann::json &j, const Step &step)

7.30 step.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_executor/algorithms/backtracking/failure_reason.hpp>
5 #include <wr22/regex_executor/quantifier_type.hpp>
6 #include <wr22/regex_parser/span/span.hpp>
7 #include <wr22/utils/adt.hpp>
8
9 // stl
10 #include <string>
11 #include <variant>
12
13 // nlohmann
14 #include <nlohmann/json.hpp>
15
16 namespace wr22::regex_executor::algorithms::backtracking {
17
18 // TODO: maybe move to a separate file.
19
20 namespace detail::step {
21     struct SuccessBase {
22         static constexpr bool success = true;
23         bool operator==(const SuccessBase& other) const = default;
24     };
25
26     struct FailureBase {
27         static constexpr bool success = false;
28         bool operator==(const FailureBase& other) const = default;
29     };
30
31 }  // namespace detail::step
32
33 namespace step {
34     struct MatchQuantifier {
35         regex_parser::span::Span regex_span;
36         size_t string_pos;
37         QuantifierType quantifier_type;
38
39         const char* type_code() const;
40         bool operator==(const MatchQuantifier& other) const = default;
41     };
42     void to_json(nlohmann::json& j, const MatchQuantifier& step);
43
44     struct FinishQuantifier {
45         QuantifierType quantifier_type;
46         regex_parser::span::Span regex_span;
47         struct Success : public detail::step::SuccessBase {
48             regex_parser::span::Span string_span;
49             size_t num_repetitions;
50         };
51         struct Failure : public detail::step::FailureBase {
52             size_t string_pos;
53             FailureReason<failure_reasons::OptionsExhausted> failure_reason;
54         };
55         wr22::utils::Adt<Success, Failure> result;
56
57         const char* type_code() const;
58         bool operator==(const FinishQuantifier& other) const = default;
59     };
60     void to_json(nlohmann::json& j, const FinishQuantifier& step);
61
62     struct MatchCharClass {
63         regex_parser::span::Span regex_span;
64         struct Success : public detail::step::SuccessBase {
65             regex_parser::span::Span string_span;
66         };
67         struct Failure : public detail::step::FailureBase {
68             size_t string_pos;
69             FailureReason<failure_reasons::ExcludedChar, failure_reasons::EndOfInput>
70                 failure_reason;
71         };
72         wr22::utils::Adt<Success, Failure> result;
73
74         constexpr const char* type_code() const {
75             return "match_char_class";
76         }
77         bool operator==(const MatchCharClass& other) const = default;
78     };
79     void to_json(nlohmann::json& j, const MatchCharClass& step);
80
81     struct MatchWildcard {
82         regex_parser::span::Span regex_span;
```

```
83          struct Success : public detail::step::SuccessBase {
84              regex_parser::span::Span string_span;
85          };
86          struct Failure : public detail::step::FailureBase {
87              size_t string_pos;
88              FailureReason<failure_reasons::EndOfInput> failure_reason;
89          };
90          wr22::utils::Adt<Success, Failure> result;
91
92          constexpr const char* type_code() const {
93              return "match_wildcard";
94          }
95          bool operator==(const MatchWildcard& other) const = default;
96      };
97      void to_json(nlohmann::json& j, const MatchWildcard& step);
98
99      struct BeginGroup {
100         // TODO: captures.
101         regex_parser::span::Span regex_span;
102         size_t string_pos;
103
104         constexpr const char* type_code() const {
105             return "begin_group";
106         }
107         bool operator==(const BeginGroup& other) const = default;
108     };
109     void to_json(nlohmann::json& j, const BeginGroup& step);
110
111     struct EndGroup {
112         size_t string_pos;
113         constexpr const char* type_code() const {
114             return "end_group";
115         }
116         bool operator==(const EndGroup& other) const = default;
117     };
118     void to_json(nlohmann::json& j, const EndGroup& step);
119
120     struct MatchLiteral {
121         regex_parser::span::Span regex_span;
122         char32_t literal;
123         struct Success : public detail::step::SuccessBase {
124             regex_parser::span::Span string_span;
125         };
126         struct Failure : public detail::step::FailureBase {
127             size_t string_pos;
128             FailureReason<failure_reasons::OtherChar, failure_reasons::EndOfInput> failure_reason;
129         };
130         wr22::utils::Adt<Success, Failure> result;
131
132         constexpr const char* type_code() const {
133             return "match_literal";
134         }
135         bool operator==(const MatchLiteral& other) const = default;
136     };
137     void to_json(nlohmann::json& j, const MatchLiteral& step);
138
139     struct MatchAlternatives {
140         regex_parser::span::Span regex_span;
141         size_t string_pos;
142
143         constexpr const char* type_code() const {
144             return "match_alternatives";
145         }
146         bool operator==(const MatchAlternatives& other) const = default;
147     };
148     void to_json(nlohmann::json& j, const MatchAlternatives& step);
149
150     struct FinishAlternatives {
151         regex_parser::span::Span regex_span;
152         struct Success : public detail::step::SuccessBase {
153             regex_parser::span::Span string_span;
154             size_t alternative_chosen;
155         };
156         struct Failure : public detail::step::FailureBase {
157             size_t string_pos;
158             FailureReason<failure_reasons::OptionsExhausted> failure_reason;
159         };
160         wr22::utils::Adt<Success, Failure> result;
161
162         constexpr const char* type_code() const {
163             return "finish_alternatives";
164         }
165         bool operator==(const FinishAlternatives& other) const = default;
166     };
167     void to_json(nlohmann::json& j, const FinishAlternatives& step);
168
169     struct Backtrack {
```

```
170         size_t string_pos;
171         size_t continue_after_step;
172
173         constexpr const char* type_code() const {
174             return "backtrack";
175         }
176         bool operator==(const Backtrack& other) const = default;
177     };
178     void to_json(nlohmann::json& j, const Backtrack& step);
179
180     struct End {
181         size_t string_pos;
182         struct Success : public detail::step::SuccessBase {};
183         struct Failure : public detail::step::FailureBase {};
184         wr22::utils::Adt<Success, Failure> result;
185
186         constexpr const char* type_code() const {
187             return "end";
188         }
189         bool operator==(const End& other) const = default;
190     };
191     void to_json(nlohmann::json& j, const End& step);
192
193     using Adt = wr22::utils::Adt<
194         MatchQuantifier,
195         FinishQuantifier,
196         MatchCharClass,
197         MatchLiteral,
198         MatchWildcard,
199         BeginGroup,
200         EndGroup,
201         MatchAlternatives,
202         FinishAlternatives,
203         Backtrack,
204         End>;
205 }  // namespace step
206
207 struct Step : public step::Adt {
208     using step::Adt::Adt;
209 };
210 void to_json(nlohmann::json& j, const Step& step);
211
212 }  // namespace wr22::regex_executor::algorithms::backtracking
```

7.31 include/wr22/regex_executor/quantifier_type.hpp File Reference

Namespaces

- namespace wr22
- namespace wr22::regex_executor

Enumerations

- enum class wr22::regex_executor::QuantifierType { wr22::regex_executor::Optional , wr22::regex_executor::Star , wr22::regex_executor::Plus }

7.32 quantifier_type.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 namespace wr22::regex_executor {
4
5 enum class QuantifierType {
6     Optional,
7     Star,
8     Plus,
9 };
10
11 }  // namespace wr22::regex_executor
```

7.33 include/wr22/regex_executor/regex.hpp File Reference

```
#include <wr22/regex_parser/regex/part.hpp>
```

Classes

- class wr22::regex_executor::Regex

Namespaces

- namespace wr22
- namespace wr22::regex_executor

7.34 regex.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_parser/regex/part.hpp>
5
6 namespace wr22::regex_executor {
7
8 class Regex {
9 public:
10     explicit Regex(regex_parser::regex::SpannedPart root_part);
11
12     const regex_parser::regex::SpannedPart& root_part() const;
13
14 private:
15     regex_parser::regex::SpannedPart m_root_part;
16 };
17
18 }
```

7.35 include/wr22/regex_executor/utils/spanned_ref.hpp File Reference

```
#include <wr22/regex_parser/span/span.hpp>
#include <functional>
```

Classes

- class wr22::regex_executor::utils::SpannedRef< T >

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::utils

7.36 spanned_ref.hpp

Go to the documentation of this file.

```
1 #pragma once
2
3 // wr22
4 #include <wr22/regex_parser/span/span.hpp>
5
6 // stl
7 #include <functional>
8
9 namespace wr22::regex_executor::utils {
10
11 template <typename T>
12 class SpannedRef {
13 public:
14     SpannedRef(const T& item, regex_parser::span::Span span) : m_item(item), m_span(span) {}
15
16     const T& item() const {
17         return m_item.get();
18     }
19
20     regex_parser::span::Span span() const {
21         return m_span;
22     }
23
24 private:
25     std::reference_wrapper<const T> m_item;
26     regex_parser::span::Span m_span;
27 };
28
29 }  // namespace wr22::regex_executor::utils
```

7.37 src/algorithms/backtracking/decision.cpp File Reference

```
#include "wr22/regex_parser/regex/part.hpp"
#include <wr22/regex_executor/algorithms/backtracking/decision.hpp>
#include <wr22/regex_executor/algorithms/backtracking/interpreter.hpp>
```

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.38 src/algorithms/backtracking/executor.cpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/executor.hpp>
#include <wr22/regex_executor/algorithms/backtracking/interpreter.hpp>
```

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.39 src/executor.cpp File Reference

```
#include <wr22/regex_executor/executor.hpp>
```

Namespaces

- namespace wr22
- namespace wr22::regex_executor

7.40 src/algorithms/backtracking/instruction.cpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/instruction.hpp>
#include <wr22/regex_executor/algorithms/backtracking/interpreter.hpp>
```

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.41 src/algorithms/backtracking/interpreter.cpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/decision_applicator.↩
hpp>
#include <wr22/regex_executor/algorithms/backtracking/instruction.hpp>
#include <wr22/regex_executor/algorithms/backtracking/interpreter.hpp>
#include <wr22/regex_executor/algorithms/backtracking/part_executor.hpp>
#include <wr22/regex_executor/algorithms/backtracking/step.hpp>
#include <wr22/regex_executor/utils/spanned_ref.hpp>
#include <wr22/regex_parser/regex/part.hpp>
#include <wr22/unicode/conversion.hpp>
#include <fmt/compile.h>
#include <fmt/core.h>
#include <iostream>
```

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

Functions

- std::ostream & wr22::regex_executor::algorithms::backtracking::operator<< (std::ostream &out, const Instruction &instruction)

7.42 src/algorithms/backtracking/part_executor.cpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/decision.hpp>
#include <wr22/regex_executor/algorithms/backtracking/interpreter.hpp>
#include <wr22/regex_executor/algorithms/backtracking/part_executor.hpp>
#include <wr22/regex_executor/algorithms/backtracking/specific_part_executor.↩
hpp>
#include <wr22/regex_executor/utils/spanned_ref.hpp>
#include <wr22/regex_parser/regex/part.hpp>
```

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

7.43 src/algorithms/backtracking/specific_part_executor.cpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/specific_part_executor.↩
hpp>
```

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking

Typedefs

- template<typename Quantifier >
  using wr22::regex_executor::algorithms::backtracking::QuantifierExecutorBase = QuantifierExecutor< SpecificPartExecutor< Quantifier >, Quantifier >

7.44 src/algorithms/backtracking/step.cpp File Reference

```
#include <wr22/regex_executor/algorithms/backtracking/step.hpp>
#include <wr22/unicode/conversion.hpp>
```

Namespaces

- namespace wr22
- namespace wr22::regex_executor
- namespace wr22::regex_executor::algorithms
- namespace wr22::regex_executor::algorithms::backtracking
- namespace wr22::regex_executor::algorithms::backtracking::step

Macros

- #define FIELD_TO_JSON(j, value, field) j[#field] = value.field

Functions

- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const MatchQuantifier &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const FinishQuantifier &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const MatchCharClass &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const MatchWildcard &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const BeginGroup &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const EndGroup &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const MatchLiteral &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const MatchAlternatives &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const FinishAlternatives &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const Backtrack &step)
- void wr22::regex_executor::algorithms::backtracking::step::to_json (nlohmann::json &j, const End &step)
- void wr22::regex_executor::algorithms::backtracking::to_json (nlohmann::json &j, const Step &step)

7.44.1 Macro Definition Documentation

7.44.1.1 FIELD_TO_JSON

```
#define FIELD_TO_JSON(
              j,
              value,
              field ) j[#field] = value.field
```

7.45 src/regex.cpp File Reference

```
#include <wr22/regex_executor/regex.hpp>
```

Namespaces

- namespace wr22
- namespace wr22::regex_executor

7.46 src/utils/spanned_ref.cpp File Reference

```
#include <wr22/regex_executor/utils/spanned_ref.hpp>
```

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