

Package: FITfileR (via r-universe)

November 4, 2024

Version 0.1.10

Title Read FIT files using only native R code

Description The 'FIT' (Flexible and Interoperable Data Transfer) protocol is designed specifically for sharing data from fitness and health devices. This package allows reading 'FIT' files in pure R without any dependence on external software or SDKs.

URL <https://github.com/grimbough/FITfileR>

Depends R (>= 3.5.0)

Imports dplyr, tibble, magrittr, methods, bit64

Suggests knitr, rmarkdown, leaflet, ggplot2, tinytest, zoo, tidyr, ggforce

VignetteBuilder knitr

License Artistic-2.0

LazyLoad yes

Roxygen list(markdown = TRUE)

RoxygenNote 7.2.3

Encoding UTF-8

Collate 'FITfileR.R' 'class_validity.R' 'allClasses.R' 'allGenerics.R' 'allMethods.R' 'dataFormatting.R' 'methods_FitFile_accessors.R' 'methods_FitFile_dim.R' 'methods_Messages_accessors.R' 'read_headers.R' 'read_messages.R' 'reader.R' 'utilities.R' 'write_headers.R' 'write_messages.R' 'writer.R'

Repository <https://grimbough.r-universe.dev>

RemoteUrl <https://github.com/grimbough/FITfileR>

RemoteRef HEAD

RemoteSha a71bb9eaf4b74343e3613ff079a1ff9c5e793e75

Contents

FitFile-accessors	2
FitFile-class	4
FITfileR	4
FitMessageHeader-class	5
FitMessages	5
readFitFile	6
Index	7

FitFile-accessors	<i>Extracting messages from FIT Files</i>
-------------------	---

Description

Methods for retrieving messages from [FitFile-class](#) objects.

Usage

```
listMessageTypes(fitFile)

## S4 method for signature 'FitFile'
listMessageTypes(fitFile)

getMessagesByType(fitFile, message_type)

## S4 method for signature 'FitFile,integer'
getMessagesByType(fitFile, message_type)

## S4 method for signature 'FitFile,character'
getMessagesByType(fitFile, message_type)

## S4 method for signature 'FitFile'
messages(fitFile)

file_id(fitFile)

## S4 method for signature 'FitFile'
file_id(fitFile)

records(fitFile)

## S4 method for signature 'FitFile'
records(fitFile)

laps(fitFile)
```

```
## S4 method for signature 'FitFile'
laps(fitFile)

events(fitFile)

## S4 method for signature 'FitFile'
events(fitFile)

hrv(fitFile)

## S4 method for signature 'FitFile'
hrv(fitFile)

monitoring(fitFile)

## S4 method for signature 'FitFile'
monitoring(fitFile)
```

Arguments

<code>fitFile</code>	A FitFile-class object.
<code>message_type</code>	Either an integer or character vector (length 1), specifying either a global message number or message type respectively.

Details

The FIT file specification allows for a large number of message types. FITfileR provides accessor methods for some of the most common. These include `records()` and `laps()`.

If a predefined function doesn't exist for the message type you want to extract, any message type can be retrieved with `getMessagesByType`. The second argument can take either the global message number (as specified in the FIT File definition) of message type you want, or the message name. A list of names for the message types held in a [FitFile-class](#) object can be retrieved with `listMessageTypes`.

The return type is dependant upon whether the [FitFile-class](#) contains multiple message definitions for the same message type. It is not uncommon for this to occur e.g. if a new sensor is added during an activity the `records` field definition will change. If there is a single definition for the message type a tibble will be returned, otherwise a list of tibbles is returned. The length of this list reflects the number of unique definitions for the message type within the file. It may be straightforward to combine these tibbles e.g. via `rbind`, but this is left to the user.

Value

Either a tibble or a list of tibble. See details for more information.

FitFile-class	<i>An S4 class representing a FIT file</i>
---------------	--

Description

An S4 class representing a FIT file

Usage

```
## S4 method for signature 'FitFile'
length(x)
```

Arguments

x An object of class FitFile.

Slots

header A list containing details of the file header

messages A list of [FitDataMessages](#)

developer_msg_defs A list of lists containing the definitions for any developer messages included in the file.

FITfileR	<i>FITfileR: A package reading FIT files using native R code.</i>
----------	---

Description

Provides functionality for reading FIT (Flexible and Interoperable Data Transfer) files without any dependence on external software or SDKs.

Author(s)

Maintainer: Mike Smith <grimbough@gmail.com> ([ORCID](#))

See Also

Useful links:

- <https://github.com/grimbough/FITfileR>

 FitMessageHeader-class

The FitMessageHeader class represents the single-byte header that precedes all FIT messages. It forms a part of all FitDefinitionMessage and FitDataMessage instances.

Description

The FitMessageHeader class represents the single-byte header that precedes all FIT messages. It forms a part of all FitDefinitionMessage and FitDataMessage instances.

Slots

is_definition Logical indicating if this is a definition message.

has_developer_data Logical defining whether the message contains developer data.

local_message_number The 'local' message number for this message type.

time_offset Numeric (length 1) giving the time offset for messages with compressed time stamps.

raw_rep Raw (length 1) matching the single byte that defined this message header. Used internally as a quick comparison to see if this is the same header as the previous message to speed up file reading.

FitMessages

S4 classes representing various aspects of FIT messages.

Description

S4 classes representing various aspects of FIT messages.

The FitDefinitionMessage class represents definition messages.

The FitDataMessage class holds data messages.

The FitDataMessageWithDevData class extends FitDataMessage with additional slots to store the definitions of developer data fields that are not defined in the standard FIT file specification.

Slots

global_message_number A integer of length 1.

field_definition A data.frame.

messages A data.frame.

header An object of class FitMessageHeader.

definition An object of class FitDefinitionMessage.

fields A list containing the data encoded in this message.

readFitFile	<i>Read a FIT file</i>
-------------	------------------------

Description

Reads a specified FIT file and returns an object of class FitFile

Usage

```
readFitFile(fileName)
```

Arguments

fileName A character specifying the FIT file to be read.

Value

An object of class [FitFile-class]

Examples

```
garmin_file <- system.file("extdata", "Activities", "garmin-edge530-ride.fit",  
                           package = "FITfileR")  
garmin <- readFitFile(garmin_file)
```

Index

events (FitFile-accessors), 2
events, FitFile-method
 (FitFile-accessors), 2

file_id (FitFile-accessors), 2
file_id, FitFile-method
 (FitFile-accessors), 2

FitDataMessage, 4
FitDataMessage-class (FitMessages), 5
FitDataMessageWithDevData-class
 (FitMessages), 5
FitDefinitionMessage-class
 (FitMessages), 5
FitFile-accessors, 2
FitFile-class, 4
FITfileR, 4
FITfileR-package (FITfileR), 4
FitMessageHeader-class, 5
FitMessages, 5

getMessagesByType (FitFile-accessors), 2
getMessagesByType, FitFile, character-method
 (FitFile-accessors), 2
getMessagesByType, FitFile, integer-method
 (FitFile-accessors), 2

hrv (FitFile-accessors), 2
hrv, FitFile-method (FitFile-accessors),
 2

laps (FitFile-accessors), 2
laps, FitFile-method
 (FitFile-accessors), 2
length, FitFile-method (FitFile-class), 4
listMessageTypes (FitFile-accessors), 2
listMessageTypes, FitFile-method
 (FitFile-accessors), 2

messages, FitFile-method
 (FitFile-accessors), 2
monitoring (FitFile-accessors), 2
monitoring, FitFile-method
 (FitFile-accessors), 2

rbind, 3
readFitFile, 6
records (FitFile-accessors), 2
records, FitFile-method
 (FitFile-accessors), 2