

# Package ‘xlsx’

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**Description**

Provide R functions to read/write/format Excel 2007 and Excel 97/2000/XP/2003 file formats.

**License** GPL-3

**URL** <https://github.com/dragua/rexcel>,  
<http://groups.google.com/group/R-package-xlsx>

**BugReports** <https://github.com/dragua/rexcel/issues>

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xlsx-package

*Read, write, format Excel 2007 and Excel 97/2000/XP/2003 files*

---

## Description

The `xlsx` package gives programatic control of Excel files using R. A high level API allows the user to read a sheet of an xlsx document into a `data.frame` and write a `data.frame` to a file. Lower level functionality permits the direct manipulation of sheets, rows and cells. For example, the user has control to set colors, fonts, data formats, add borders, hide/unhide sheets, add/remove rows, add/remove sheets, etc.

Behind the scenes, the `xlsx` package uses a java library from the Apache project, <http://poi.apache.org/index.html>. This Apache project provides a Java API to Microsoft Documents (Excel, Word, PowerPoint, Outlook, Visio, etc.) By using the `rJava` package that links R and Java, we can piggyback on the excellent work already done by the folks at the Apache project and provide this functionality in R. The `xlsx` package uses only a subset of the Apache POI project, namely the one dealing with Excel files. All the necessary jar files are kept in package `xlsxjars` that is imported by package `xlsx`.

A collection of tests that can be used as examples are located in folder `/tests/`. They are a good source of examples of how to use the package.

Please see <http://code.google.com/p/rexcel/> for a Wiki and the development version. To report a bug, use the Issues page at <https://code.google.com/p/rexcel/issues/list>. Questions should be asked on the dedicated mailing list at <http://groups.google.com/group/R-package-xlsx>.

## Details

Package: xlsx  
Type: Package  
Version: 0.6.1  
Date: 2018-06-07  
License: GPL-3

## Author(s)

Adrian A. Dragulescu, Cole Arendt.

Maintainer: Adrian A. Dragulescu <adrian.dragulescu@gmail.com>

## References

Apache POI project for Microsoft Excel format: <http://poi.apache.org/spreadsheet/index.html>.

The Java Doc detailing the classes: <http://poi.apache.org/apidocs/index.html>. This can be useful if you are looking for something that is not exposed in R as it may be available on the Java side. Inspecting the source code for some the the R functions in this package can show you how to do it (even if you are Java shy.)

## See Also

[Workbook](#) for ways to work with Workbook objects.

## Examples

```
## Not run:

require(xlsx)

# example of reading xlsx sheets
file <- system.file("tests", "test_import.xlsx", package = "xlsx")
res <- read.xlsx(file, 2) # read the second sheet

# example of writing xlsx sheets
file <- paste(tempfile(), "xlsx", sep=".")
write.xlsx(USArrests, file=file)

## End(Not run)
```

---

"+.CellStyle"      *CellStyle construction.*

---

### Description

Create cell styles.

### Usage

```
## S3 method for class 'CellStyle'  
cs1 + object
```

### Arguments

cs1            a [CellStyle](#) object.  
object        an object to add. The object can be another [CellStyle](#), a [DataFormat](#), a [Alignment](#), a [Border](#), a [Fill](#), a [Font](#), or a [CellProtection](#) object.

### Details

The style of the argument object takes precedence over the style of argument cs1.

### Value

A [CellStyle](#) object.

### Author(s)

Adrian Dragulescu

### Examples

```
## Not run:  
cs <- CellStyle(wb) +  
  Font(wb, heightInPoints=20, isBold=TRUE, isItalic=TRUE,  
       name="Courier New", color="orange") +  
  Fill(backgroundColor="lavender", foregroundColor="lavender",  
       pattern="SOLID_FOREGROUND") +  
  Alignment(h="ALIGN_RIGHT")  
  
setCellStyle(cell.1, cellStyle1)  
  
# you need to save the workbook now if you want to see this art  
  
## End(Not run)
```

---

addDataFrame	<i>Add a data.frame to a sheet.</i>
--------------	-------------------------------------

---

### Description

Add a data.frame to a sheet, allowing for different column styles. Useful when constructing the spreadsheet from scratch.

### Usage

```
addDataFrame(x, sheet, col.names=TRUE, row.names=TRUE,  
            startRow=1, startColumn=1, colStyle=NULL, colnamesStyle=NULL,  
            rownamesStyle=NULL, showNA=FALSE, characterNA="", byrow=FALSE)
```

### Arguments

x	a data.frame.
sheet	a <a href="#">Sheet</a> object.
col.names	a logical value indicating if the column names of x are to be written along with x to the file.
row.names	a logical value indicating whether the row names of x are to be written along with x to the file.
startRow	a numeric value for the starting row.
startColumn	a numeric value for the starting column.
colStyle	a list of <a href="#">CellStyle</a> . If the name of the list element is the column number, it will be used to set the style of the column. Columns of type Date and POSIXct are styled automatically even if colStyle=NULL.
colnamesStyle	a <a href="#">CellStyle</a> object to customize the table header.
rownamesStyle	a <a href="#">CellStyle</a> object to customize the row names (if row.names=TRUE).
showNA	a boolean value to control how NA's are displayed on the sheet. If FALSE, NA values will be represented as blank cells.
characterNA	a string value to control how character NA will be shown in the spreadsheet.
byrow	a logical value indicating if the data.frame should be added to the sheet in row wise fashion.

### Details

Starting with version 0.5.0 this function uses the functionality provided by CellBlock which results in a significant improvement in performance compared with a cell by cell application of [setCellValue](#) and with other previous attempts.

It is difficult to treat NA's consistently between R and Excel via Java. Most likely, users of Excel will want to see NA's as blank cells. In R character NA's are simply characters, which for Excel means "NA".

The default formats for Date and DateTime columns can be changed via the two package options `xlsx.date.format` and `xlsx.datetime.format`. They need to be specified in Java date format <http://docs.oracle.com/javase/7/docs/api/java/text/SimpleDateFormat.html>.

### Value

None. The modification to the workbook is done in place.

### Author(s)

Adrian Dragulescu

### Examples

```
wb <- createWorkbook()
sheet <- createSheet(wb, sheetName="addDataFrame1")
data <- data.frame(mon=month.abb[1:10], day=1:10, year=2000:2009,
  date=seq(as.Date("1999-01-01"), by="1 year", length.out=10),
  bool=c(TRUE, FALSE), log=log(1:10),
  rnorm=10000*rnorm(10),
  datetime=seq(as.POSIXct("2011-11-06 00:00:00", tz="GMT"), by="1 hour",
  length.out=10))
cs1 <- CellStyle(wb) + Font(wb, isItalic=TRUE)           # rowcolumns
cs2 <- CellStyle(wb) + Font(wb, color="blue")
cs3 <- CellStyle(wb) + Font(wb, isBold=TRUE) + Border() # header
addDataFrame(data, sheet, startRow=3, startColumn=2, colnamesStyle=cs3,
  rownamesStyle=cs1, colStyle=list(`2`=cs2, `3`=cs2))

# to change the default date format use something like this
# options(xlsx.date.format="dd MMM, yyyy")

# Don't forget to save the workbook ...
# saveWorkbook(wb, file)
```

---

addHyperlink

*Add a hyperlink to a cell.*

---

### Description

Add a hyperlink to a cell to point to an external resource.

## Usage

```
addHyperlink(cell, address, linkType=c("URL", "DOCUMENT",  
  "EMAIL", "FILE"), hyperlinkStyle=NULL)
```

## Arguments

`cell` a [Cell](#) object.

`address` a string pointing to the resource.

`linkType` a the type of the resource.

`hyperlinkStyle` a [CellStyle](#) object. If NULL a default cell style is created, blue underlined font.

## Details

The cell needs to have content before you add a hyperlink to it. The contents of the cells don't need to be the same as the address of the hyperlink. See the examples.

## Value

None. The modification to the cell is done in place.

## Author(s)

Adrian Dragulescu

## Examples

```
wb <- createWorkbook()
sheet1 <- createSheet(wb, "Sheet1")
rows <- createRow(sheet1, 1:10) # 10 rows
cells <- createCell(rows, colIndex=1:8) # 8 columns

cat("Add hyperlinks to a cell")
cell <- cells[[1,1]]
address <- "http://poi.apache.org/"
setCellValue(cell, "click me!")
addHyperlink(cell, address)

# Don't forget to save the workbook ...
```

---

Alignment

*Create an Alignment object.*

---

### Description

Create an Alignment object, useful when working with cell styles.

### Usage

```
Alignment(horizontal=NULL, vertical=NULL, wrapText=FALSE,  
           rotation=0, indent=0)
```

```
is.Alignment(x)
```

### Arguments

horizontal	a character value specifying the horizontal alignment. Valid values come from constant HALIGN_STYLES_.
vertical	a character value specifying the vertical alignment. Valid values come from constant VALIGN_STYLES_.
wrapText	a logical indicating if the text should be wrapped.
rotation	a numerical value indicating the degrees you want to rotate the text in the cell.
indent	a numerical value indicating the number of spaces you want to indent the text in the cell.
x	An Alignment object, as returned by Alignment.

### Value

Alignment returns a list with components from the input argument, and a class attribute "Alignment". Alignment objects are used when constructing cell styles.

is.Alignment returns TRUE if the argument is of class "Alignment" and FALSE otherwise.

### Author(s)

Adrian Dragulescu

### See Also

[CellStyle](#) for using the a Alignment object.

### Examples

```
# you can just use h for horizontal, since R does the matching for you  
a1 <- Alignment(h="ALIGN_CENTER", rotation=90) # centered and rotated!
```



---

Border	<i>Create an Border object.</i>
--------	---------------------------------

---

### Description

Create an Border object, useful when working with cell styles.

### Usage

```
Border(color="black", position="BOTTOM", pen="BORDER_THIN")
```

```
is.Border(x)
```

### Arguments

color	a character vector specifying the font color. Any color names as returned by <a href="#">colors</a> can be used. Or, a hex character, e.g. "#FF0000" for red. For Excel 95 workbooks, only a subset of colors is available, see the constant INDEXED_COLORS_.
position	a character vector specifying the border position. Valid values are "BOTTOM", "LEFT", "TOP", "RIGHT".
pen	a character vector specifying the pen style. Valid values come from constant BORDER_STYLES_.
x	An Border object, as returned by Border.

### Details

The values for the color, position, or pen arguments are replicated to the longest of them.

### Value

Border returns a list with components from the input argument, and a class attribute "Border". Border objects are used when constructing cell styles.

is.Border returns TRUE if the argument is of class "Border" and FALSE otherwise.

### Author(s)

Adrian Dragulescu

### See Also

[CellStyle](#) for using the a Border object.

**Examples**

```
border <- Border(color="red", position=c("TOP", "BOTTOM"),
  pen=c("BORDER_THIN", "BORDER_THICK"))
```

---

 Cell

*Functions to manipulate cells.*


---

**Description**

Functions to manipulate cells.

**Usage**

```
createCell(row, colIndex=1:5)
getCells(row, colIndex=NULL, simplify=TRUE)
setCellValue(cell, value, richTextString=FALSE, showNA=TRUE)
getCellValue(cell, keepFormulas=FALSE, encoding="unknown")
```

**Arguments**

row	a list of row objects. See Row.
colIndex	a numeric vector specifying the index of columns.
simplify	a logical value. If TRUE, the result will be unlisted.
value	an R variable of length one.
richTextString	a logical value indicating if the value should be inserted into the Excel cell as rich text.
showNA	a logical value. If TRUE the cell will contain the "#N/A" value, if FALSE they will be skipped. The default value was chosen to remain compatible with previous versions of the function.
keepFormulas	a logical value. If TRUE the formulas will be returned as characters instead of being explicitly evaluated.
encoding	A character value to set the encoding, for example "UTF-8".
cell	a Cell object.

**Details**

setCellValue writes the content of an R variable into the cell. Date and POSIXct objects are passed in as numerical values. To format them as dates in Excel see [CellStyle](#).

These functions are not vectorized and should be used only for small spreadsheets. Use CellBlock functionality to efficiently read/write parts of a spreadsheet.

**Value**

`createCell` creates a matrix of lists, each element of the list being a java object reference to an object of type `Cell` representing an empty cell. The dimnames of this matrix are taken from the names of the rows and the `colIndex` variable.

`getCells` returns a list of java object references for all the cells in the row if `colIndex` is `NULL`. If you want to extract only a specific columns, set `colIndex` to the column indices you are interested.

`getCellValue` returns the value in the cell as an R object. Type conversions are done behind the scene. This function is not vectorized.

**Author(s)**

Adrian Dragulescu

**See Also**

To format cells, see [CellStyle](#). For rows see [Row](#), for sheets see [Sheet](#).

**Examples**

```
file <- system.file("tests", "test_import.xlsx", package = "xlsx")

wb <- loadWorkbook(file)
sheets <- getSheets(wb)

sheet <- sheets[['mixedTypes']] # get second sheet
rows <- getRows(sheet) # get all the rows

cells <- getCells(rows) # returns all non empty cells

values <- lapply(cells, getCellValue) # extract the values

# write the months of the year in the first column of the spreadsheet
ind <- paste(2:13, ".2", sep="")
mapply(setCellValue, cells[ind], month.name)

#####
# make a new workbook with one sheet and 5x5 cells
wb <- createWorkbook()
sheet <- createSheet(wb, "Sheet1")
rows <- createRow(sheet, rowIndex=1:5)
cells <- createCell(rows, colIndex=1:5)

# populate the first column with Dates
days <- seq(as.Date("2013-01-01"), by="1 day", length.out=5)
mapply(setCellValue, cells[,1], days)
```

---

CellBlock

*Create and style a block of cells.*

---

### Description

Functions to create and style (not read) a block of cells. Use it to set/update cell values and cell styles in an efficient manner.

### Usage

```
## Default S3 method:
CellBlock(sheet, startRow, startColumn, noRows, noColumns,
  create=TRUE)

is.CellBlock( cellBlock )

CB.setColData(cellBlock, x, colIndex, rowOffset=0, showNA=TRUE,
  colStyle=NULL)

CB.setRowData(cellBlock, x, rowIndex, colOffset=0, showNA=TRUE,
  rowStyle=NULL)

CB.setMatrixData(cellBlock, x, startRow, startColumn,
  showNA=TRUE, cellStyle=NULL)

CB.setFill( cellBlock, fill, rowIndex, colIndex)

CB.setFont( cellBlock, font, rowIndex, colIndex )

CB.setBorder( cellBlock, border, rowIndex, colIndex)
```

### Arguments

sheet	a <a href="#">Sheet</a> object.
startRow	a numeric value for the starting row.
startColumn	a numeric value for the starting column.
rowOffset	a numeric value for the starting row.
colOffset	a numeric value for the starting column.
showNA	a logical value. If set to FALSE, NA values will be left as empty cells.
noRows	a numeric value to specify the number of rows for the block.
noColumns	a numeric value to specify the number of columns for the block.

create	If TRUE cells will be created if they don't exist, if FALSE only existing cells will be used. If cells don't exist (on a new sheet for example), you have to use TRUE. On an existing sheet with data, use TRUE if you want to blank out an existing cell block. Use FALSE if you want to keep the styling of existing cells, but just modify the value of the cell.
cellBlock	a cell block object as returned by <a href="#">CellBlock</a> .
rowStyle	a <a href="#">CellStyle</a> object used to style the row.
colStyle	a <a href="#">CellStyle</a> object used to style the column.
cellStyle	a <a href="#">CellStyle</a> object.
border	a <a href="#">Border</a> object, as returned by <a href="#">Border</a> .
fill	a <a href="#">Fill</a> object, as returned by <a href="#">Fill</a> .
font	a <a href="#">Font</a> object, as returned by <a href="#">Font</a> .
colIndex	a numeric vector specifying the columns you want relative to the <code>startColumn</code> .
rowIndex	a numeric vector specifying the rows you want relative to the <code>startRow</code> .
x	the data you want to add to the cell block, a vector or a matrix depending on the function.

### Details

Introduced in version 0.5.0 of the package, these functions speed up the creation and styling of cells that are part of a "cell block" (a rectangular shaped group of cells). Use the functions above if you want to create efficiently a complex sheet with many styles. A simple by-column styling can be done by directly using [addDataFrame](#). With the functionality provided here you can efficiently style individual cells, see the example.

It is difficult to treat NA's consistently between R and Excel via Java. Most likely, users of Excel will want to see NA's as blank cells. In R character NA's are simply characters, which for Excel means "NA".

If you try to set more data to the block than you have cells in the block, only the existing cells will be set.

Note that when modifying the style of a group of cells, the changes are made to the pairs defined by (`rowIndex`, `colIndex`). This implies that the length of `rowIndex` and `colIndex` are the same value. An exception is made when either `rowIndex` or `colIndex` have length one, when they will be expanded internally to match the length of the other index.

Function `CB.setMatrixData` works for numeric or character matrices. If the matrix `x` is not of numeric type it will be converted to a character matrix.

### Value

For `CellBlock` a cell block object.

For `CB.setColData`, `CB.setRowData`, `CB.setMatrixData`, `CB.setFill`, `CB.setFont`, `CB.setBorder` nothing as the modification to the workbook is done in place.

### Author(s)

Adrian Dragulescu

**Examples**

```
## Not run:
wb <- createWorkbook()
sheet <- createSheet(wb, sheetName="CellBlock")

cb <- CellBlock(sheet, 7, 3, 1000, 60)
CB.setColData(cb, 1:100, 1) # set a column
CB.setRowData(cb, 1:50, 1) # set a row

# add a matrix, and style it
cs <- CellStyle(wb) + DataFormat("#,##0.00")
x <- matrix(rnorm(900*45), nrow=900)
CB.setMatrixData(cb, x, 10, 4, cellStyle=cs)

# highlight the negative numbers in red
fill <- Fill(foregroundColor = "red", backgroundColor="red")
ind <- which(x < 0, arr.ind=TRUE)
CB.setFill(cb, fill, ind[,1]+9, ind[,2]+3) # note the indices offset

# set the border on the top row of the Cell Block
border <- Border(color="blue", position=c("TOP", "BOTTOM"),
  pen=c("BORDER_THIN", "BORDER_THICK"))
CB.setBorder(cb, border, 1:1000, 1)

# Don't forget to save the workbook ...
# saveWorkbook(wb, file)

## End(Not run)
```

---

CellProtection

*Create a CellProtection object.*

---

**Description**

Create a CellProtection object used for cell styles.

**Usage**

```
CellProtection(locked=TRUE, hidden=FALSE)
```

```
is.CellProtection(x)
```

**Arguments**

locked	a logical indicating the cell is locked.
hidden	a logical indicating the cell is hidden.
x	A CellProtection object, as returned by CellProtection.

**Value**

CellProtection returns a list with components from the input argument, and a class attribute "CellProtection". CellProtection objects are used when constructing cell styles.

is.CellProtection returns TRUE if the argument is of class "CellProtection" and FALSE otherwise.

**Author(s)**

Adrian Dragulescu

**See Also**

[CellStyle](#) for using the a CellProtection object.

**Examples**

```
font <- CellProtection(locked=TRUE)
```

---

CellStyle                      *Functions to manipulate cells.*

---

**Description**

Create and set cell styles.

**Usage**

```
## Default S3 method:  
CellStyle(wb, dataFormat=NULL, alignment=NULL,  
          border=NULL, fill=NULL, font=NULL, cellProtection=NULL)  
  
setCellStyle(cell, cellStyle)  
  
getCellStyle(cell)  
  
is.CellStyle(x)
```

**Arguments**

wb	a workbook object as returned by <a href="#">createWorkbook</a> or <a href="#">loadWorkbook</a> .
dataFormat	a <a href="#">DataFormat</a> object.
alignment	a <a href="#">Alignment</a> object.
border	a <a href="#">Border</a> object.
fill	a <a href="#">Fill</a> object.

font            a [Font](#) object.  
 cellProtection a [CellProtection](#) object.  
 x                a CellStyle object.  
 cell            a [Cell](#) object.  
 cellStyle      a CellStyle object.  
 ...             arguments to CellStyle.default.

### Details

setCellStyle sets the CellStyle to one Cell object.

You need to have a Workbook object to attach a CellStyle object to it.

Since OS X 10.5 Apple dropped support for AWT on the main thread, so essentially you cannot use any graphics classes in R on OS X 10.5 since R is single-threaded. (verbatim from Simon Urbanek). This implies that setting colors on Mac will not work as is! A set of about 50 basic colors are still available please see the javadocs.

For Excel 95/2000/XP/2003 the choice of colors is limited. See INDEXED\_COLORS\_ for the list of available colors.

Unspecified values for arguments are taken from the system locale.

### Value

createCellStyle creates a CellStyle object.

is.CellStyle returns TRUE if the argument is of class "CellStyle" and FALSE otherwise.

### Author(s)

Adrian Dragulescu

### Examples

```
## Not run:
wb <- createWorkbook()
sheet <- createSheet(wb, "Sheet1")

rows <- createRow(sheet, rowIndex=1)

cell.1 <- createCell(rows, colIndex=1)[[1,1]]
setCellValue(cell.1, "Hello R!")

cs <- CellStyle(wb) +
  Font(wb, heightInPoints=20, isBold=TRUE, isItalic=TRUE,
       name="Courier New", color="orange") +
  Fill(background="lavender", foreground="lavender",
       pattern="SOLID_FOREGROUND") +
  Alignment(h="ALIGN_RIGHT")

setCellStyle(cell.1, cellStyle1)
```



```
# you need to save the workbook now if you want to see this art
## End(Not run)
```

---

Comment

*Functions to manipulate cell comments.*

---

## Description

Functions to manipulate cell comments.

## Usage

```
createCellComment(cell, string="", author=NULL, visible=TRUE)
```

```
getCellComment(cell)
```

```
removeCellComment(cell)
```

## Arguments

cell	a Cell object.
string	a string for the comment.
author	a string with the author's name
visible	a logical value. If TRUE the comment will be visible.

## Details

These functions are not vectorized.

## Value

`createCellComment` creates a `Comment` object.

`getCellComment` returns a the `Comment` object if it exists.

`removeCellComment` removes a comment from the given cell.

## Author(s)

Adrian Dragulescu

## See Also

For cells, see [Cell](#). To format cells, see [CellStyle](#).

## Examples

```

wb <- createWorkbook()
sheet1 <- createSheet(wb, "Sheet1")
rows <- createRow(sheet1, rowIndex=1:10) # 10 rows
cells <- createCell(rows, colIndex=1:8) # 8 columns

cell1 <- cells[[1,1]]
setCellValue(cell1, 1) # add value 1 to cell A1

# create a cell comment
createCellComment(cell1, "Cogito", author="Descartes")

# extract the comments
comment <- getCellComment(cell1)
stopifnot(comment$getAuthor()=="Descartes")
stopifnot(comment$getString()$toString()=="Cogito")

# don't forget to save your workbook!

```

---

DataFormat

*Create an DataFormat object.*

---

## Description

Create an DataFormat object, useful when working with cell styles.

## Usage

```

DataFormat(x)

is.DataFormat(df)

```

## Arguments

x	a character value specifying the data format.
df	An DataFormat object, as returned by DataFormat.

## Details

Specifying the dataFormat argument allows you to format the cell. For example, "#,##0.00" corresponds to using a comma separator for powers of 1000 with two decimal places, "m/d/yyyy" can be used to format dates and is the equivalent of R's MM/DD/YYYY format. To format datetimes use "m/d/yyyy h:mm:ss;@". To show negative values in red within parantheses with two decimals and commas after power of 1000 use "#,##0.00\_);[Red](#,##0.00)". I am not aware of an official

way to discover these strings. I find them out by recording a macro that formats a specific cell and then checking out the resulting VBA code. From there you can read the `dataFormat` code.

### Value

`DataFormat` returns a list one component `dataFormat`, and a class attribute "DataFormat". `DataFormat` objects are used when constructing cell styles.

`is.DataFormat` returns TRUE if the argument is of class "DataFormat" and FALSE otherwise.

### Author(s)

Adrian Dragulescu

### See Also

[CellStyle](#) for using the a `DataFormat` object.

### Examples

```
df <- DataFormat("#,##0.00")
```

---

Fill

*Create an Fill object.*

---

### Description

Create an Fill object, useful when working with cell styles.

### Usage

```
Fill(foregroundColor="lightblue", backgroundColor="lightblue",  
     pattern="SOLID_FOREGROUND")
```

```
is.Fill(x)
```

### Arguments

`foregroundColor`

a character vector specifying the foreground color. Any color names as returned by [colors](#) can be used. Or, a hex character, e.g. "#FF0000" for red. For Excel 95 workbooks, only a subset of colors is available, see the constant `INDEXED_COLORS_`.

`backgroundColor`

a character vector specifying the foreground color. Any color names as returned by [colors](#) can be used. Or, a hex character, e.g. "#FF0000" for red. For Excel 95 workbooks, only a subset of colors is available, see the constant `INDEXED_COLORS_`.

pattern	a character vector specifying the fill pattern style. Valid values come from constant FILL_STYLES_.
x	a Fill object, as returned by Fill.

**Value**

Fill returns a list with components from the input argument, and a class attribute "Fill". Fill objects are used when constructing cell styles.

is.Fill returns TRUE if the argument is of class "Fill" and FALSE otherwise.

**Author(s)**

Adrian Dragulescu

**See Also**

[CellStyle](#) for using the a Fill object.

**Examples**

```
fill <- Fill()
```

---

Font

*Create a Font object.*

---

**Description**

Create a Font object.

**Usage**

```
Font(wb, color=NULL, heightInPoints=NULL, name=NULL,
      isItalic=FALSE, isStrikeout=FALSE, isBold=FALSE, underline=NULL,
      boldweight=NULL)
```

```
is.Font(x)
```

**Arguments**

wb	a workbook object as returned by <a href="#">createWorkbook</a> or <a href="#">loadWorkbook</a> .
color	a character specifying the font color. Any color names as returned by <a href="#">colors</a> can be used. Or, a hex character, e.g. "#FF0000" for red. For Excel 95 workbooks, only a subset of colors is available, see the constant INDEXED_COLORS_.
heightInPoints	a numeric value specifying the font height. Usual values are 10, 12, 14, etc.

name	a character value for the font to use. All values that you see in Excel should be available, e.g. "Courier New".
isItalic	a logical indicating the font should be italic.
isStrikeout	a logical indicating the font should be stiked out.
isBold	a logical indicating the font should be bold.
underline	a numeric value specifying the thickness of the underline. Allowed values are 0, 1, 2.
boldweight	a numeric value indicating bold weight. Normal is 400, regular bold is 700.
x	A Font object, as returned by Font.
...	arguments get passed to Font.

### Details

Default values for NULL parameters are taken from Excel. So the default font color is black, the default font name is "Calibri", and the font height in points is 11.

For Excel 95/2000/XP/2003, it is impossible to set the font to bold. This limitation may be removed in the future.

NOTE: You need to have a Workbook object to attach a Font object to it.

### Value

Font returns a list with a java reference to a Font object, and a class attribute "Font".

is.Font returns TRUE if the argument is of class "Font" and FALSE otherwise.

### Author(s)

Adrian Dragulescu

### See Also

[CellStyle](#) for using the a Font object.

### Examples

```
## Not run:  
font <- Font(wb, color="blue", isItalic=TRUE)  
  
## End(Not run)
```

**Description**

Functions to force formula calculation or refresh of pivot tables when the Excel file is opened.

**Usage**

```
forcePivotTableRefresh(file, output=NULL, verbose=FALSE)
```

```
forceFormulaRefresh(file, output=NULL, verbose=FALSE)
```

**Arguments**

file	the path of the source file where formulae/pivot table needs to be refreshed
output	the path of the output file. If it is NULL then the source file will be overwritten.
verbose	a boolean. Set to TRUE if you want details.

**Details**

forcePivotTableRefresh forces pivot tables to be refreshed when the Excel file is opened.

forceFormulaRefresh forces formulae to be recalculated when the Excel file is opened.

**Value**

forcePivotTableRefresh does not return any results

forceFormulaRefresh does not return any results

**Author(s)**

Tom Kwong

**Examples**

```
## Not run:  
# Patch a file where its pivot tables are not recalculated when the file is opened  
forcePivotTableRefresh("/tmp/file.xlsx")  
forcePivotTableRefresh("/tmp/file.xlsx", "/tmp/fixe_file.xlsx")  
  
# Patch a file where its formulae are not recalculated when the file is opened  
forceFormulaRefresh("/tmp/file.xlsx")  
forceFormulaRefresh("/tmp/file.xlsx", "/tmp/fixe_file.xlsx")  
  
## End(Not run)
```

---

NamedRanges

*Functions to manipulate named ranges.*

---

### **Description**

Functions to manipulate (contiguous) named ranges.

### **Usage**

```
getRanges(wb)
readRange(range, sheet, colClasses="character")
createRange(rangeName, firstCell, lastCell)
```

### **Arguments**

<code>wb</code>	a workbook object as returned by <code>createWorksheet</code> or <code>loadWorksheet</code> .
<code>range</code>	a range object as returned by <code>getRanges</code> .
<code>sheet</code>	a sheet object as returned by <code>getSheets</code> .
<code>rangeName</code>	a character specifying the name of the name to create.
<code>colClasses</code>	the type of the columns supported. Only numeric and character are supported. See <a href="#">read.xlsx2</a> for more details.
<code>firstCell</code>	a cell object corresponding to the top left cell in the range.
<code>lastCell</code>	a cell object corresponding to the bottom right cell in the range.

### **Details**

These functions are provided for convenience only. Use directly the Java API to access additional functionality.

### **Value**

`getRanges` returns the existing ranges as a list.  
`readRange` reads the range into a `data.frame`.  
`createRange` returns the created range object.

### **Author(s)**

Adrian Dragulescu

## Examples

```
## Not run:
file <- system.file("tests", "test_import.xlsx", package = "xlsx")
wb <- loadWorkbook(file)
sheet <- getSheets(wb)[["deletedFields"]]
ranges <- getRanges(wb)

ranges[[1]]$getNameName() # get its name

# see all the available java methods that you can call
.jmethods(ranges[[1]])

# create a new named range
firstCell <- sheet$getRow(14L)$getCell(4L)
lastCell <- sheet$getRow(20L)$getCell(7L)
rangeName <- "Test2"
createRange(rangeName, firstCell, lastCell)

## End(Not run)
```

---

OtherEffects

*Functions to do various spreadsheets effects.*

---

## Description

Functions to do various spreadsheets effects.

## Usage

```
addAutoFilter(sheet, cellRange)

addMergedRegion(sheet, startRow, endRow, startColumn, endColumn)

removeMergedRegion(sheet, ind)

autoSizeColumn(sheet, colIndex)

createFreezePane(sheet, rowSplit, colSplit, startRow=NULL,
  startColumn=NULL)

createSplitPane(sheet, xSplitPos=2000, ySplitPos=2000,
  startRow=1, startColumn=1, position="PANE_LOWER_LEFT")

setColumnWidth(sheet, colIndex, colWidth)

setPrintArea(wb, sheetIndex, startColumn, endColumn, startRow,
  endRow)
```



```
setZoom(sheet, numerator=100, denominator=100)
```

### Arguments

cellRange	a string specifying the cell range. For example a standard area ref (e.g. "B1:D8"). May be a single cell ref (e.g. "B5") in which case the result is a 1 x 1 cell range. May also be a whole row range (e.g. "3:5"), or a whole column range (e.g. "C:F")
colIndex	a numeric vector specifying the columns you want to auto size.
colSplit	a numeric value for the column to split.
colWidth	a numeric value to specify the width of the column. The units are in 1/256ths of a character width.
denominator	a numeric value representing the denominator of the zoom ratio.
endColumn	a numeric value for the ending column.
endRow	a numeric value for the ending row.
ind	a numeric value indicating which merged region you want to remove.
numerator	a numeric value representing the numerator of the zoom ratio.
position	a character. Valid value are "PANE_LOWER_LEFT", "PANE_LOWER_RIGHT", "PANE_UPPER_LEFT", "PANE_UPPER_RIGHT".
rowSplit	a numeric value for the row to split.
sheet	a <a href="#">Worksheet</a> object.
sheetIndex	a numeric value for the worksheet index.
startColumn	a numeric value for the starting column.
startRow	a numeric value for the starting row.
xSplitPos	a numeric value for the horizontal position of split in 1/20 of a point.
ySplitPos	a numeric value for the vertical position of split in 1/20 of a point.
wb	a <a href="#">Workbook</a> object.

### Details

Function `autoSizeColumn` expands the column width to match the column contents thus removing the ##### that you get when cell contents are larger than cell width.

You may need other functionality that is not exposed. Take a look at the java docs and the source code of these functions for how you can implement it in R.

### Value

`addMergedRegion` returns a numeric value to label the merged region. You should use this value as the `ind` if you want to `removeMergedRegion`.

### Author(s)

Adrian Dragulescu

**Examples**

```

wb <- createWorkbook()
sheet1 <- createSheet(wb, "Sheet1")
rows <- createRow(sheet1, 1:10)           # 10 rows
cells <- createCell(rows, colIndex=1:8)   # 8 columns

cat("Merge cells \n")
setCellValue(cells[[1,1]], "A title that spans 3 columns")
addMergedRegion(sheet1, 1, 1, 1, 3)

cat("Set zoom 2:1 \n")
setZoom(sheet1, 200, 100)

sheet2 <- createSheet(wb, "Sheet2")
rows <- createRow(sheet2, 1:10)           # 10 rows
cells <- createCell(rows, colIndex=1:8)   # 8 columns
#createFreezePane(sheet2, 1, 1, 1, 1)
createFreezePane(sheet2, 5, 5, 8, 8)

sheet3 <- createSheet(wb, "Sheet3")
rows <- createRow(sheet3, 1:10)           # 10 rows
cells <- createCell(rows, colIndex=1:8)   # 8 columns
createSplitPane(sheet3, 2000, 2000, 1, 1, "PANE_LOWER_LEFT")

# set the column width of first column to 25 characters wide
setColumnWidth(sheet1, 1, 25)

# add a filter on the 3rd row, columns C:E
addAutoFilter(sheet1, "C3:E3")

# Don't forget to save the workbook ...

```

---

Picture

*Functions to manipulate images in a spreadsheet.*


---

**Description**

Functions to manipulate images in a spreadsheet.

**Usage**

```
addPicture(file, sheet, scale=1, startRow=1, startColumn=1)
```

**Arguments**

file	the absolute path to the image file.
sheet	a worksheet object as returned by <code>createSheet</code> or by subsetting <code>getSheets</code> . The picture will be added on this sheet at position <code>startRow</code> , <code>startColumn</code> .
scale	a numeric specifying the scale factor for the image.
startRow	a numeric specifying the row of the upper left corner of the image.
startColumn	a numeric specifying the column of the upper left corner of the image.

**Details**

For now, the following image types are supported: dib, emf, jpeg, pict, png, wmf. Please note, that scaling works correctly only for workbooks with the default font size (Calibri 11pt for .xlsx). If the default font is changed the resized image can be stretched vertically or horizontally.

Don't know how to remove an existing image yet.

**Value**

`addPicture` a java object references pointing to the picture.

**Author(s)**

Adrian Dragulescu

**Examples**

```
file <- system.file("tests", "log_plot.jpeg", package = "xlsx")

wb <- createWorkbook()
sheet <- createSheet(wb, "Sheet1")

addPicture(file, sheet)

# don't forget to save the workbook!
```

---

POI\_constants

*Constants used in the project.*

---

**Description**

Document some Apache POI constants used in the project.

**Usage**

HALIGN\_STYLES\_  
VALIGN\_STYLES\_  
BORDER\_STYLES\_  
FILL\_STYLES\_  
CELL\_STYLES\_  
INDEXED\_COLORS\_

**Value**

A named vector.

**Author(s)**

Adrian Dragulescu

**See Also**

[CellStyle](#) for using the POI\_constants.

---

PrintSetup

*Function to manipulate print setup.*

---

**Description**

Function to manipulate print setup.

**Usage**

```
printSetup(sheet, fitHeight=NULL,  
           fitWidth=NULL, copies=NULL, draft=NULL, footerMargin=NULL,  
           headerMargin=NULL, landscape=FALSE, pageStart=NULL, paperSize=NULL,  
           noColor=NULL)
```

**Arguments**

sheet	a worksheet object <a href="#">Worksheet</a> .
fitHeight	numeric value to set the number of pages high to fit the sheet in.
fitWidth	numeric value to set the number of pages wide to fit the sheet in.
copies	numeric value to set the number of copies.
draft	logical indicating if it's a draft or not.
footerMargin	numeric value to set the footer margin.
headerMargin	numeric value to set the header margin.
landscape	logical value to specify the paper orientation.
pageStart	numeric value from where to start the page numbering.
paperSize	character to set the paper size. Valid values are "A4_PAPERSIZE", "A5_PAPERSIZE", "ENVELOPE_10_PAPERSIZE", "ENVELOPE_CS_PAPERSIZE", "ENVELOPE_DL_PAPERSIZE", "ENVELOPE_MONARCH_PAPERSIZE", "EXECUTIVE_PAPERSIZE", "LEGAL_PAPERSIZE", "LETTER_PAPERSIZE".
noColor	logical value to indicate if the prints should be color or not.

**Details**

Other settings are available but not exposed. Please see the java docs.

**Value**

A reference to a java PrintSetup object.

**Author(s)**

Adrian Dragulescu

**Examples**

```
wb <- createWorkbook()
sheet <- createSheet(wb, "Sheet1")
ps <- printSetup(sheet, landscape=TRUE, copies=3)
```

---

read.xlsx	<i>Read the contents of a worksheet into an R data.frame</i>
-----------	--

---

### Description

Read the contents of a worksheet into an R data.frame.

### Usage

```
read.xlsx(file, sheetIndex, sheetName=NULL, rowIndex=NULL,
  startRow=NULL, endRow=NULL, colIndex=NULL,
  as.data.frame=TRUE, header=TRUE, colClasses=NA,
  keepFormulas=FALSE, encoding="unknown", password=NULL, ...)
```

```
read.xlsx2(file, sheetIndex, sheetName=NULL, startRow=1,
  colIndex=NULL, endRow=NULL, as.data.frame=TRUE, header=TRUE,
  colClasses="character", password=NULL, ...)
```

### Arguments

file	the path to the file to read.
sheetIndex	a number representing the sheet index in the workbook.
sheetName	a character string with the sheet name.
rowIndex	a numeric vector indicating the rows you want to extract. If NULL, all rows found will be extracted, unless startRow or endRow are specified.
colIndex	a numeric vector indicating the cols you want to extract. If NULL, all columns found will be extracted.
as.data.frame	a logical value indicating if the result should be coerced into a data.frame. If FALSE, the result is a list with one element for each column.
header	a logical value indicating whether the first row corresponding to the first element of the rowIndex vector contains the names of the variables.
colClasses	For read.xlsx a character vector that represent the class of each column. Recycled as necessary, or if the character vector is named, unspecified values are taken to be NA. For read.xlsx2 see <a href="#">readColumns</a> .
keepFormulas	a logical value indicating if Excel formulas should be shown as text in R and not evaluated before bringing them in.
encoding	encoding to be assumed for input strings. See <a href="#">read.table</a> .
startRow	a number specifying the index of starting row. For read.xlsx this argument is active only if rowIndex is NULL.
endRow	a number specifying the index of the last row to pull. If NULL, read all the rows in the sheet. For read.xlsx this argument is active only if rowIndex is NULL.
password	a String with the password.
...	other arguments to data.frame, for example stringsAsFactors

## Details

The `read.xlsx` function provides a high level API for reading data from an Excel worksheet. It calls several low level functions in the process. Its goal is to provide the convenience of [read.table](#) by borrowing from its signature.

The function pulls the value of each non empty cell in the worksheet into a vector of type `list` by preserving the data type. If `as.data.frame=TRUE`, this vector of lists is then formatted into a rectangular shape. Special care is needed for worksheets with ragged data.

An attempt is made to guess the class type of the variable corresponding to each column in the worksheet from the type of the first non empty cell in that column. If you need to impose a specific class type on a variable, use the `colClasses` argument. It is recommended to specify the column classes and not rely on R to guess them, unless in very simple cases.

Excel internally stores dates and datetimes as numeric values, and does not keep track of time zones and DST. When a datetime column is brought into R, it is converted to `POSIXct` class with a `GMT` timezone. Occasional rounding errors may appear and the R and Excel string representation may differ by one second. For `read.xlsx2` bring in a datetime column as a numeric one and then convert to class `POSIXct` or `Date`. Also rounding the `POSIXct` column in R usually does the trick too.

The `read.xlsx2` function does more work in Java so it achieves better performance (an order of magnitude faster on sheets with 100,000 cells or more). The result of `read.xlsx2` will in general be different from `read.xlsx`, because internally `read.xlsx2` uses `readColumns` which is tailored for tabular data.

Reading of password protected workbooks is supported for Excel 2007 OOXML format only.

## Value

A `data.frame` or a list, depending on the `as.data.frame` argument. If some of the columns are read as `NA`'s it's an indication that the `colClasses` argument has not been set properly.

If the sheet is empty, return `NULL`. If the sheet does not exist, return an error.

## Author(s)

Adrian Dragulescu

## See Also

[write.xlsx](#) for writing `xlsx` documents. See also [readColumns](#) for reading only a set of columns into R.

## Examples

```
## Not run:
```

```
file <- system.file("tests", "test_import.xlsx", package = "xlsx")
res <- read.xlsx(file, 1) # read first sheet
head(res)
#      NA. Population Income Illiteracy Life.Exp Murder HS.Grad Frost Area
# 1 Alabama      3615   3624         2.1   69.05   15.1   41.3    20 50708
# 2  Alaska       365    6315         1.5   69.31   11.3   66.7   152 566432
```

```
# 3  Arizona      2212  4530      1.8   70.55   7.8   58.1   15 113417
# 4  Arkansas     2110  3378      1.9   70.66  10.1   39.9   65  51945
# 5  California   21198 5114      1.1   71.71  10.3   62.6   20 156361
# 6  Colorado     2541  4884      0.7   72.06   6.8   63.9  166 103766
# >
```

```
# To convert an Excel datetime colum to POSIXct, do something like:
# as.POSIXct((x-25569)*86400, tz="GMT", origin="1970-01-01")
# For Dates, use a conversion like:
# as.Date(x-25569, origin="1970-01-01")
```

```
res2 <- read.xlsx2(file, 1)
```

```
## End(Not run)
```

---

readColumns

*Read a contiguous set of columns from sheet into an R data.frame*

---

### Description

Read a contiguous set of columns from sheet into an R data.frame. Uses the RInterface for speed.

### Usage

```
readColumns(sheet, startColumn, endColumn, startRow,
  endRow=NULL, as.data.frame=TRUE, header=TRUE, colClasses=NA,
  ...)
```

### Arguments

sheet	a <a href="#">Worksheet</a> object.
startColumn	a numeric value for the starting column.
endColumn	a numeric value for the ending column.
startRow	a numeric value for the starting row.
endRow	a numeric value for the ending row. If NULL it reads all the rows in the sheet. If you request more than the existing rows in the sheet, the result will be truncated by the actual row number.
as.data.frame	a logical value indicating if the result should be coerced into a data.frame. If FALSE, the result is a list with one element for each column.
header	a logical value indicating whether the first row corresponding to the first element of the rowIndex vector contains the names of the variables.
colClasses	a character vector that represents the class of each column. Recycled as necessary, or if NA an attempt is made to guess the type of each column by reading the first row of data. Only numeric, character, Date, POSIXct, column types are accepted. Anything else will be converted to a character type. If the length is less than the number of columns requested, replicate it.



... other arguments to `data.frame`, for example `stringsAsFactors`

### Details

Use the `readColumns` function when you want to read a rectangular block of data from an Excel worksheet. If you request columns which are blank, these will be read in as empty character "" columns. Internally, the loop over columns is done in R, the loop over rows is done in Java, so this function achieves good performance when number of rows » number of columns.

Excel internally stores dates and datetimes as numeric values, and does not keep track of time zones and DST. When a numeric column is formatted as a datetime, it will be converted into `POSIXct` class with a *GMT* timezone. If you need a `Date` column, you need to specify explicitly using `colClasses` argument.

For a numeric column Excel's errors and blank cells will be returned as `NaN` values. Excel's `#N/A` will be returned as `NA`. Formulas will be evaluated. For a character column, blank cells will be returned as "".

### Value

A `data.frame` or a list, depending on the `as.data.frame` argument.

### Author(s)

Adrian Dragulescu

### See Also

[read.xlsx2](#) for reading entire sheets. See also [addDataFrame](#) for writing a `data.frame` to a sheet.

### Examples

```
## Not run:

file <- system.file("tests", "test_import.xlsx", package = "xlsx")

wb <- loadWorkbook(file)
sheets <- getSheets(wb)

sheet <- sheets[["all"]]
res <- readColumns(sheet, startColumn=3, endColumn=10, startRow=3,
  endRow=7)

sheet <- sheets[["NAs"]]
res <- readColumns(sheet, 1, 6, 1, colClasses=c("Date", "character",
  "integer", rep("numeric", 2), "POSIXct"))

## End(Not run)
```

---

readRows	<i>Read a contiguous set of rows into an R matrix</i>
----------	---

---

**Description**

Read a contiguous set of rows into an R character matrix. Uses the RInterface for speed.

**Usage**

```
readRows(sheet, startRow, endRow, startColumn,  
         endColumn=NULL)
```

**Arguments**

sheet	a <a href="#">Worksheet</a> object.
startRow	a numeric value for the starting row.
endRow	a numeric value for the ending row. If NULL it reads all the rows in the sheet.
startColumn	a numeric value for the starting column.
endColumn	a numeric value for the ending column. Empty cells will be returned as "".

**Details**

Use the readRows function when you want to read a row or a block block of data from an Excel worksheet. Internally, the loop over rows is done in R, and the loop over columns is done in Java, so this function achieves good performance when number of rows  $\ll$  number of columns.

In general, you should prefer the function [readColumns](#) over this one.

**Value**

A character matrix.

**Author(s)**

Adrian Dragulescu

**See Also**

[read.xlsx2](#) for reading entire sheets. See also [addDataFrame](#) for writing a data.frame to a sheet.

## Examples

```
## Not run:

file <- system.file("tests", "test_import.xlsx", package = "xlsx")

wb    <- loadWorkbook(file)
sheets <- getSheets(wb)

sheet <- sheets[["all"]]
res <- readRows(sheet, startRow=3, endRow=7, startColumn=3, endColumn=10)

## End(Not run)
```

---

Row

*Functions to manipulate rows of a worksheet.*

---

## Description

Functions to manipulate rows of a worksheet.

## Usage

```
createRow(sheet, rowIndex=1:5)

getRows(sheet, rowIndex=NULL)

removeRow(sheet, rows=NULL)

setRowHeight(rows, inPoints, multiplier=NULL)
```

## Arguments

sheet	a worksheet object as returned by createSheet or by subsetting getSheets.
rowIndex	a numeric vector specifying the index of rows to create. For getRows, a NULL value will return all non empty rows.
rows	a list of Row objects.
inPoints	a numeric value to specify the height of the row in points.
multiplier	a numeric value to specify the multiple of default row height in points. If this value is set, it takes precedence over the inPoints argument.

**Details**

`removeRow` is just a convenience wrapper to remove the rows from the sheet (before saving). Internally it calls `lapply`.

**Value**

For `getRows` a list of java object references each pointing to a row. The list is named with the row number.

**Author(s)**

Adrian Dragulescu

**See Also**

To extract the cells from a given row, see [Cell](#).

**Examples**

```
file <- system.file("tests", "test_import.xlsx", package = "xlsx")

wb <- loadWorkbook(file)
sheets <- getSheets(wb)

sheet <- sheets[[2]]
rows <- getRows(sheet) # get all the rows

# see all the available java methods that you can call
#.jmethods(rows[[1]])

# for example
rows[[1]]$getRowNum() # zero based index in Java

removeRow(sheet, rows) # remove them all

# create some row
rows <- createRow(sheet, rowIndex=1:5)
setRowHeight( rows, multiplier=3) # 3 times bigger rows than the default
```

---

Sheet

*Functions to manipulate worksheets.*

---

**Description**

Functions to manipulate worksheets.

**Usage**

```
createSheet(wb, sheetName="Sheet1")  
removeSheet(wb, sheetName="Sheet1")  
getSheets(wb)
```

**Arguments**

`wb` a workbook object as returned by `createWorksheet` or `loadWorksheet`.  
`sheetName` a character specifying the name of the worksheet to create, or remove.

**Value**

`createSheet` returns the created `Sheet` object.  
`getSheets` returns a list of java object references each pointing to an worksheet. The list is named with the sheet names.

**Author(s)**

Adrian Dragulescu

**See Also**

To extract rows from a given sheet, see [Row](#).

**Examples**

```
file <- system.file("tests", "test_import.xlsx", package = "xlsx")  
  
wb <- loadWorkbook(file)  
sheets <- getSheets(wb)  
  
sheet <- sheets[[2]] # extract the second sheet  
  
# see all the available java methods that you can call  
#.jmethods(sheet)  
  
# for example  
sheet$getLastRowNum()
```

---

Workbook

*Functions to manipulate Excel 2007 workbooks.*

---

### Description

Functions to manipulate Excel 2007 workbooks.

### Usage

```
createWorkbook(type="xlsx")
```

```
loadWorkbook(file, password=NULL)
```

```
saveWorkbook(wb, file, password=NULL)
```

### Arguments

type	a String, either <code>xlsx</code> for Excel 2007 OOXML format, or <code>xls</code> for Excel 95 binary format.
file	the path to the file you intend to read or write. Can be an <code>xls</code> or <code>xlsx</code> format.
wb	a workbook object as returned by <code>createWorkbook</code> or <code>loadWorkbook</code> .
password	a String with the password.

### Details

`createWorkbook` creates an empty workbook object.

`loadWorkbook` loads a workbook from a file.

`saveWorkbook` saves an existing workbook to an Excel 2007 file.

Reading or writing of password protected workbooks is supported for Excel 2007 OOXML format only. Note that in Linux, LibreOffice is not able to read password protected spreadsheets.

### Value

`createWorkbook` returns a java object reference pointing to an empty workbook object.

`loadWorkbook` creates a java object reference corresponding to the file to load.

### Author(s)

Adrian Dragulescu

### See Also

[write.xlsx](#) for writing a data.frame to an `xlsx` file. [read.xlsx](#) for reading the content of a `xlsx` worksheet into a data.frame. To extract worksheets and manipulate them, see [Worksheet](#).

**Examples**

```

wb <- createWorkbook()

# see all the available java methods that you can call
#.jmethods(wb)

# for example
wb$getNumberOfSheets() # no sheet yet!

# loadWorkbook("C:/Temp/myFile.xls")

```

---

write.xlsx	<i>Write a data.frame to an Excel workbook.</i>
------------	---

---

**Description**

Write a data.frame to an Excel workbook.

**Usage**

```

write.xlsx(x, file, sheetName="Sheet1",
           col.names=TRUE, row.names=TRUE, append=FALSE, showNA=TRUE, password=NULL)

write.xlsx2(x, file, sheetName="Sheet1",
            col.names=TRUE, row.names=TRUE, append=FALSE, password=NULL, ...)

```

**Arguments**

x	a data.frame to write to the workbook.
file	the path to the output file.
sheetName	a character string with the sheet name.
col.names	a logical value indicating if the column names of x are to be written along with x to the file.
row.names	a logical value indicating whether the row names of x are to be written along with x to the file.
append	a logical value indicating if x should be appended to an existing file. If TRUE the file is read from disk.
showNA	a logical value. If set to FALSE, NA values will be left as empty cells.
...	other arguments to addDataFrame in the case of read.xlsx2.
password	a String with the password.

## Details

This function provides a high level API for writing a `data.frame` to an Excel 2007 worksheet. It calls several low level functions in the process. Its goal is to provide the convenience of [write.csv](#) by borrowing from its signature.

Internally, `write.xlsx` uses a double loop in R over all the elements of the `data.frame` so performance for very large `data.frame` may be an issue. Please report if you experience slow performance. Dates and POSIXct classes are formatted separately after the insertion. This also adds to processing time.

If `x` is not a `data.frame` it will be converted to one.

Function `write.xlsx2` uses `addDataFrame` which speeds up the execution compared to `write.xlsx` by an order of magnitude for large spreadsheets (with more than 100,000 cells).

The default formats for Date and DateTime columns can be changed via the two package options `xlsx.date.format` and `xlsx.datetime.format`. They need to be specified in Java date format <http://docs.oracle.com/javase/7/docs/api/java/text/SimpleDateFormat.html>.

Writing of password protected workbooks is supported for Excel 2007 OOXML format only. Note that in Linux, LibreOffice is not able to read password protected spreadsheets.

## Author(s)

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## See Also

[read.xlsx](#) for reading `xlsx` documents. See also [addDataFrame](#) for writing a `data.frame` to a sheet.

## Examples

```
## Not run:

file <- paste(tempdir(), "/usarrests.xlsx", sep="")
res <- write.xlsx(USArrests, file)

# to change the default date format
oldOpt <- options()
options(xlsx.date.format="dd MMM, yyyy")
write.xlsx(x, sheet) # where x is a data.frame with a Date column.
options(oldOpt)      # revert back to defaults

## End(Not run)
```



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