

RProtoBuf Quick Reference Guide

Dirk Edelbuettel^a, Romain François^b, and Murray Stokely^c

^a<http://dirk.edelbuettel.com>; ^b<https://romain.rbind.io/>; ^c<https://stokely.org>

This version was compiled on November 3, 2018

Example proto file.

```
// mark as Protocol Buffers v2 format
syntax = "proto2";

package tutorial;
option java_package = "com.example.tutorial";
option java_outer_classname = "AddressBookProtos";
message Person {
  required string name = 1;
  required int32 id = 2;
  optional string email = 3;
  enum PhoneType {
    MOBILE = 0;
    HOME = 1;
    WORK = 2;
  }
  message PhoneNumber {
    required string number = 1;
    optional PhoneType type = 2 [default = HOME];
  }
  repeated PhoneNumber phone = 4;
  extensions 100 to 199;
}
message AddressBook {
  repeated Person person = 1;
}
service EchoService {
  rpc Echo (Person) returns (Person);
}
```

Read proto description files.

```
readProtoFiles("somefile.proto")
readProtoFiles(dir = somedir)
readProtoFiles(package = AnRPackage)
```

Create a message.

```
message <- new(tutorial.Person, id = 0,
              name = "Romain Francois",
              email = "francoisromain@free.fr")
```

Serialize a message to a file or binary connection.

```
# to a file
tf1 <- tempfile()
message$serialize(tf1)

# to a binary connection
tf2 <- tempfile()
con <- file(tf2, open = "wb")
```

```
message$serialize(con)
close(con)

# retrieve the payload
message$serialize(NULL)
```

```
# [1] 0a 0f 52 6f 6d 61 69 6e 20 46 72 61 6e 63
# [15] 6f 69 73 10 00 1a 16 66 72 61 6e 63 6f 69
# [29] 73 72 6f 6d 61 69 6e 40 66 72 65 65 2e 66
# [43] 72
```

Read a message from a file or binary connection.

```
# from a file
tutorial.Person$read(tf1)
# from a connection
con <- file(tf2, open = "rb")
tutorial.Person$read(con)
close(con)
```

Get/Set fields.

```
email <- message$email
message$id <- 2
message[["name"]] <- "Romain"
id <- message[[2]] # tag number for 'id'
```

Message methods.

| | |
|---------------|--|
| has | Indicates if a message has a given field. |
| clone | Creates a clone of the message |
| isInitialized | Indicates if a message has all its required fields set |
| serialize | serialize a message to a file or a binary connection or retrieve the message payload as a raw vector |
| clear | Clear one or several fields of a message, or the entire message |
| size | The number of elements in a message field |
| bytesize | The number of bytes the message would take once serialized |
| swap | swap elements of a repeated field of a message |
| set | set elements of a repeated field |
| fetch | fetch elements of a repeated field |
| add | add elements to a repeated field |
| str | the R structure of the message |
| as.character | character representation of a message |
| toString | character representation of a message (same as as.character) |
| update | updates several fields of a message at once |
| descriptor | get the descriptor of the message type of this message |

More info.

| | |
|------------------|---|
| Full Vignette | <code>vignette("RProtoBuf-intro")</code> |
| JSS Paper | <code>vignette("RProtoBuf-paper")</code> |
| Protocol Buffers | https://developers.google.com/protocol-buffers/ |
| RProtoBuf | https://github.com/edelbuettel/rprotobuf |