Package 'yyjsonr'

April 10, 2024

Type Package

Title Fast 'JSON', 'NDJSON' and 'GeoJSON' Parser and Generator

Version 0.1.20

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Description A fast 'JSON' parser, generator and validator which converts 'JSON', 'NDJSON' (Newline Delimited 'JSON') and 'GeoJSON' (Geographic 'JSON') data to/from R objects. The standard R data types are supported (e.g. logical, numeric, integer) with configurable handling of NULL and NA values. Data frames, atomic vectors and lists are all supported as data containers translated to/from 'JSON'. 'GeoJSON' data is read in as 'simple features' objects.
This implementation wraps the 'yyjson' 'C' library which is available from <https://github.com/ibireme/yyjson>.

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URL https://github.com/coolbutuseless/yyjsonr, https://coolbutuseless.github.io/package/yyjsonr/

BugReports https://github.com/coolbutuseless/yyjsonr/issues

Encoding UTF-8

Language en-AU

RoxygenNote 7.3.1

Suggests bit64, knitr, rmarkdown, jsonlite, testthat (>= 3.0.0)

Config/testthat/edition 3

VignetteBuilder knitr

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Depends R (>= 3.5.0)

NeedsCompilation yes

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Repository CRAN

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R topics documented:

`opts_read_geojson` *Options for reading in GeoJSON*

Description

Options for reading in GeoJSON

Usage

```
opts_read_geojson(
  type = c("sf", "sfc"),
  property_promotion = c("string", "list"),
  property_promotion_lgl = c("integer", "string")
)
```

Arguments

`type`	'sf' or 'sfc'
`property_promotion`	What is the most general container type to use when properties differ across a FEATURECOLLECTION? E.g. if the property exists both as a numeric and a string, should all values be promoted to a 'string', or contained as different types in a 'list'. Default: 'string' will behave like `geojsonsf` package.

property_promotion_lgl
: when property_promotion = "string" should logical values become words (i.e. "TRUE"/"FALSE") or integers (i.e. "1"/"0"). Default: "integer" in order to match geojsonsf package

Value

Named list of options specific to reading GeoJSON

Examples

```
# Create a set of options to use when reading geojson
opts_read_geojson()
```

---

opts_read_json *Create named list of options for parsing R from JSON*

Description

Create named list of options for parsing R from JSON

Usage

```
opts_read_json(
  promote_num_to_string = FALSE,
  df_missing_list_elem = NULL,
  obj_of_arrs_to_df = TRUE,
  arr_of_objs_to_df = TRUE,
  str_specials = c("string", "special"),
  num_specials = c("special", "string"),
  int64 = c("string", "double", "bit64"),
  length1_array_asis = FALSE,
  yyjson_read_flag = 0L
)
```

Arguments

promote_num_to_string
: Should numeric values be promoted to strings when they occur within an array with other string values? Default: FALSE means to keep numerics as numeric value and promote the *container* to be a list rather than an atomic vector when types are mixed. If TRUE then array of mixed string/numeric types will be promoted to all string values and returned as an atomic character vector. Set this to TRUE if you want to emulate the behaviour of jsonlite::fromJSON()

df_missing_list_elem
: R value to use when elements are missing in list columns in data.frames. Default: NULL

`obj_of_arrs_to_df`
: logical. Should a named list of equal-length vectors be promoted to a data.frame? Default: TRUE. If FALSE, then result will be left as a list.

`arr_of_objs_to_df`
: logical. Should an array or objects be promoted to a a data.frame? Default: TRUE. If FALSE, then results will be read as a list-of-lists.

`str_specials`
: Should `'NA'` in a JSON string be converted to the `'special'` `NA` value in R, or left as a `'string'`. Default: 'string'

`num_specials`
: Should JSON strings 'NA'/'Inf'/'NaN' in a numeric context be converted to the `'special'` R numeric values `NA`, `Inf`, `NaN`, or left as a `'string'`. Default: 'special'

`int64`
: how to encode large integers which do not fit into R's integer type. 'string' imports them as a character vector. 'double' will convert the integer to a double precision numeric value. 'bit64' will use the 'integer64' type from the 'bit64' package. Note that the 'integer64' type is a *signed* integer type, and a warning will be issued if JSON contains an *unsigned* integer which cannot be stored in this type.

`length1_array_asis`
: logical. Should JSON arrays with length = 1 be marked with class `AsIs`. Default: FALSE

`yyjson_read_flag`
: integer vector of internal `yyjson` options. See `yyjson_read_flag` in this package, and read the yyjson API documentation for more information. This is considered an advanced option.

Value

Named list of options for reading JSON

See Also

`yyjson_read_flag()`

Examples

```
opts_read_json()
```

---

opts_write_geojson *Options for writing from* `sf` *object to* `GeoJSON`

Description

Currently no options available.

Usage

```
opts_write_geojson()
```

Value

Named list of options specific to writing GeoJSON

Examples

```
# Create a set of options to use when writing geojson
opts_write_geojson()
```

`opts_write_json` *Create named list of options for serializing R to JSON*

Description

Create named list of options for serializing R to JSON

Usage

```
opts_write_json(
  digits = -1,
  pretty = FALSE,
  auto_unbox = FALSE,
  dataframe = c("rows", "columns"),
  factor = c("string", "integer"),
  name_repair = c("none", "minimal"),
  num_specials = c("null", "string"),
  str_specials = c("null", "string"),
  fast_numerics = FALSE,
  yyjson_write_flag = 0L
)
```

Arguments

`digits`	decimal places to keep for floating point numbers. Default: -1. Positive values specify number of decimal places. Using zero will write the numeric value as an integer. Values less than zero mean that the floating point value should be written as-is (the default).
`pretty`	Logical value indicating if the created JSON string should have whitespace for indentation and linebreaks. Default: FALSE. Note: this option is equivalent to `yyjson_write_flag = write_flag$YYJSON_WRITE_PRETTY`
`auto_unbox`	automatically unbox all atomic vectors of length 1 such that they appear as atomic elements in JSON rather than arrays of length 1.
`dataframe`	how to encode data.frame objects. Options 'rows' or columns'. Default: 'rows'
`factor`	how to encode factor objects: must be one of 'string' or 'integer' Default: 'string'

name_repair — How should unnamed items in a partially named list be handled? 'none' means to leave their names blank in JSON (which may not be valid JSON). 'minimal' means to use the integer position index of the item as its name if it is missing. Default: 'none'

num_specials — Should special numeric values (i.e. NA, NaN, Inf) be converted to a JSON null value or converted to a string representation e.g. "NA"/"NaN" etc. Default: 'null'

str_specials — Should a special value of NA in a character vector be converted to a JSON null value, or converted to a string "NA"? Default: 'null'

fast_numerics — Does the user guarantee that there are no NA, NaN or Inf values in the numeric vectors? Default: FALSE. If TRUE then numeric and integer vectors will be written to JSON using a faster method. Note: if there are NA, NaN or Inf values, an error will be thrown. Expert users are invited to also consider the YYJSON_WRITE_ALLOW_INF_AND_NAN and YYJSON_WRITE_INF_AND_NAN_AS_NULL options for yyjson_write_flags and should consult the yyjson API documentation for further details.

yyjson_write_flag — integer vector corresponding to internal yyjson options. See yyjson_write_flag in this package, and read the yyjson API documentation for more information. This is considered an advanced option.

Value

Named list of options for writing JSON

See Also

yyjson_write_flag()

Examples

```
write_json_str(head(iris, 3), opts = opts_write_json(factor = 'integer'))
```

---

read_geojson_str *Load GeoJSON as* sf *object*

Description

Load GeoJSON as sf object

Usage

```
read_geojson_str(str, opts = list(), ..., json_opts = list())

read_geojson_file(filename, opts = list(), ..., json_opts = list())
```

Arguments

str	Single string containing GeoJSON
opts	Named list of GeoJSON-specific options. Usually created with opts_read_geojson(). Default: empty list() to use the default options.
...	Any extra named options override those in GeoJSON-specific options - opts
json_opts	Named list of vanilla JSON options as used by read_json_str(). This is usually created with opts_read_json(). Default value is an empty list() which means to use all the default JSON parsing options which is usually the correct thing to do when reading GeoJSON.
filename	Filename

Value

sf object

Examples

```
geojson_file <- system.file("geojson-example.json", package = 'yyjsonr')
read_geojson_file(geojson_file)
```

---

read_json_conn *Parse JSON from an R connection object.*

Description

Currently, this is not very efficient as the entire contents of the connection are read into R as a string and then the JSON parsed from there.

Usage

```
read_json_conn(conn, opts = list(), ...)
```

Arguments

conn	connection object. e.g. url('https://jsonplaceholder.typicode.com/todos/1')
opts	Named list of options for parsing. Usually created by opts_read_json()
...	Other named options can be used to override any options in opts. The valid named options are identical to arguments to opts_read_json()

Details

For plain text files it is faster to use read_json_file().

Value

R object

See Also

Other JSON Parsers: read_json_file(), read_json_raw(), read_json_str(), read_ndjson_file(), read_ndjson_str()

Examples

```
if (interactive()) {
  read_json_conn(url("https://api.github.com/users/hadley/repos"))
}
```

---

read_json_file *Convert JSON to R*

Description

Convert JSON to R

Usage

```
read_json_file(filename, opts = list(), ...)
```

Arguments

filename	full path to text file containing JSON.
opts	Named list of options for parsing. Usually created by opts_read_json()
...	Other named options can be used to override any options in opts. The valid named options are identical to arguments to opts_read_json()

Value

R object

See Also

Other JSON Parsers: read_json_conn(), read_json_raw(), read_json_str(), read_ndjson_file(), read_ndjson_str()

Examples

```
tmp <- tempfile()
write_json_file(head(iris, 3), tmp)
read_json_file(tmp)
```

read_json_raw *Convert JSON in a raw vector to R*

Description

Convert JSON in a raw vector to R

Usage

```
read_json_raw(raw_vec, opts = list(), ...)
```

Arguments

raw_vec	raw vector
opts	Named list of options for parsing. Usually created by opts_read_json()
...	Other named options can be used to override any options in opts. The valid named options are identical to arguments to opts_read_json()

Value

R object

See Also

Other JSON Parsers: read_json_conn(), read_json_file(), read_json_str(), read_ndjson_file(), read_ndjson_str()

Examples

```
raw_str <- as.raw(utf8ToInt('[1, 2, 3, "four"]'))
read_json_raw(raw_str)
```

read_json_str *Convert JSON in a character string to R*

Description

Convert JSON in a character string to R

Usage

```
read_json_str(str, opts = list(), ...)
```

Arguments

str	a single character string
opts	Named list of options for parsing. Usually created by opts_read_json()
...	Other named options can be used to override any options in opts. The valid named options are identical to arguments to opts_read_json()

Value

R object

See Also

Other JSON Parsers: read_json_conn(), read_json_file(), read_json_raw(), read_ndjson_file(), read_ndjson_str()

Examples

```
read_json_str("4294967297", opts = opts_read_json(int64 = 'string'))
```

---

read_ndjson_file *Parse an NDJSON file to a data.frame or list*

Description

If reading as data.frame, each row of NDJSON becomes a row in the data.frame. If reading as a list, then each row becomes an element in the list.

Usage

```
read_ndjson_file(
  filename,
  type = c("df", "list"),
  nread = -1,
  nskip = 0,
  nprobe = 100,
  opts = list(),
  ...
)
```

Arguments

filename	Path to file containing NDJSON data. May e a vanilla text file or a gzipped file
type	The type of R object the JSON should be parsed into. Valid values are 'df' or 'list'. Default: 'df' (data.frame)
nread	Number of records to read. Default: -1 (reads all JSON strings)
nskip	Number of records to skip before starting to read. Default: 0 (skip no data)

nprobe	Number of lines to read to determine types for data.frame columns. Default: 100. Use -1 to probe entire file.
opts	Named list of options for parsing. Usually created by opts_read_json()
...	Other named options can be used to override any options in opts. The valid named options are identical to arguments to opts_read_json()

Details

If parsing NDJSON to a data.frame it is usually better if the json objects are consistent from line-to-line. Type inference for the data.frame is done during initialisation by reading through nprobe lines. Warning: if there is a type-mismatch further into the file than it is probed, then you will get missing values in the data.frame, or JSON values not captured in the R data.

No flattening of the namespace is done i.e. nested object remain nested.

Value

NDJSON data read into R as list or data.frame depending on 'type' argument

See Also

Other JSON Parsers: read_json_conn(), read_json_file(), read_json_raw(), read_json_str(), read_ndjson_str()

Examples

```
tmp <- tempfile()
write_ndjson_file(head(mtcars), tmp)
read_ndjson_file(tmp)
```

---

read_ndjson_str *Parse an NDJSON file to a data.frame or list*

Description

If reading as data.frame, each row of NDJSON becomes a row in the data.frame. If reading as a list, then each row becomes an element in the list.

Usage

```
read_ndjson_str(
  x,
  type = c("df", "list"),
  nread = -1,
  nskip = 0,
  nprobe = 100,
  opts = list(),
  ...
)
```

Arguments

x	string containing NDJSON
type	The type of R object the JSON should be parsed into. Valid values are 'df' or 'list'. Default: 'df' (data.frame)
nread	Number of records to read. Default: -1 (reads all JSON strings)
nskip	Number of records to skip before starting to read. Default: 0 (skip no data)
nprobe	Number of lines to read to determine types for data.frame columns. Default: 100. Use -1 to probe entire file.
opts	Named list of options for parsing. Usually created by opts_read_json()
...	Other named options can be used to override any options in opts. The valid named options are identical to arguments to opts_read_json()

Details

If parsing NDJSON to a data.frame it is usually better if the json objects are consistent from line-to-line. Type inference for the data.frame is done during initialisation by reading through nprobe lines. Warning: if there is a type-mismatch further into the file than it is probed, then you will get missing values in the data.frame, or JSON values not captured in the R data.

No flattening of the namespace is done i.e. nested object remain nested.

Value

NDJSON data read into R as list or data.frame depending on 'type' argument

See Also

Other JSON Parsers: read_json_conn(), read_json_file(), read_json_raw(), read_json_str(), read_ndjson_file()

Examples

```
tmp <- tempfile()
json <- write_ndjson_str(head(mtcars))
read_ndjson_str(json, type = 'list')
```

---

validate_json_file *Validate JSON in file or string*

Description

Validate JSON in file or string

Usage

```
validate_json_file(filename, verbose = FALSE, opts = list(), ...)

validate_json_str(str, verbose = FALSE, opts = list(), ...)
```

Arguments

filename	path to file containing JSON
verbose	logical. If the JSON is not valid, should a warning be shown giving details?
opts	Named list of options for parsing. Usually created by `opts_read_json()`
...	Other named options can be used to override any options in `opts`. The valid named options are identical to arguments to `opts_read_json()`
str	character string containing JSON

Value

Logical value. TRUE if JSON validates as OK, otherwise FALSE

Examples

```
tmp <- tempfile()
write_json_file(head(iris, 3), tmp)
validate_json_file(tmp)
str <- write_json_str(iris)
validate_json_str(str)
```

---

write_geojson_str *Write SF to GeoJSON string*

Description

Write SF to GeoJSON string

Usage

```
write_geojson_str(x, opts = list(), ..., json_opts = list())

write_geojson_file(x, filename, opts = list(), ..., json_opts = list())
```

Arguments

x	`sf` object. Supports `sf` or `sfc`
opts	named list of options. Usually created with `opts_write_geojson()`. Default: empty `list()` to use the default options.
...	any extra named options override those in `opts`

json_opts	Named list of vanilla JSON options as used by write_json_str(). This is usually created with opts_write_json(). Default value is an empty list() which means to use all the default JSON writing options which is usually the correct thing to do when writing GeoJSON.
filename	filename

Value

Character string containing GeoJSON, or NULL if GeoJSON written to file.

Examples

```
geojson_file <- system.file("geojson-example.json", package = 'yyjsonr')
sf <- read_geojson_file(geojson_file)
cat(write_geojson_str(sf, json_opts = opts_write_json(pretty = TRUE)))
```

---

write_json_file *Convert R object to JSON file*

Description

Convert R object to JSON file

Usage

```
write_json_file(x, filename, opts = list(), ...)
```

Arguments

x	the object to be encoded
filename	filename
opts	Named list of serialization options. Usually created by opts_write_json()
...	Other named options can be used to override any options in opts. The valid named options are identical to arguments to opts_write_json()

Value

None

See Also

Other JSON Serializer: write_json_str(), write_ndjson_file(), write_ndjson_str()

Examples

```
tmp <- tempfile()
write_json_file(head(iris, 3), tmp)
read_json_file(tmp)
```

write_json_str *Convert R object to JSON string*

Description

Convert R object to JSON string

Usage

```
write_json_str(x, opts = list(), ...)
```

Arguments

x	the object to be encoded
opts	Named list of serialization options. Usually created by opts_write_json()
...	Other named options can be used to override any options in opts. The valid named options are identical to arguments to opts_write_json()

Value

Single string containing JSON

See Also

Other JSON Serializer: write_json_file(), write_ndjson_file(), write_ndjson_str()

Examples

```
write_json_str(head(iris, 3), pretty = TRUE)
```

write_ndjson_file *Write list or data.frame object to NDJSON in a file*

Description

For list input, each element of the list is written as a single JSON string. For data.frame input, each row of the data.frame is written as aJSON string.

Usage

```
write_ndjson_file(x, filename, opts = list(), ...)
```

Arguments

x	data.frame or list to be written as multiple JSON strings
filename	JSON strings will be written to this file one-line-per-JSON string.
opts	Named list of serialization options. Usually created by opts_write_json()
...	Other named options can be used to override any options in opts. The valid named options are identical to arguments to opts_write_json()

Value

None

See Also

Other JSON Serializer: write_json_file(), write_json_str(), write_ndjson_str()

Examples

```
tmp <- tempfile()
write_ndjson_file(head(mtcars), tmp)
read_ndjson_file(tmp)
```

---

write_ndjson_str *Write list or data.frame object to NDJSON in a string*

Description

For list input, each element of the list is written as a single JSON string. For data.frame input, each row of the data.frame is written as aJSON string.

Usage

```
write_ndjson_str(x, opts = list(), ...)
```

Arguments

x	data.frame or list to be written as multiple JSON strings
opts	Named list of serialization options. Usually created by opts_write_json()
...	Other named options can be used to override any options in opts. The valid named options are identical to arguments to opts_write_json()

Value

String containing multiple JSON strings separated by newlines.

See Also

Other JSON Serializer: write_json_file(), write_json_str(), write_ndjson_file()

Examples

```
write_ndjson_str(head(mtcars))
```

`yyjson_read_flag` *Advanced: Values for setting internal options directly on YYJSON library*

Description

This is a list of integer values used for setting flags on the `yyjson` code directly. This is an ADVANCED option and should be used with caution.

Usage

```
yyjson_read_flag
```

Format

An object of class `list` of length 9.

Details

Some of these settings overlap and conflict with code needed to handle the translation of JSON values to R.

`opts_read_json(yyjson_read_flag = c(yyjson_read_flag$x, yyjson_read_flag$y, ...))`

YYJSON_READ_NOFLAG Default option (RFC 8259 compliant):

- Read positive integer as uint64_t.
- Read negative integer as int64_t.
- Read floating-point number as double with round-to-nearest mode.
- Read integer which cannot fit in uint64_t or int64_t as double.
- Report error if double number is infinity.
- Report error if string contains invalid UTF-8 character or BOM.
- Report error on trailing commas, comments, inf and nan literals.

YYJSON_READ_INSITU Read the input data in-situ. This option allows the reader to modify and use input data to store string values, which can increase reading speed slightly. The caller should hold the input data before free the document. The input data must be padded by at least `YYJSON_PADDING_SIZE` bytes. For example: `"[1,2]"` should be `"[1,2]\0\0\0\0"`, input length should be 5.

YYJSON_READ_STOP_WHEN_DONE Stop when done instead of issuing an error if there's additional content after a JSON document. This option may be used to parse small pieces of JSON in larger data, such as "NDJSON"

YYJSON_READ_ALLOW_TRAILING_COMMAS Allow single trailing comma at the end of an object or array, such as `"[1,2,3,]"`

YYJSON_READ_ALLOW_COMMENTS Allow C-style single line and multiple line comments (non-standard).

YYJSON_READ_ALLOW_INF_AND_NAN Allow inf/nan number and literal, case-insensitive, such as 1e999, NaN, inf, -Infinity (non-standard).

YYJSON_READ_NUMBER_AS_RAW Read all numbers as raw strings (value with "YYJSON_TYPE_RAW" type), inf/nan literal is also read as raw with "ALLOW_INF_AND_NAN" flag.

YYJSON_READ_ALLOW_INVALID_UNICODE Allow reading invalid unicode when parsing string values (non-standard). Invalid characters will be allowed to appear in the string values, but invalid escape sequences will still be reported as errors. This flag does not affect the performance of correctly encoded strings. WARNING: Strings in JSON values may contain incorrect encoding when this option is used, you need to handle these strings carefully to avoid security risks.

YYJSON_READ_BIGNUM_AS_RAW Read big numbers as raw strings. These big numbers include integers that cannot be represented by "int64_t" and "uint64_t", and floating-point numbers that cannot be represented by finite "double". The flag will be overridden by "YYJSON_READ_NUMBER_AS_RAW" flag.

Examples

```
read_json_str(
   '[12.3]',
  opts = opts_read_json(yyjson_read_flag = yyjson_read_flag$YYJSON_READ_ALLOW_TRAILING_COMMAS)
 )
```

`yyjson_version` *Version number of 'yyjson' C library*

Description

Version number of 'yyjson' C library

Usage

```
yyjson_version()
```

Examples

```
yyjson_version()
```

yyjson_write_flag *Advanced: Values for setting internal options directly on YYJSON library*

Description

This is a list of integer values used for setting flags on the yyjson code directly. This is an ADVANCED option and should be used with caution.

Usage

```
yyjson_write_flag
```

Format

An object of class list of length 9.

Details

Some of these settings overlap and conflict with code needed to handle the translation of JSON values to R.

```
opts_write_json(yyjson_write_flag = c(write_flag$x, write_flag$y, ...))
```

YYJSON_WRITE_NOFLAG Default value.

- Write JSON minify.
- Report error on inf or nan number.
- Report error on invalid UTF-8 string.
- Do not escape unicode or slash.

YYJSON_WRITE_PRETTY Write JSON pretty with 4 space indent.

YYJSON_WRITE_ESCAPE_UNICODE Escape unicode as uXXXX, make the output ASCII only.

YYJSON_WRITE_ESCAPE_SLASHES Escape '/' as '\/'.

YYJSON_WRITE_ALLOW_INF_AND_NAN Write inf and nan number as 'Infinity' and 'NaN' literal (non-standard).

YYJSON_WRITE_INF_AND_NAN_AS_NULL Write inf and nan number as null literal. This flag will override YYJSON_WRITE_ALLOW_INF_AND_NAN flag.

YYJSON_WRITE_ALLOW_INVALID_UNICODE Allow invalid unicode when encoding string values (non-standard). Invalid characters in string value will be copied byte by byte. If YYJSON_WRITE_ESCAPE_UNICODE flag is also set, invalid character will be escaped as U+FFFD (replacement character). This flag does not affect the performance of correctly encoded strings.

YYJSON_WRITE_PRETTY_TWO_SPACES Write JSON pretty with 2 space indent. This flag will override YYJSON_WRITE_PRETTY flag.

YYJSON_WRITE_NEWLINE_AT_END Adds a newline character at the end of the JSON. This can be helpful for text editors or NDJSON

Examples

```
write_json_str("hello/there", opts = opts_write_json(
  yyjson_write_flag = yyjson_write_flag$YYJSON_WRITE_ESCAPE_SLASHES
))
```

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