

Package ‘Ramble’

October 29, 2016

Type Package

Title Parser Combinator for R

Version 0.1.1

Date 2016-10-23

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Description Parser generator for R using combinatory parsers. It is inspired by combinatory parsers developed in Haskell.

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Imports methods

Suggests testthat, knitr, rmarkdown

VignetteBuilder knitr

LazyData true

RoxygenNote 5.0.1

URL <https://github.com/chappers/Ramble>

NeedsCompilation no

Repository CRAN

Date/Publication 2016-10-29 10:48:13

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Alpha	<i>Alpha checks for single alphabet character</i>
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Description

Alpha checks for single alphabet character

Usage

Alpha(...)

Arguments

... additional arguments for the primitives to be parsed

See Also

[Digit](#), [Lower](#), [Upper](#), [AlphaNum](#), [SpaceCheck](#), [String](#), [ident](#), [nat](#), [space](#), [token](#), [identifier](#), [natural](#), [symbol](#)

Examples

Alpha("abc")

AlphaNum

AlphaNum checks for a single alphanumeric character

Description

AlphaNum checks for a single alphanumeric character

Usage

```
AlphaNum(...)
```

Arguments

... additional arguments for the primitives to be parsed

See Also

[Digit](#), [Lower](#), [Upper](#), [Alpha](#), [SpaceCheck](#), [String](#), [ident](#), [nat](#), [space](#), [token](#), [identifier](#), [natural](#), [symbol](#)

Examples

```
AlphaNum("123")  
AlphaNum("abc123")
```

alt

alt combinator is similar to alternation in BNF. the parser (alt(p1, p2)) recognises anything that p1 or p2 would. The approach taken in this parser follows (Fairbairn86), in which either is interpreted in a sequential (or exclusive) manner, returning the result of the first parser to succeed, and failure if neither does.

Description

`%alt%` is the infix notation for the `alt` function, and it is the preferred way to use the `alt` operator.

Usage

```
alt(p1, p2)
```

Arguments

p1 the first parser
p2 the second parser

Value

Returns the first parser if it succeeds otherwise the second parser

See Also

[then](#)

Examples

```
(item() %alt% succeed("2")) ("abcdef")
```

Digit

Digit checks for single digit

Description

Digit checks for single digit

Usage

```
Digit(...)
```

Arguments

... additional arguments for the primitives to be parsed

See Also

[Lower](#), [Upper](#), [Alpha](#), [AlphaNum](#), [SpaceCheck](#), [String](#), [ident](#), [nat](#), [space](#), [token](#), [identifier](#), [natural](#), [symbol](#)

Examples

```
Digit>("123")
```

ident	<i>ident is a parser which matches zero or more alphanumeric characters.</i>
-------	--

Description

ident is a parser which matches zero or more alphanumeric characters.

Usage

```
ident()
```

See Also

[Digit](#), [Lower](#), [Upper](#), [Alpha](#), [AlphaNum](#), [SpaceCheck](#), [String](#), [nat](#), [space](#), [token](#), [identifier](#), [natural](#), [symbol](#)

Examples

```
ident() ("variable1 = 123")
```

identifier	<i>identifier creates an identifier</i>
------------	---

Description

identifier creates an identifier

Usage

```
identifier(...)
```

Arguments

... takes in token primitives

See Also

[Digit](#), [Lower](#), [Upper](#), [Alpha](#), [AlphaNum](#), [SpaceCheck](#), [String](#), [ident](#), [nat](#), [space](#), [token](#), [natural](#), [symbol](#)

<code>item</code>	<i>item is a parser that consumes the first character of the string and returns the rest. If it cannot consume a single character from the string, it will emit the empty list, indicating the parser has failed.</i>
-------------------	---

Description

`item` is a parser that consumes the first character of the string and returns the rest. If it cannot consume a single character from the string, it will emit the empty list, indicating the parser has failed.

Usage

```
item(...)
```

Arguments

... additional arguments for the parser

Examples

```
item() ("abc")  
item() ("")
```

<code>literal</code>	<i>literal is a parser for single symbols. It will attempt to match the single symbol with the first character in the string.</i>
----------------------	---

Description

`literal` is a parser for single symbols. It will attempt to match the single symbol with the first character in the string.

Usage

```
literal(char)
```

Arguments

`char` is the character to be matched

Examples

```
literal("a") ("abc")
```

Lower

Lower checks for single lower case character

Description

Lower checks for single lower case character

Usage

```
Lower(...)
```

Arguments

... additional arguments for the primitives to be parsed

See Also

[Digit](#), [Upper](#), [Alpha](#), [AlphaNum](#), [SpaceCheck](#), [String](#), [ident](#), [nat](#), [space](#), [token](#), [identifier](#), [natural](#), [symbol](#)

Examples

```
Lower() ("abc")
```

many

many matches 0 or more of pattern p. In BNF notation, repetition occurs often enough to merit its own abbreviation. When zero or more repetitions of a phrase p are admissible, we simply write p. The many combinator corresponds directly to this operator, and is defined in much the same way.*

Description

This implementation of many differs from (Hutton92) due to the nature of R's data structures. Since R does not support the concept of a list of tuples, we must revert to using a list rather than a vector, since all values in an R vector must be the same datatype.

Usage

```
many(p)
```

Arguments

p is the parser to match 0 or more times.

See Also

[maybe](#), [some](#)

Examples

```
Digit <- function(...) {satisfy(function(x) {return(!length(grep("[0-9]", x))))}}
many(Digit()) ("123abc")
many(Digit()) ("abc")
```

maybe	<i>maybe matches 0 or 1 of pattern p. In EBNF notation, this corresponds to a question mark ('?').</i>
-------	--

Description

maybe matches 0 or 1 of pattern p. In EBNF notation, this corresponds to a question mark ('?').

Usage

```
maybe(p)
```

Arguments

p is the parser to be matched 0 or 1 times.

See Also

[many](#), [some](#)

Examples

```
maybe(Digit())("123abc")
maybe(Digit())("abc123")
```

nat	<i>nat is a parser which matches one or more numeric characters.</i>
-----	--

Description

nat is a parser which matches one or more numeric characters.

Usage

```
nat()
```


See Also

[Digit](#), [Lower](#), [Upper](#), [Alpha](#), [AlphaNum](#), [SpaceCheck](#), [String](#), [ident](#), [space](#), [token](#), [identifier](#), [natural](#), [symbol](#)

Examples

```
nat() ("123 + 456")
```

natural	natural <i>creates a token parser for natural numbers</i>
---------	---

Description

natural creates a token parser for natural numbers

Usage

```
natural(...)
```

Arguments

... additional arguments for the parser

See Also

[Digit](#), [Lower](#), [Upper](#), [Alpha](#), [AlphaNum](#), [SpaceCheck](#), [String](#), [ident](#), [nat](#), [space](#), [token](#), [identifier](#), [symbol](#)

Ramble	<i>Ramble is a parser generator using combinatory parsers.</i>
--------	--

Description

Ramble allows you to write parsers in a functional manner, inspired by Haskell's Parsec library.

satisfy	<i>satisfy is a function which allows us to make parsers that recognise single symbols.</i>
---------	---

Description

satisfy is a function which allows us to make parsers that recognise single symbols.

Usage

satisfy(p)

Arguments

p is the predicate to determine if the arbitrary symbol is a member.

some	<i>some matches 1 or more of pattern p. in BNF notation, repetition occurs often enough to merit its own abbreviation. When zero or more repetitions of a phrase p are admissible, we simply write p+. The some combinator corresponds directly to this operator, and is defined in much the same way.</i>
------	--

Description

some matches 1 or more of pattern p. in BNF notation, repetition occurs often enough to merit its own abbreviation. When zero or more repetitions of a phrase p are admissible, we simply write p+. The some combinator corresponds directly to this operator, and is defined in much the same way.

Usage

some(p)

Arguments

p is the parser to match 1 or more times.

See Also

[maybe](#), [many](#)

Examples

```
Digit <- function(...) {satisfy(function(x) {return(!length(grep("[0-9]", x))))}}
some(Digit()) ("123abc")
```

space	<i>space matches zero or more space characters.</i>
-------	---

Description

space matches zero or more space characters.

Usage

```
space()
```

See Also

[Digit](#), [Lower](#), [Upper](#), [Alpha](#), [AlphaNum](#), [SpaceCheck](#), [String](#), [ident](#), [nat](#), [token](#), [identifier](#), [natural](#), [symbol](#)

Examples

```
space() (" abc")
```

SpaceCheck	<i>SpaceCheck checks for a single space character</i>
------------	---

Description

SpaceCheck checks for a single space character

Usage

```
SpaceCheck(...)
```

Arguments

... additional arguments for the primitives to be parsed

See Also

[Digit](#), [Lower](#), [Upper](#), [Alpha](#), [AlphaNum](#), [String](#), [ident](#), [nat](#), [space](#), [token](#), [identifier](#), [natural](#), [symbol](#)

Examples

```
SpaceCheck>(" 123")
```

String	<i>String is a combinator which allows us to build parsers which recognise strings of symbols, rather than just single symbols</i>
--------	--

Description

String is a combinator which allows us to build parsers which recognise strings of symbols, rather than just single symbols

Usage

```
String(string)
```

Arguments

string is the string to be matched

See Also

[Digit](#), [Lower](#), [Upper](#), [Alpha](#), [AlphaNum](#), [SpaceCheck](#), [ident](#), [nat](#), [space](#), [token](#), [identifier](#), [natural](#), [symbol](#)

Examples

```
String("123")("123 abc")
```

succeed	<i>succeed is based on the empty string symbol in the BNF notation The succeed parser always succeeds, without actually consuming any input string. Since the outcome of succeed does not depend on its input, its result value must be pre-determined, so it is included as an extra parameter.</i>
---------	--

Description

succeed is based on the empty string symbol in the BNF notation The succeed parser always succeeds, without actually consuming any input string. Since the outcome of succeed does not depend on its input, its result value must be pre-determined, so it is included as an extra parameter.

Usage

```
succeed(string)
```

Arguments

string the result value of succeed parser

Examples

```
succeed("1") ("abc")
```

```
symbol
```

```
symbol creates a token for a symbol
```

Description

symbol creates a token for a symbol

Usage

```
symbol(xs)
```

Arguments

xs takes in a string to create a token

See Also

[Digit](#), [Lower](#), [Upper](#), [Alpha](#), [AlphaNum](#), [SpaceCheck](#), [String](#), [ident](#), [nat](#), [space](#), [token](#), [identifier](#), [natural](#)

Examples

```
symbol("[") (" [123]")
```

```
then
```

```
then combinator corresponds to sequencing in BNF. The parser
(then(p1, p2)) recognises anything that p1 and p2 would if placed
in succession.
```

Description

`%then%` is the infix operator for the then combinator, and it is the preferred way to use the then operator.

Usage

```
then(p1, p2)
```

Arguments

p1 the first parser
p2 the second parser

Value

recognises anything that p1 and p2 would if placed in succession.

See Also

[alt](#), [thentree](#)

Examples

```
(item() %then% succeed("123")) ("abc")
```

thentree	<i>thentree keeps the full tree representation of the results of parsing. Otherwise, it is identical to then.</i>
----------	---

Description

thentree keeps the full tree representation of the results of parsing. Otherwise, it is identical to then.

Usage

```
thentree(p1, p2)
```

Arguments

p1	the first parser
p2	the second parser

Value

recognises anything that p1 and p2 would if placed in succession.

See Also

[alt](#), [thentree](#)

Examples

```
(item() %thentree% succeed("123")) ("abc")
```

token	<i>token is a new primitive that ignores any space before and after applying a parser to a token.</i>
-------	---

Description

token is a new primitive that ignores any space before and after applying a parser to a token.

Usage

```
token(p)
```

Arguments

p is the parser to have spaces stripped.

See Also

[Digit](#), [Lower](#), [Upper](#), [Alpha](#), [AlphaNum](#), [SpaceCheck](#), [String](#), [ident](#), [nat](#), [space](#), [identifier](#), [natural](#), [symbol](#)

Examples

```
token(ident()) (" variable1 ")
```

Unlist	<i>Unlist is the same as unlist, but doesn't recurse all the way to preserve the type. This function is not well optimised.</i>
--------	---

Description

Unlist is the same as unlist, but doesn't recurse all the way to preserve the type. This function is not well optimised.

Usage

```
Unlist(obj)
```

Arguments

obj is a list to be flatten

Upper	<i>Upper checks for a single upper case character</i>
-------	---

Description

Upper checks for a single upper case character

Usage

Upper(...)

Arguments

... additional arguments for the primitives to be parsed

See Also

[Digit](#), [Lower](#), [Alpha](#), [AlphaNum](#), [SpaceCheck](#), [String](#), [ident](#), [nat](#), [space](#), [token](#), [identifier](#), [natural](#), [symbol](#)

Examples

Upper("Abc")

using	<i>using combinator allows us to manipulate results from a parser, for example building a parse tree. The parser (p %using% f) has the same behaviour as the parser p, except that the function f is applied to each of its result values.</i>
-------	--

Description

%using% is the infix operator for using, and it is the preferred way to use the using operator.

Usage

using(p, f)

Arguments

p is the parser to be applied
 f is the function to be applied to each result of p.

Value

The parser (p %using% f) has the same behaviour as the parser p, except that the function f is applied to each of its result values.

Examples

```
(item() %using% as.numeric) ("1abc")
```

%alt% *%alt% is the infix notation for the alt function.*

Description

%alt% is the infix notation for the alt function.

Usage

```
p1 %alt% p2
```

Arguments

p1	the first parser
p2	the second parser

Value

Returns the first parser if it succeeds otherwise the second parser

Examples

```
(item() %alt% succeed("2")) ("abcdef")
```

%then% *%then% is the infix operator for the then combinator.*

Description

%then% is the infix operator for the then combinator.

Usage

```
p1 %then% p2
```

Arguments

p1	the first parser
p2	the second parser

Value

recognises anything that p1 and p2 would if placed in succession.

Examples

```
(item() %then% succeed("123")) ("abc")
```

<code>%thentree%</code>	<i>%thentree% is the infix operator for the then combinator, and it is the preferred way to use the thentree operator.</i>
-------------------------	--

Description

`%thentree%` is the infix operator for the then combinator, and it is the preferred way to use the thentree operator.

Usage

```
p1 %thentree% p2
```

Arguments

p1	the first parser
p2	the second parser

Value

recognises anything that p1 and p2 would if placed in succession.

See Also

[alt](#), [thentree](#)

Examples

```
(item() %thentree% succeed("123")) ("abc")
```

<code>%using%</code>	<i>%using% is the infix operator for using</i>
----------------------	--

Description

`%using%` is the infix operator for using

Usage

```
p %using% f
```

Arguments

- p is the parser to be applied
- f is the function to be applied to each result of p.

Examples

```
(item() %using% as.numeric) ("1abc")
```

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