

# Package ‘XLConnect’

October 1, 2021

**Type** Package

**Title** Excel Connector for R

**Version** 1.0.5

**URL** <https://mirai-solutions.ch>  
<https://github.com/miraisolutions/xlconnect>

**BugReports** <https://github.com/miraisolutions/xlconnect/issues>

**SystemRequirements** Java (>= 8, <= 17)

**Depends** R (>= 2.10.0)

**Imports** methods, rJava

**Suggests** RUnit, lattice, ggplot2 (>= 0.9.3), zoo

**Description** Provides comprehensive functionality to read, write and format Excel data.

**License** GPL-3

**Copyright** See file COPYRIGHTS

**LazyData** yes

**NeedsCompilation** no

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Graph Builder [ctb, cph] (Curvesapi Java library),  
Brett Woolridge [ctb, cph] (SparseBitSet Java library)

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**Repository** CRAN

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XLConnect-package	<i>Excel Connector for R</i>
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### Description

Provides comprehensive functionality to read, write and format Excel data.

### Details

Package:	XLConnect
Type:	Package
Version:	0.2-15
Date:	2018-04-05
URL:	<a href="https://mirai-solutions.ch">https://mirai-solutions.ch</a> <a href="https://github.com/miraisolutions/xlconnect">https://github.com/miraisolutions/xlconnect</a>
BugReports:	<a href="https://github.com/miraisolutions/xlconnect/issues">https://github.com/miraisolutions/xlconnect/issues</a>
SystemRequirements:	Java (>= 6)
Depends:	R (>= 2.10.0)
Imports:	methods, rJava
Suggests:	RUnit, lattice, ggplot2 (>= 0.9.3), zoo
License:	GPL-3
Copyright:	See file COPYRIGHTS
LazyData:	yes

For an overview over the package please refer to the available demos:  
demo(package = "XLConnect")

### Author(s)

Mirai Solutions GmbH, <[xlconnect@mirai-solutions.com](mailto:xlconnect@mirai-solutions.com)>

### References

Mirai Solutions GmbH: <https://mirai-solutions.ch>  
 XLConnect on GitHub: <https://github.com/miraisolutions/xlconnect> Mirai Solutions on  
 GitHub: <https://github.com/miraisolutions>  
 Apache POI: <https://poi.apache.org>

## Examples

```
## Not run:
# Load workbook; create if not existing
wb <- loadWorkbook("XLConnect.xlsx", create = TRUE)

# Create a worksheet
createSheet(wb, name = "mtcars")

# Create a name reference
createName(wb, name = "mtcars", formula = "mtcars!$C$5")

# Write built-in data.frame 'mtcars' to the specified named region
writeNamedRegion(wb, mtcars, name = "mtcars")

# Save workbook
saveWorkbook(wb)

# clean up
file.remove("XLConnect.xlsx")

## End(Not run)
```

---

addImage-methods      *Adding images to a worksheet*

---

## Description

Adds an image to a worksheet using a named region.

## Usage

```
## S4 method for signature 'workbook'
addImage(object, filename, name, originalSize)
```

## Arguments

object	The <a href="#">workbook</a> to use
filename	Name of the image file. Supported are images of the following formats: JPG/JPEG, PNG, WMF, EMF, BMP, PICT.
name	Name of the named region that the image is set to
originalSize	If originalSize = TRUE, the image is inserted in the top left corner of the named region and not scaled. Otherwise, the image is scaled to fit the named region. The default value for originalSize is FALSE.

**Note**

There is a known issue in Apache POI with adding images to xls workbooks. The result of adding images to workbooks that already contain shapes or images may be that previous images are removed or that existing images are replaced with newly added ones. It is therefore advised that you use the addImage functionality only with workbooks that have no existing shapes or images. Note that this only holds for xls workbooks (Excel 97-2003) and not for xlsx (Excel 2007+). There should be no issues with xlsx workbooks.

**Author(s)**

Martin Studer  
 Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [createName](#)

**Examples**

```
## Not run:
## Write an R plot to a specified named region
## This example makes use of the 'Tonga Trench Earthquakes' example

# Load workbook (create if not existing)
wb <- loadWorkbook("earthquake.xlsx", create = TRUE)

# Create a sheet named 'earthquake'
createSheet(wb, name = "earthquake")

# Create a named region called 'earthquake' referring to the sheet
# called 'earthquake'
createName(wb, name = "earthquake", formula = "earthquake!$B$2")

# Create R plot to a png device
require(lattice)
png(filename = "earthquake.png", width = 800, height = 600)
devAskNewPage(ask = FALSE)

Depth <- equal.count(quakes$depth, number=8, overlap=.1)
xyplot(lat ~ long | Depth, data = quakes)
update(trellis.last.object(),
       strip = strip.custom(strip.names = TRUE, strip.levels = TRUE),
       par.strip.text = list(cex = 0.75),
       aspect = "iso")

dev.off()

# Write image to the named region created above using the image's
# original size; i.e. the image's top left corner will match the
# specified cell's top left corner
addImage(wb, filename = "earthquake.png", name = "earthquake",
```

```
        originalSize = TRUE)

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up
file.remove("earthquake.xlsx")
file.remove("earthquake.png")

## End(Not run)
```

---

## appendNamedRegion-methods

*Appending data to a named region*

---

### Description

Appends data to an existing named region.

### Usage

```
## S4 method for signature 'workbook,ANY'
appendNamedRegion(object,data,name,header,rownames)
```

### Arguments

object	The <a href="#">workbook</a> to use
data	Data to write
name	Name of the (existing) named region to which to append the data
header	Specifies if the column names should be written. The default is FALSE.
rownames	Name (character) of column to use for the row names of the provided data object. If specified, the row names of the data object (data.frame) will be included as an additional column with the specified name. If rownames = NULL (default), no row names will be included.

### Details

Appends data to the existing named region specified by name. The data is appended at the bottom of the named region. See [writeNamedRegion](#) for further information on writing named regions.

### Note

Named regions are automatically redefined to the area occupied by the previous and the newly appended data. This guarantees that the complete set of data can be re-read using [readNamedRegion](#). Note however, that no checks are performed to see whether the appended data has the same shape/structure as the previous data.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [writeNamedRegion](#), [readNamedRegion](#), [writeWorksheet](#), [appendWorksheet](#), [readWorksheet](#)

**Examples**

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Append mtcars data set to named region named 'mtcars'
appendNamedRegion(wb, mtcars, name = "mtcars")

## End(Not run)
```

---

appendWorksheet-methods

*Appending data to worksheets*

---

**Description**

Appends data to worksheets of a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook,ANY,character'
appendWorksheet(object,data,sheet,header,rownames)
## S4 method for signature 'workbook,ANY,numeric'
appendWorksheet(object,data,sheet,header,rownames)
```

**Arguments**

object	The <a href="#">workbook</a> to write to
data	Data to append
sheet	The name or index of the sheet to append the data to
header	Specifies if the column names should be written. The default is TRUE.
rownames	Name (character) of column to use for the row names of the provided data object. If specified, the row names of the data object ( <code>data.frame</code> ) will be included as an additional column with the specified name. If <code>rownames = NULL</code> (default), no row names will be included.



## Details

Appends data to the worksheet specified by sheet. Data will be appended at the bottom and left most column containing some data. If more complex "appending schemes" are required you may make direct use of [writeWorksheet](#).

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [writeWorksheet](#), [readWorksheet](#), [writeNamedRegion](#), [appendNamedRegion](#), [readNamedRegion](#)

## Examples

```
## Not run:  
# mtcars xlsx file from demoFiles subfolder of package XLConnect  
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(demoExcelFile)  
  
# Append mtcars data set to worksheet named 'mtcars'  
appendWorksheet(wb, mtcars, sheet = "mtcars")  
  
## End(Not run)
```

---

aref

*Constructing Excel area references*

---

## Description

Constructs an Excel area reference

## Usage

```
aref(topLeft, dimension)
```

## Arguments

topLeft	Top left corner. Either a character specifying a cell reference in the form "A1" or a numeric vector of length two specifying the corresponding coordinates.
dimension	Dimensions (numeric) of a 2-dimensional object (mostly a <code>data.frame</code> or a <code>matrix</code> )

## Value

Returns the area reference (character) for the specified top left cell and dimension.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[aref2idx](#), [idx2aref](#), [idx2cref](#), [col2idx](#), [idx2col](#)

**Examples**

```
## Not run:  
aref("A1", dim(mtcars))  
aref(c(1, 1), dim(mtcars))  
  
## End(Not run)
```

---

aref2idx	<i>Converting Excel cell references to row and column based cell references</i>
----------	---

---

**Description**

Converts Excel cell references to row and column based cell references

**Usage**

```
aref2idx(x)
```

**Arguments**

x                    Character vector of Excel cell references (e.g. "A1:B6", "B6:C17", ...)

**Value**

Returns a numeric matrix with four columns and as many rows as cell references that have been provided. The first two columns represent the coordinates of the top left corner (row, column) and the third and fourth columns represent the bottom right corner of the referenced area.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[idx2aref](#), [aref](#), [cref2idx](#), [idx2cref](#), [col2idx](#), [idx2col](#)

## Examples

```
## Not run:  
aref2idx(c("A1:B6", "B6:C17"))  
  
## End(Not run)
```

---

cellstyle-class	Class "cellstyle"
-----------------	-------------------

---

## Description

This class represents a cell style in a Microsoft Excel [workbook](#). S4 objects of this class and corresponding methods are used to manipulate cell styles. This includes setting data formats, borders, background- and foreground-colors, etc.

## Objects from the Class

Cell styles are created by calling the [createCellStyle](#) method on a [workbook](#) object.

## Slots

**jobj**: Object of class `jobjRef` (see package **rJava**) which represents a Java object reference that is used in the back-end to manipulate the underlying Excel cell style instance.

## Note

**XLConnect** generally makes use of custom (named) cell styles. This allows users to more easily manage cell styles via Excel's cell style menu. For example, assuming you were using a specific custom cell style for your data table headers, you can change the header styling with a few clicks in Excel's cell style menu across all tables.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## References

Apply, create, or remove a cell style:

<https://support.microsoft.com/en-us/office/apply-create-or-remove-a-cell-style-472213bf-66bd-40c8-0c8sassetid=hp001216732&correlationid=5691ac73-b7a2-40c3-99aa-a06e806bb566&ui=en-us&rs=en-us&ad=us>

## See Also

[workbook](#), [createCellStyle](#), [setStyleAction](#), [setCellStyle](#)

**Examples**

```

## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("cellstyles.xlsx", create = TRUE)

# We don't set a specific style action in this demo, so the
# default 'XLConnect' will be used (XLC$"STYLE_ACTION.XLCONNECT")

# Create a sheet named 'mtcars'
createSheet(wb, name = "mtcars")

# Create a named region called 'mtcars' referring to the sheet
# called 'mtcars'
createName(wb, name = "mtcars", formula = "mtcars!$C$4")

# Write built-in data set 'mtcars' to the above defined named region.
# This will use the default style action 'XLConnect'.
writeNamedRegion(wb, mtcars, name = "mtcars")

# Now let's color all weight cells of cars with a weight > 3.5 in red
# (mtcars$wt > 3.5)

# First, create a corresponding (named) cell style
heavyCar <- createCellStyle(wb, name = "HeavyCar")

# Specify the cell style to use a solid foreground color
setFillPattern(heavyCar, fill = XLC$"FILL.SOLID_FOREGROUND")

# Specify the foreground color to be used
setFillForegroundColor(heavyCar, color = XLC$"COLOR.RED")

# Which cars have a weight > 3.5 ?
rowIndex <- which(mtcars$wt > 3.5)

# NOTE: The mtcars data.frame has been written offset with top
# left cell C4 - and we have also written a header row!
# So, let's take that into account appropriately. Obviously,
# the two steps could be combined directly into one ...
rowIndex <- rowIndex + 4

# The same holds for the column index
colIndex <- which(names(mtcars) == "wt") + 2

# Set the 'HeavyCar' cell style for the corresponding cells.
# Note: the row and col arguments are vectorized!
setCellStyle(wb, sheet = "mtcars", row = rowIndex, col = colIndex,
             cellstyle = heavyCar)

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up

```

```
file.remove("cellstyles.xlsx")  
  
## End(Not run)
```

---

clearNamedRegion-methods

*Clearing named regions in a workbook*

---

## Description

Clears named regions in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,character'  
clearNamedRegion(object, name)
```

## Arguments

object	The <a href="#">workbook</a> to use
name	The name of the named region to clear

## Details

Clearing a named region/range means to clear all the cells associated with that named region. Clearing named regions can be useful if (named) data sets in a worksheet need to be replaced, i.e. data is first read, modified in R and finally written back to the the same named region. Without clearing the named region first, (parts of) the original data may still be visible if they occupied a larger range in the worksheet.

## Author(s)

Nicola Lambiase  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [clearSheet](#), [clearRange](#), [clearRangeFromReference](#), [clearSheet](#)

## Examples

```
## Not run:  
# mtcars xlsx file from demoFiles subfolder of  
# package XLConnect  
demoExcelFile <- system.file("demoFiles/mtcars.xlsx",  
                             package = "XLConnect")  
  
# Load workbook
```

```

wb <- loadWorkbook(demoExcelFile)

# Read named region 'mtcars'
data <- readNamedRegion(wb, name = "mtcars", header = TRUE)

# Only consider cars with a weight >= 5
data <- data[data$wt >= 5, ]

# Clear original named region
clearNamedRegion(wb, name = "mtcars")

# Write subsetted data back
# Note: this is covering a smaller area now -
# writeNamedRegion automatically redefines the named region
# to the size/area of the data
writeNamedRegion(wb, data = data, name = "mtcars",
                 header = TRUE)

## End(Not run)

```

---

clearRange-methods      *Clearing cell ranges in a workbook*

---

### Description

Clears cell ranges in a [workbook](#).

### Usage

```

## S4 method for signature 'workbook,numeric'
clearRange(object, sheet, coords)
## S4 method for signature 'workbook,character'
clearRange(object, sheet, coords)

```

### Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the worksheet in which to clear cell ranges
coords	Numeric vector of length 4 or numeric matrix with 4 columns where the elements of the vector or rows in the matrix refer to the coordinates of the top-left and bottom-right corners of the ranges to clear. I.e. a vector or each row specifies the coordinates {top row, left column, bottom row, right column}. You may use <a href="#">aref2idx</a> to generate such a matrix.

### Details

Clearing a cell range means to clear all the cells associated with that range.

**Author(s)**

Nicola Lambiase  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [clearSheet](#), [clearNamedRegion](#), [clearRangeFromReference](#), [clearSheet](#)

**Examples**

```
## Not run:
# mtcars.xlsx file from demoFiles subfolder of
# package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx",
                             package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Clear range from top left corner (4,2) ^= B4 to
# bottom right corner (6,4) ^= D6
clearRange(wb, sheet = "mtcars", coords = c(4, 2, 6, 4))

# Clear two ranges in one go ...
mat = matrix(c(5, 1, 6, 4, 5, 7, 7, 9), ncol = 4,
             byrow = TRUE)
clearRange(wb, sheet = "mtcars", coords = mat)

# The above is equivalent to ...
clearRange(wb, sheet = "mtcars",
           coords = aref2idx(c("A5:D6", "G5:I7")))

# This in turn is the same as ...
clearRangeFromReference(wb, reference = c("mtcars!A5:D6",
                                          "mtcars!G5:I7"))

## End(Not run)
```

---

clearRangeFromReference-methods

*Clearing cell ranges in a workbook*

---

**Description**

Clears cell ranges specified by area reference in a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook,character'
clearRangeFromReference(object, reference)
```

## Arguments

object            The [workbook](#) to use  
reference        character specifying an area reference in the form 'SheetX!A7:B19'

## Details

Clearing a cell range means to clear all the cells associated with that range. This method is very similar to [clearRange](#).

## Author(s)

Nicola Lambiase  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [clearSheet](#), [clearNamedRegion](#), [clearRange](#), [clearSheet](#)

## Examples

```
## Not run:  
# mtcars xlsx file from demoFiles subfolder of  
# package XLConnect  
demoExcelFile <- system.file("demoFiles/mtcars.xlsx",  
                             package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(demoExcelFile)  
  
# Clear ranges A5:D6 and G5:I7 on sheet mtcars  
clearRangeFromReference(wb, reference = c("mtcars!A5:D6",  
                                          "mtcars!G5:I7"))  
  
## End(Not run)
```

---

clearSheet-methods      *Clearing worksheets in a workbook*

---

## Description

Clears worksheets with specified names or indices in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,numeric'  
clearSheet(object, sheet)  
## S4 method for signature 'workbook,character'  
clearSheet(object, sheet)
```



## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or the index of the worksheet to clear

## Details

Clearing a worksheet means to clear all the cells in that worksheet. Consequently, the saved workbook should be smaller in size. Clearing a worksheet can be useful if data sets in a worksheet need to be replaced, i.e. data are first read, modified in R and finally written back to the worksheet. Without clearing the worksheet first, (parts of) the original data may still be visible if they occupied a larger range of the worksheet.

## Author(s)

Nicola Lambiase  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [clearNamedRegion](#), [clearRange](#), [clearRangeFromReference](#)

## Examples

```
## Not run:  
# mtcars xlsx file from demoFiles subfolder of  
# package XLConnect  
demoExcelFile <- system.file("demoFiles/mtcars.xlsx",  
                             package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(demoExcelFile)  
  
# Clear worksheets named 'mtcars' and 'mtcars2'  
clearSheet(wb, sheet = c("mtcars", "mtcars2"))  
  
# Clear 3rd worksheet  
clearSheet(wb, sheet = 3)  
  
## End(Not run)
```

---

cloneSheet-methods      *Cloning/copying worksheets*

---

## Description

Clones (copies) a worksheet in a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook,numeric'  
cloneSheet(object,sheet,name)  
## S4 method for signature 'workbook,character'  
cloneSheet(object,sheet,name)
```

**Arguments**

object	The <a href="#">workbook</a> to use
sheet	The name or index of the worksheet to clone
name	The name to assign to the cloned worksheet. Throws an exception if the name to assign is the name of an already existing worksheet.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [createSheet](#), [removeSheet](#), [renameSheet](#), [getSheets](#), [existsSheet](#)

**Examples**

```
## Not run:  
# mtcars xlsx file from demoFiles subfolder of package XLConnect  
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(demoExcelFile)  
  
# Clone the 'mtcars' worksheet and assign it the name 'mtcars cloned'  
cloneSheet(wb, sheet = "mtcars", name = "mtcars cloned")  
  
## End(Not run)
```

---

col2idx

*Converting Excel column names to indices*

---

**Description**

Converts Excel column names to indices.

**Usage**

```
col2idx(x)
```

**Arguments**

x                      Character vector of Excel column names (e.g. "A", "AF", ...)

**Value**

Returns a vector of integers representing the corresponding column indices. Note that passing invalid column name references may result in an arbitrary number.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[idx2col](#), [cref2idx](#), [idx2cref](#), [idx2aref](#), [aref2idx](#), [aref](#)

**Examples**

```
## Not run:  
col2idx(c("A", "BTG"))  
  
## End(Not run)
```

---

createCellStyle-methods

*Creating custom named and anonymous cell styles*

---

**Description**

Creates a custom named or anonymous [cellstyle](#).

**Usage**

```
## S4 method for signature 'workbook,character'  
createCellStyle(object,name)
```

**Arguments**

object                The [workbook](#) to use  
name                   The name of the new [cellstyle](#) to create. Omit to create an anonymous [cellstyle](#).

## Details

Creates a named `cellstyle` with the specified name. Named cell styles may be used in conjunction with the *name prefix* style action (see `setStyleAction`) or may also be used directly with the method `setCellStyle`. Named cell styles can easily be changed from within Excel using the cell styles menu.

If name is missing, an anonymous cell style is created. Anonymous cell styles can be used in conjunction with the `setCellStyle` method.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [cellstyle](#), [getOrCreateCellStyle](#), [existsCellStyle](#), [setStyleAction](#), [setStyleNamePrefix](#), [setCellStyle](#), [setDataFormat](#), [setBorder](#), [setFillBackgroundColor](#), [setFillForegroundColor](#), [setFillPattern](#), [setWrapText](#)

## Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("createCellstyles.xlsx", create = TRUE)

# We don't set a specific style action in this demo, so the
# default 'XLConnect' will be used (XLC$"STYLE_ACTION.XLCONNECT")

# Create a sheet named 'mtcars'
createSheet(wb, name = "mtcars")

# Create a named region called 'mtcars' referring to the sheet
# called 'mtcars'
createName(wb, name = "mtcars", formula = "mtcars!$C$4")

# Write built-in data set 'mtcars' to the above defined named region.
# This will use the default style action 'XLConnect'.
writeNamedRegion(wb, mtcars, name = "mtcars")

# Now let's color all weight cells of cars with a weight > 3.5 in red
# (mtcars$wt > 3.5)

# First, create a corresponding (named) cell style
heavyCar <- createCellStyle(wb, name = "HeavyCar")

# Specify the cell style to use a solid foreground color
setFillPattern(heavyCar, fill = XLC$"FILL.SOLID_FOREGROUND")

# Specify the foreground color to be used
setFillForegroundColor(heavyCar, color = XLC$"COLOR.RED")
```

```

# Which cars have a weight > 3.5 ?
rowIndex <- which(mtcars$wt > 3.5)

# NOTE: The mtcars data.frame has been written offset with
# top left cell C4 - and we have also written a header row!
# So, let's take that into account appropriately. Obviously,
# the two steps could be combined directly into one ...
rowIndex <- rowIndex + 4

# The same holds for the column index
colIndex <- which(names(mtcars) == "wt") + 2

# Set the 'HeavyCar' cell style for the corresponding cells.
# Note: the row and col arguments are vectorized!
setCellStyle(wb, sheet = "mtcars", row = rowIndex, col = colIndex,
             cellstyle = heavyCar)

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up
file.remove("createCellstyles.xlsx")

## End(Not run)

```

---

createFreezePane-methods

*Creating a freeze pane on a worksheet*

---

## Description

Creates a freeze pane on a specified worksheet.

## Usage

```

## S4 method for signature 'workbook,character'
createFreezePane(object, sheet, colSplit, rowSplit, leftColumn, topRow)
## S4 method for signature 'workbook,numeric'
createFreezePane(object, sheet, colSplit, rowSplit, leftColumn, topRow)

```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet on which to create a freeze pane
colSplit	Horizontal position of freeze (as column index or name)
rowSplit	Vertical position of freeze (as number of rows)
leftColumn	Left column (as column index or name) visible in right pane. If not specified, the default is leftColumn=colSplit
topRow	Top row (as index) visible in bottom pane. If not specified, the default is topRow=rowSplit

**Note**

To keep an area of a worksheet visible while you scroll to another area of the worksheet, you can lock specific rows or columns in one area by freezing or splitting panes.

When you freeze panes, you keep specific rows or columns visible when you scroll in the worksheet. For example, you might want to keep row and column labels visible as you scroll.

When you split panes, you create separate worksheet areas that you can scroll within, while rows or columns in the non-scrolled area remain visible.

**Author(s)**

Nicola Lambiase  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**References**

How to create a freeze pane/split pane in Office 2007 <https://support.microsoft.com/en-us/office/freeze-panes-to-lock-rows-and-columns-dab2ffc9-020d-4026-8121-67dd25f2508f?ocmsassetid=hp001217048&correlationid=b4f5baeb-b622-4487-a96f-514d2f00208a&ui=en-us&rs=en-us&ad=us>

**See Also**

[workbook createSplitPane removePane](#)

**Examples**

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("freezePaneTest.xlsx", create = TRUE)

# Create a worksheet named 'Sheet1'
createSheet(wb, name = "Sheet1")

# Create a freeze pane on Sheet1, using as reference position the 5th column and the 5th row,
# showing the 10th column as the leftmost visible one in the right pane
# and the 10th row as the top visible one in the bottom pane.
createFreezePane(wb, "Sheet1", 5, 5, 10, 10)

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up
file.remove("freezePaneTest.xlsx")

## End(Not run)
```

---

createName-methods      *Creating names in a workbook*

---

### Description

Creates a name for a specified formula in a [workbook](#).

### Usage

```
## S4 method for signature 'workbook'  
createName(object, name, formula, overwrite)
```

### Arguments

object	The <a href="#">workbook</a> to use
name	The name's name to create
formula	Excel formula specifying the name
overwrite	If a name with the same name already exists and <code>overwrite = TRUE</code> , then this name is removed first before the new one is created. If a name already exists and <code>overwrite = FALSE</code> , then an exception is thrown. The default value for <code>overwrite</code> is <code>FALSE</code> .

### Details

Creates a name named `name` for the specified formula.

The formula should be specified as you would type it in Excel. Make sure that the worksheets, functions, ... exist that you are referring to in the formula.

The `name`, `formula` and `overwrite` arguments are vectorized such that multiple names can be created in one method call.

### Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### References

What are named regions/ranges?  
[https://www.officearticles.com/excel/named\\_ranges\\_in\\_microsoft\\_excel.htm](https://www.officearticles.com/excel/named_ranges_in_microsoft_excel.htm)  
How to create named regions/ranges?  
<https://www.youtube.com/watch?v=iAE9a0uRtpM>

### See Also

[workbook](#), [removeName](#), [existsName](#), [getDefinedNames](#),  
[readNamedRegion](#), [writeNamedRegion](#)

## Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("createName.xlsx", create = TRUE)

# Create a worksheet named 'mtcars'
createSheet(wb, name = "mtcars")

# Create a named region called 'mtcars' on the sheet called 'mtcars'
createName(wb, name = "mtcars", formula = "mtcars!$A$1")

# Write built-in data set 'mtcars' to the above defined named region
writeNamedRegion(wb, mtcars, name = "mtcars")

# Save workbook
saveWorkbook(wb)

# clean up
file.remove("createName.xlsx")

## End(Not run)
```

---

createSheet-methods    *Creating worksheets in a workbook*

---

## Description

Creates worksheets with specified names in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook'
createSheet(object, name)
```

## Arguments

object	The <a href="#">workbook</a> to use
name	The name of the sheet to create

## Details

Creates a worksheet with the specified name if it does not already exist. Note that the naming of worksheets needs to be in line with Excel's convention, otherwise an exception will be thrown. For example, worksheet names cannot be longer than 31 characters. Also note that the name argument is vectorized, so multiple worksheets can be created in one method call.



**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [removeSheet](#), [renameSheet](#), [existsSheet](#), [getSheets](#), [cloneSheet](#)

**Examples**

```
## Not run:  
# Load workbook (create if not existing)  
wb <- loadWorkbook("createSheet.xlsx", create = TRUE)  
  
# Create a worksheet called 'C02'  
createSheet(wb, name = "C02")  
  
# Save workbook (this actually writes the file to disk)  
saveWorkbook(wb)  
  
# clean up  
file.remove("createSheet.xlsx")  
  
## End(Not run)
```

---

createSplitPane-methods

*Creating a split pane on a worksheet*

---

**Description**

Creates a split pane on a specified worksheet.

**Usage**

```
## S4 method for signature 'workbook,character'  
createSplitPane(object, sheet, xSplitPos, ySplitPos, leftColumn, topRow)  
## S4 method for signature 'workbook,numeric'  
createSplitPane(object, sheet, xSplitPos, ySplitPos, leftColumn, topRow)
```

**Arguments**

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet on which to create a split pane
xSplitPos	Horizontal position of split (in 1/20th of a point)
ySplitPos	Vertical position of split (in 1/20th of a point)
leftColumn	Left column (as index or column name) visible in right pane
topRow	Top row visible in bottom pane

**Note**

To keep an area of a worksheet visible while you scroll to another area of the worksheet, you can lock specific rows or columns in one area by freezing or splitting panes.

When you freeze panes, you keep specific rows or columns visible when you scroll in the worksheet. For example, you might want to keep row and column labels visible as you scroll.

When you split panes, you create separate worksheet areas that you can scroll within, while rows or columns in the non-scrolled area remain visible.

**Author(s)**

Nicola Lambiase  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**References**

How to create a freeze pane/split pane in Office 2007 <https://support.microsoft.com/en-us/office/freeze-panes-to-lock-rows-and-columns-dab2ffc9-020d-4026-8121-67dd25f2508f?ocmsassetid=hp001217048&correlationid=b4f5baeb-b622-4487-a96f-514d2f00208a&ui=en-us&rs=en-us&ad=us>

**See Also**

[workbook createFreezePane removePane](#)

**Examples**

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("splitPaneTest.xlsx", create = TRUE)

# Create a worksheet named 'Sheet1'
createSheet(wb, name = "Sheet1")

# Create a split pane on Sheet1, with coordinates (10000, 5000) expressed as 1/20th of a point,
# 10 (-> J) as left column visible in right pane and 10 as top row visible in bottom pane
createSplitPane(wb, "Sheet1", 10000, 5000, 10, 10)

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up
file.remove("splitPaneTest.xlsx")

## End(Not run)
```

---

cref2idx	<i>Converting Excel cell references to indices</i>
----------	--

---

**Description**

Converts Excel cell references to row & column indices

**Usage**

```
cref2idx(x)
```

**Arguments**

x                    Character vector of Excel cell references (e.g. "\$A\$20", "B18", ...)

**Value**

Returns a numeric matrix with two columns and as many rows as cell references that have been provided. The first column represents the row indices and the second column represents the column indices.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[idx2cref](#), [col2idx](#), [idx2col](#), [idx2aref](#), [aref2idx](#), [aref](#)

**Examples**

```
## Not run:  
cref2idx(c("$A$20", "B18"))  
  
## End(Not run)
```

---

existsCellStyle-methods

*Retrieving named cell styles*

---

## Description

Checks whether a named cell style exists in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook'  
existsCellStyle(object,name)
```

## Arguments

object	The <a href="#">workbook</a> to use
name	The name of the <a href="#">cellstyle</a> to check

## Details

Checks whether the [cellstyle](#) with the specified name exists.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [cellstyle](#), [setCellStyle](#), [createCellStyle](#), [getOrCreateCellStyle](#)

## Examples

```
## Not run:  
# Load workbook (create if not existing)  
wb <- loadWorkbook("existsCellStyle.xlsx", create = TRUE)  
  
# Cell style 'MyStyle' does not exist yet  
stopifnot(!existsCellStyle(wb, "MyStyle"))  
  
# Create the style "MyStyle"  
createCellStyle(wb, "MyStyle")  
  
# And now it is here  
stopifnot(existsCellStyle(wb, "MyStyle"))  
  
# clean up  
file.remove("existsCellStyle.xlsx")  
  
## End(Not run)
```

---

existsName-methods      *Checking existence of names in a workbook*

---

## Description

Checks the existence of a name in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook'  
existsName(object, name)
```

## Arguments

object	The <a href="#">workbook</a> to use
name	The name to check for

## Details

Returns TRUE if the specified name exists and FALSE otherwise. Note that the name argument is vectorized and therefore multiple names can be checked for existence in one method call.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [createName](#), [removeName](#), [getDefinedNames](#), [readNamedRegion](#),  
[writeNamedRegion](#)

## Examples

```
## Not run:  
# mtcars.xlsx file from demoFiles subfolder of package XLConnect  
mtcarsFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(mtcarsFile)  
  
# Check if the name 'mtcars' exists  
# (should return TRUE since the name is defined as 'mtcars!$A$1:$K$33')  
existsName(wb, name = "mtcars")  
  
## End(Not run)
```

---

existsSheet-methods    *Checking for existence of worksheets in a workbook*

---

### Description

Checks the existence of a worksheet in a [workbook](#).

### Usage

```
## S4 method for signature 'workbook'  
existsSheet(object,name)
```

### Arguments

object	The <a href="#">workbook</a> to use
name	The sheet name to check for

### Details

Checks if the specified worksheet exists. Returns TRUE if it exists, otherwise FALSE. The name argument is vectorized which allows to check for existence of multiple worksheets with one call.

### Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### See Also

[workbook](#), [createSheet](#), [removeSheet](#), [renameSheet](#), [getSheets](#), [cloneSheet](#)

### Examples

```
## Not run:  
# mtcars xlsx file from demoFiles subfolder of package XLConnect  
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(demoExcelFile)  
  
# Check for existence of a worksheet called 'mtcars'  
existsSheet(wb, "mtcars")  
  
## End(Not run)
```

## Description

Operators that allow to extract/replace data from/on a [workbook](#).

## Arguments

x	The <a href="#">workbook</a> object to use
i	Name of worksheet ([, [(<-) or name of Excel name ([[, [[(<-) to extract or replace
j	Only used with [[(<-: Optional formula to define the Excel name if it does not yet exist on the workbook.
drop	Not used
value	Data object used for replacement
...	Arguments passed to the corresponding underlying function to read/write the data

## Details

The workbook extraction operators are basically syntactic sugar for the common methods [readWorksheet](#) ([, [writeWorksheet](#) ([(<-), [readNamedRegion](#) ([[), [writeNamedRegion](#) ([[(<-).

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [readWorksheet](#), [writeWorksheet](#), [readNamedRegion](#), [writeNamedRegion](#)

## Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("extraction.xlsx", create = TRUE)

# Write mtcars data set on a worksheet named 'mtcars1'.
# Note: The 'mtcars1' sheet will be created automatically if it does
# not exist yet. Also, default values for other writeWorksheet arguments
# hold, i.e. the data set is written starting at the top left corner.
wb["mtcars1"] = mtcars

# Write mtcars data set on a worksheet named 'mtcars2'.
# Again, the 'mtcars2' worksheet is created automatically.
```

```

# Additionally specify arguments passed to the underlying method
# writeWorksheet.
wb["mtcars2", startRow = 6, startCol = 11, header = FALSE] = mtcars

# Read worksheets 'mtcars1' and 'mtcars2'.
# Note: The default arguments hold for the underlying method
# readWorksheet.
wb["mtcars1"]
wb["mtcars2"]

# Write mtcars data set to a named region named 'mtcars3'. Since
# it doesn't exist yet we also need to specify the formula to
# define it. Also note that the sheet 'mtcars3' referenced in the
# formula does not yet exist - it will be created automatically!
# Moreover, default values for other writeNamedRegion arguments hold.
wb[["mtcars3", "mtcars3!$B$7"]] = mtcars

# Redefine named region 'mtcars3'. Note that no formula specification
# is required since named region is already defined (see above example).
wb[["mtcars3"]] = mtcars

# Write mtcars data set to a named region 'mtcars4'. Since the named
# region does not yet exist a formula specification is required. Also,
# additional arguments are specified that are passed to the underlying
# method writeNamedRegion.
wb[["mtcars4", "mtcars4!$D$8", rownames = "Car"]] = mtcars

# Read the named regions 'mtcars3' and 'mtcars4'.
# Note: Default values hold for the underlying method readNamedRegion.
wb[["mtcars3"]]
wb[["mtcars4"]]

# clean up
file.remove("extraction.xlsx")

## End(Not run)

```

---

extractSheetName

*Extracting the sheet name from a formula*

---

### Description

Extracts the sheet name from a formula of the form <SHEET\_NAME>!<CELL\_ADDRESS>

### Usage

```
extractSheetName(formula)
```



**Arguments**

formula                      Formula string of the form <SHEET\_NAME>!<CELL\_ADDRESS>. Note that the validity of the formula won't be checked.

**Value**

Returns the name of the sheet referenced in the formula. For quoted sheet names (required if names contain e.g. whitespaces or exclamation marks (!)) in formulas the function returns the unquoted name.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**Examples**

```
## Not run:  
extractSheetName(c("MySheet!$A$1", "'My Sheet'!$A$1", "'My!Sheet'!$A$1"))  
  
## End(Not run)
```

---

getActiveSheetIndex-methods

*Querying the active worksheet index*

---

**Description**

Queries the index of the active worksheet in a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook'  
getActiveSheetIndex(object)
```

**Arguments**

object                      The [workbook](#) to use

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [getActiveSheetName](#)

**Examples**

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Query the active sheet index
activeSheet <- getActiveSheetIndex(wb)

## End(Not run)
```

---

getActiveSheetName-methods

*Querying the active worksheet name*

---

**Description**

Queries the name of the active worksheet in a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook'
getActiveSheetName(object)
```

**Arguments**

object            The [workbook](#) to use

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [getActiveSheetIndex](#)

**Examples**

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Query the active sheet name
```

```
activeSheet <- getActiveSheetName(wb)

## End(Not run)
```

---

getBoundingBox-methods

*Querying the coordinates of a worksheet bounding box*

---

### Description

This function queries the coordinates of a bounding box in an Excel worksheet. A bounding box is the rectangular region of minimum size containing all the non-empty cells in a sheet.

### Usage

```
## S4 method for signature 'workbook,character'
getBoundingBox(object, sheet, startRow, startCol, endRow, endCol, autofitRow, autofitCol)
## S4 method for signature 'workbook,numeric'
getBoundingBox(object, sheet, startRow, startCol, endRow, endCol, autofitRow, autofitCol)
```

### Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet from which to get the bounding box
startRow	Start reference row for the bounding box. Defaults to 0 meaning that the start row is determined automatically.
startCol	Start reference column for the bounding box. Defaults to 0 meaning that the start column is determined automatically.
endRow	End reference row for the bounding box. Defaults to 0 meaning that the end row is determined automatically.
endCol	End reference column for the bounding box. Defaults to 0 meaning that the end column is determined automatically.
autofitRow	logical specifying if leading and trailing empty rows should be skipped. Defaults to TRUE.
autofitCol	logical specifying if leading and trailing empty columns should be skipped. Defaults to TRUE.

### Details

The result is a matrix containing the following coordinates:

```
[1,] top left row
[2,] top left column
[3,] bottom right row
[4,] bottom right column
```

In case more than one sheet is selected, the result matrix will contain a column for each sheet.

The bounding box resolution algorithm works as follows:

If `startRow <= 0` then the first available row in the sheet is assumed. If `endRow <= 0` then the last available row in the sheet is assumed. If `startCol <= 0` then the minimum column between `startRow` and `endRow` is assumed. If `endCol <= 0` then the maximum column between `startRow` and `endRow` is assumed. The arguments `autofitRow` and `autofitCol` (both defaulting to `TRUE`) can be used to skip leading and trailing empty rows even in case `startRow`, `endRow`, `startCol` and `endCol` are specified to values `> 0`. This can be useful if data is expected within certain given boundaries but the exact location is not available.

### Author(s)

Nicola Lambiase  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### See Also

[workbook](#)

### Examples

```
## Not run:
# multiregion.xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/multiregion.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Query bounding box for the second sheet
print(getBoundingBox(wb, sheet="SecondSheet"))

# Query bounding box for the first sheet, selecting the columns from 5 to 8
print(getBoundingBox(wb, sheet="FirstSheet", startCol=5, endCol=8))

## End(Not run)
```

---

getCellFormula-methods

*Retrieving formula definitions from cells*

---

### Description

Retrieves a cell formula from a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook,character'  
getCellFormula(object,sheet,row,col)  
## S4 method for signature 'workbook,numeric'  
getCellFormula(object,sheet,row,col)
```

**Arguments**

object	The <a href="#">workbook</a> to use
sheet	The name or index of the worksheet containing the cell
row	The one-based row index of the cell to query
col	The one-based column index of the cell to query

**Details**

Retrieves the formula of the specified cell as a character, without the initial = character displayed in Excel. Raises an error if the specified cell is not a formula cell.

**Author(s)**

Thomas Themel  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [setCellFormula](#)

**Examples**

```
## Not run:  
# Load workbook (create if not existing)  
wb <- loadWorkbook("cellFormula.xlsx", create = TRUE)  
  
createSheet(wb, "Formula")  
  
# Assign a formula to A1  
setCellFormula(wb, "Formula", 1, 1, "SUM($B$1:$B$29)")  
  
# Returns the formula for Sheet1!A1  
getCellFormula(wb, "Formula", 1, 1)  
# The same with a numeric sheet index  
getCellFormula(wb, 1, 1, 1)  
  
# clean up  
file.remove("cellFormula.xlsx")  
  
## End(Not run)
```

---

`getCellStyle-methods` *Retrieving named cell styles*

---

**Description**

Retrieves a named cell style from a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook'  
getCellStyle(object,name)
```

**Arguments**

<code>object</code>	The <a href="#">workbook</a> to use
<code>name</code>	The name of the <a href="#">cellstyle</a> to retrieve

**Details**

Retrieves the [cellstyle](#) with the specified name.

**Author(s)**

Thomas Themel  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [cellstyle](#), [setStyleAction](#), [createCellStyle](#), [getOrCreateCellStyle](#), [existsCellStyle](#),  
[setStyleNamePrefix](#), [setCellStyle](#), [setDataFormat](#), [setBorder](#), [setFillBackgroundColor](#),  
[setFillForegroundColor](#), [setFillPattern](#), [setWrapText](#)

**Examples**

```
## Not run:  
# Load workbook (create if not existing)  
wb <- loadWorkbook("getCellstyles.xlsx", create = TRUE)  
  
# You wouldn't usually ignore the return value here...  
createCellStyle(wb, 'Header')  
  
# ... but if you did it doesn't hurt.  
cs <- getCellStyle(wb, 'Header')  
  
# Specify the cell style to use a solid foreground color  
setFillPattern(cs, fill = XLC$"FILL.SOLID_FOREGROUND")  
  
# Specify the foreground color to be used  
setFillForegroundColor(cs, color = XLC$"COLOR.RED")
```

```
# clean up
file.remove("getCellstyles.xlsx")

## End(Not run)
```

---

getCellStyleForType-methods

*Querying the cell style per data type for the DATATYPE style action*

---

## Description

Queries the cell style for a specific data type as used by the DATATYPE style action.

## Usage

```
## S4 method for signature 'workbook'
getCellStyleForType(object, type)
```

## Arguments

object	The <a href="#">workbook</a> to use
type	The data type for which to get the <a href="#">cellstyle</a> .

## Details

Based on the (cell) data type the DATATYPE style action (see [setStyleAction](#)) sets the [cellstyle](#) for the corresponding cells. The data type is normally specified via a corresponding data type constant from the [XLC](#) object.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [setCellStyleForType](#), [setStyleAction](#)

## Examples

```
## Not run:
file.copy(system.file("demoFiles/template2.xlsx",
                      package = "XLConnect"),
          "datatype.xlsx", overwrite = TRUE)

# Load workbook
wb <- loadWorkbook("datatype.xlsx")
```

```

# Get current (existing) cell style for numerics
cs <- getCellStyleForType(wb, XLC$"DATA_TYPE.NUMERIC")
# Could also say cs <- getCellStyleForType(wb, "numeric")

# Change style
setBorder(cs, side = c("bottom", "right"), type = XLC$"BORDER.THICK",
          color = c(XLC$"COLOR.BLACK", XLC$"COLOR.RED"))

# Set style action to 'datatype'
setStyleAction(wb, XLC$"STYLE_ACTION.DATATYPE")

# Write built-in data set 'mtcars' to the named region
# 'mtcars' as defined by the Excel template.
writeNamedRegion(wb, mtcars, name = "mtcars")

# Save workbook
saveWorkbook(wb)

# clean up
file.remove("datatype.xlsx")

## End(Not run)

```

---

getDefinedNames-methods

*Retrieving defined names in a workbook*

---

## Description

Retrieves the defined names in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook'
getDefinedNames(object, validOnly)
```

## Arguments

object	The <a href="#">workbook</a> to use
validOnly	If validOnly = TRUE only names with valid references are returned. Valid references are ones not starting with #REF! or #NULL! - which could result e.g. due to a missing sheet reference. The default value for validOnly is TRUE.

## Author(s)

Martin Studer  
 Mirai Solutions GmbH <https://mirai-solutions.ch>



**See Also**

[workbook](#), [createName](#), [removeName](#), [existsName](#), [readNamedRegion](#),  
[writeNamedRegion](#)

**Examples**

```
## Not run:  
# mtcars xlsx file from demoFiles subfolder of package XLConnect  
mtcarsFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(mtcarsFile)  
  
# Retrieve defined names with valid references  
getDefinedNames(wb)  
  
## End(Not run)
```

---

getForceFormulaRecalculation-methods

*Querying the coordinates of the range reference by an Excel name*

---

**Description**

Queries the "force formula recalculation" flag on an Excel worksheet.

**Usage**

```
## S4 method for signature 'workbook,character'  
getForceFormulaRecalculation(object,sheet)  
## S4 method for signature 'workbook,numeric'  
getForceFormulaRecalculation(object,sheet)
```

**Arguments**

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet to query. This argument is vectorized such that multiple sheets can be queried with one method call. If sheet = "*", the flag is queried for all sheets in the <a href="#">workbook</a> (in the order as returned by <a href="#">getSheets</a> ).

**Author(s)**

Thomas Themel  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [getSheets](#), [setForceFormulaRecalculation](#)

## Examples

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Ask whether Excel will automatically recalculate formulas on sheet mtcars
print(getForceFormulaRecalculation(wb, sheet = "mtcars"))

## End(Not run)
```

---

getLastColumn-methods *Querying the last (non-empty) column on a worksheet*

---

## Description

Queries the last (non-empty) column on a worksheet.

## Usage

```
## S4 method for signature 'workbook,character'
getLastColumn(object, sheet)
## S4 method for signature 'workbook,numeric'
getLastColumn(object, sheet)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet of which to query the last column

## Details

Returns the (1-based) numeric index of the last non-empty column in the specified worksheet.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#)

## Examples

```
## Not run:
# mtcars.xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Query the last row of the 'mtcars' worksheet
getLastColumn(wb, "mtcars")

# Query the last row of the 'mtcars2' worksheet
getLastColumn(wb, "mtcars2")

# Query the last row of the 'mtcars3' worksheet
getLastColumn(wb, "mtcars3")

## End(Not run)
```

---

getLastRow-methods      *Querying the last (non-empty) row on a worksheet*

---

## Description

Queries the last (non-empty) row on a worksheet.

## Usage

```
## S4 method for signature 'workbook,character'
getLastRow(object, sheet)
## S4 method for signature 'workbook,numeric'
getLastRow(object, sheet)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet of which to query the last row

## Details

Returns the numeric index of the last non-empty row in the specified worksheet.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**[workbook](#)**Examples**

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Query the last row of the 'mtcars' worksheet
getLastRow(wb, "mtcars")

# Query the last row of the 'mtcars2' worksheet
getLastRow(wb, "mtcars2")

# Query the last row of the 'mtcars3' worksheet
getLastRow(wb, "mtcars3")

## End(Not run)
```

---

getOrCreateCellStyle-methods

*Retrieving or creating named cell styles*

---

**Description**

Retrieves or creates cell styles in [workbooks](#).

**Usage**

```
## S4 method for signature 'workbook,character'
getOrCreateCellStyle(object,name)
```

**Arguments**

object	The <a href="#">workbook</a> to use
name	The name of the <a href="#">cellstyle</a> to retrieve or to create

**Details**

Retrieves an existing [cellstyle](#) if it exists or creates a new one if it does not exist yet.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [cellstyle](#), [setCellStyle](#), [createCellStyle](#), [existsCellStyle](#)

**Examples**

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("getOrCreateCellStyle.xlsx", create = TRUE)

# The first time, the style does not exist yet and gets created
myStyle <- getOrCreateCellStyle(wb, name = "MyStyle")

# The second time, we retrieve the already existing style
myStyle <- getOrCreateCellStyle(wb, name = "MyStyle")

# clean up
file.remove("getOrCreateCellStyle.xlsx")

## End(Not run)
```

---

getReferenceCoordinates-methods

*Querying the coordinates of the range reference by an Excel name*

---

**Description**

(DEPRECATED) Queries the coordinates of an Excel name in a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook'
getReferenceCoordinates(object, name)
```

**Arguments**

object	The <a href="#">workbook</a> to use
name	The name to query. This argument is vectorized such that multiple names can be queried with one method call.

**Note**

This function is deprecated. Use [getReferenceCoordinatesForName](#) instead.

**Author(s)**

Thomas Themel  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [createName](#), [existsName](#), [removeName](#), [getReferenceFormula](#)

**Examples**

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Query reference coordinate for name 'mtcars'
print(getReferenceCoordinatesForName(wb, name = "mtcars"))

## End(Not run)
```

---

getReferenceCoordinatesForName-methods

*Querying the coordinates of the range reference by an Excel name*

---

**Description**

Queries the coordinates of an Excel name in a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook'
getReferenceCoordinatesForName(object, name)
```

**Arguments**

object	The <a href="#">workbook</a> to use
name	The name to query. This argument is vectorized such that multiple names can be queried with one method call.

**Author(s)**

Thomas Themel  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [createName](#), [existsName](#), [removeName](#), [getReferenceFormula](#), [getReferenceCoordinatesForTable](#)

## Examples

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Query reference coordinate for name 'mtcars'
print(getReferenceCoordinatesForName(wb, name = "mtcars"))

## End(Not run)
```

---

getReferenceCoordinatesForTable-methods

*Querying the coordinates of the range of an Excel table*

---

## Description

Queries the coordinates of an Excel table (Office 2007+) in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,numeric'
getReferenceCoordinatesForTable(object,sheet,table)
## S4 method for signature 'workbook,character'
getReferenceCoordinatesForTable(object,sheet,table)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The index or name of the worksheet on which to look for the specified table
table	The name of the table to query. This argument is vectorized such that multiple tables can be queried with one method call.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [createName](#), [existsName](#), [removeName](#), [getReferenceFormula](#), [getReferenceCoordinatesForName](#)

## Examples

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Query reference coordinates for table 'MtcarsTable' on sheet
# 'mtcars_table'
print(getReferenceCoordinatesForTable(wb, sheet = "mtcars_table",
                                     table = "MtcarsTable"))

## End(Not run)
```

---

getReferenceFormula-methods

*Querying reference formulas of Excel names*

---

## Description

Queries the reference formula of an Excel name in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook'
getReferenceFormula(object,name)
```

## Arguments

object	The <a href="#">workbook</a> to use
name	The name to query. This argument is vectorized such that multiple names can be queried with one method call.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [createName](#), [existsName](#), [removeName](#)



## Examples

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Query reference formula for name 'mtcars'
print(getReferenceFormula(wb, name = "mtcars"))

## End(Not run)
```

---

getSheetPos-methods     *Querying worksheet position*

---

## Description

Queries the position of a worksheet in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,character'
getSheetPos(object, sheet)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name of the worksheet (character) to query. This argument is vectorized such that multiple worksheets can be queried with one method call.

## Value

Returns the position index of the corresponding worksheet. Note that querying a non-existing worksheet results in a 0 index and does not throw an exception!

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [setSheetPos](#), [getSheets](#)

## Examples

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Query worksheet positions for the worksheets 'mtcars2', 'mtcars3',
# 'mtcars' and 'NotThere' (which actually does not exist)
print(getSheetPos(wb, sheet = c("mtcars2", "mtcars3", "mtcars", "NotThere")))

## End(Not run)
```

---

getSheets-methods

*Querying available worksheets in a workbook*

---

## Description

Returns all worksheet names in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook'
getSheets(object)
```

## Arguments

object            The [workbook](#) to use

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [createSheet](#), [removeSheet](#), [renameSheet](#), [getSheetPos](#), [setSheetPos](#)

## Examples

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Query available worksheets
```

```
sheets <- getSheets(wb)

## End(Not run)
```

---

getTables-methods      *Querying available Excel tables in a workbook*

---

## Description

Queries the available Excel tables on the specified worksheet.

## Usage

```
## S4 method for signature 'workbook,numeric'
getTables(object,sheet,simplify)
## S4 method for signature 'workbook,character'
getTables(object,sheet,simplify)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	Index (integer) or name (character) of worksheet to query
simplify	logical specifying if the result should be simplified (defaults to TRUE). See details.

## Details

Since this is a vectorized function (multiple sheets can be specified) the result is a named list (one component per sheet) if no simplification is applied. In cases where only one sheet is queried and `simplify = TRUE` (default) the result is simplified to a vector.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [getSheets](#), [readTable](#)

## Examples

```
## Not run:
# mtcars.xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)
```

```
# Query available tables (table names) on sheet 'mtcars_table'
tables <- getTables(wb, sheet = "mtcars_table")

# ... or via sheet index
tables <- getTables(wb, sheet = 4)

## End(Not run)
```

---

hideSheet-methods      *Hiding worksheets in a workbook*

---

## Description

(Very) hides the specified worksheets in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,character'
hideSheet(object, sheet, veryHidden)
## S4 method for signature 'workbook,numeric'
hideSheet(object, sheet, veryHidden)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet to hide
veryHidden	If veryHidden = TRUE, the specified sheet is "very" hidden (see note), otherwise it is just hidden. Default is FALSE.

## Details

The arguments sheet and veryHidden are vectorized such that multiple worksheets can be (very) hidden with one method call. An exception is thrown if the specified sheet does not exist.

## Note

Note that hidden worksheets can be unhidden by users directly within Excel via standard functionality. Therefore Excel knows the concept of "very hidden" worksheets. These worksheets cannot be unhidden with standard Excel functionality but need programatic intervention to be made visible.

Also note that in case the specified worksheet to hide is the currently active worksheet, then hideSheet tries to set the active worksheet to the first non-hidden (not hidden and not very hidden) worksheet in the workbook. If there is no such worksheet, hideSheet will throw an exception.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [unhideSheet](#), [isSheetHidden](#), [isSheetVeryHidden](#), [isSheetVisible](#)

**Examples**

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("hiddenWorksheet.xlsx", create = TRUE)

# Write a couple of built-in data.frame's into sheets
# with corresponding name
for(obj in c("CO2", "airquality", "swiss")) {
  createSheet(wb, name = obj)
  writeWorksheet(wb, get(obj), sheet = obj)
}

# Hide sheet 'airquality';
# the sheet may be unhidden by a user from within Excel
# since veryHidden defaults to FALSE
hideSheet(wb, sheet = "airquality")

# Save workbook
saveWorkbook(wb)

# clean up
file.remove("hiddenWorksheet.xlsx")

## End(Not run)
```

---

idx2aref

*Converting row and column based area references to Excel area references*

---

**Description**

Converts row & column based area references to Excel area references

**Usage**

```
idx2aref(x)
```

**Arguments**

x                    Numeric (integer) matrix or vector of indices. If a matrix is provided it should have four columns with the first two columns representing the top left corner (row and column indices) and the third & fourth column representing the bottom right corner. If a vector is provided it will be converted to a matrix by filling the vector into a 4-column matrix by row.

**Value**

Returns a character vector of corresponding Excel area references.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[aref2idx](#), [aref](#), [idx2cref](#), [cref2idx](#), [idx2col](#), [col2idx](#)

**Examples**

```
## Not run:
idx2aref(c(1, 1, 5, 4))

## End(Not run)
```

---

idx2col

*Converting column indices to Excel column names*


---

**Description**

Converts column indices to Excel column names.

**Usage**

```
idx2col(x)
```

**Arguments**

x                    Numeric (integer) vector of column indices

**Value**

Returns a character vector of corresponding Excel column names. Numbers  $\leq 0$  result in the empty string ("").

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[col2idx](#), [idx2cref](#), [cref2idx](#), [idx2aref](#), [aref2idx](#), [aref](#)

**Examples**

```
## Not run:  
idx2col(c(1, 347))  
  
## End(Not run)
```

---

idx2cref

*Converting indices to Excel cell references*

---

**Description**

Converts row & column indices to Excel cell references

**Usage**

```
idx2cref(x, absRow = TRUE, absCol = TRUE)
```

**Arguments**

x	Numeric (integer) matrix or vector of indices. If a matrix is provided it should have two columns with the first column representing the row indices and the second column representing the column indices (i.e. each row represents an index-based cell reference). If a vector is provided it will be converted to a matrix by filling the vector into a 2-column matrix by row.
absRow	Boolean determining if the row index should be considered absolute. If TRUE (default), this will result in a '\$'-prefixed row identifier.
absCol	Boolean determining if the column index should be considered absolute. If TRUE (default), this will result in a '\$'-prefixed column identifier.

**Value**

Returns a character vector of corresponding Excel cell references.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[cref2idx](#), [idx2col](#), [col2idx](#), [idx2aref](#), [aref2idx](#), [aref](#)

**Examples**

```
## Not run:  
idx2cref(c(5, 8, 14, 38))  
  
## End(Not run)
```

---

isSheetHidden-methods *Checking if worksheets are hidden in a workbook*

---

**Description**

Checks if the specified worksheets are hidden (but not very hidden) in a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook,character'  
isSheetHidden(object, sheet)  
## S4 method for signature 'workbook,numeric'  
isSheetHidden(object, sheet)
```

**Arguments**

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet to check

**Details**

Returns TRUE if the specified sheet is hidden (not visible but also not very hidden), otherwise FALSE. sheet is vectorized such that multiple worksheets can be queried with one method call. An exception is thrown if the specified sheet does not exist.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [hideSheet](#), [unhideSheet](#), [isSheetVeryHidden](#), [isSheetVisible](#)



## Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("isSheetHidden.xlsx", create = TRUE)

# Write a couple of built-in data.frame's into sheets
# with corresponding name
for(obj in c("CO2", "airquality", "swiss")) {
  createSheet(wb, name = obj)
  writeWorksheet(wb, get(obj), sheet = obj)
}

# Hide sheet 'airquality'
hideSheet(wb, sheet = "airquality")

# Check if sheet 'airquality' is hidden;
# this should obviously return TRUE
isSheetHidden(wb, "airquality")

# Check if sheet 'swiss' is hidden;
# this should obviously return FALSE
isSheetHidden(wb, "swiss")

# clean up
file.remove("isSheetHidden.xlsx")

## End(Not run)
```

---

isSheetVeryHidden-methods

*Checking if worksheets are very hidden in a workbook*

---

## Description

Checks if the specified worksheets are very hidden (but not just hidden) in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,character'
isSheetVeryHidden(object,sheet)
## S4 method for signature 'workbook,numeric'
isSheetVeryHidden(object,sheet)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet to check

### Details

Returns TRUE if the specified named sheet is very hidden (not visible but also not just hidden), otherwise FALSE. sheet is vectorized such that multiple worksheets can be queried with one method call. An exception is thrown if the specified sheet does not exist.

### Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### See Also

[workbook](#), [hideSheet](#), [unhideSheet](#), [isSheetHidden](#), [isSheetVisible](#)

### Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("isSheetVeryHidden.xlsx", create = TRUE)

# Write a couple of built-in data.frame's into sheets
# with corresponding name
for(obj in c("CO2", "airquality", "swiss")) {
  createSheet(wb, name = obj)
  writeWorksheet(wb, get(obj), sheet = obj)
}

# Very hide sheet 'airquality'
hideSheet(wb, sheet = "airquality", veryHidden = TRUE)

# Hide sheet 'CO2'
hideSheet(wb, sheet = "CO2", veryHidden = FALSE)

# Check if sheet 'airquality' is very hidden;
# this should obviously return TRUE
isSheetVeryHidden(wb, "airquality")

# Check if sheet 'swiss' is very hidden;
# this should obviously return FALSE
isSheetVeryHidden(wb, "swiss")

# Check if sheet 'CO2' is very hidden;
# this should also return FALSE - the sheet
# is just hidden but not very hidden
isSheetVeryHidden(wb, "CO2")

# clean up
file.remove("isSheetVeryHidden.xlsx")

## End(Not run)
```

---

`isSheetVisible-methods`*Checking if worksheets are visible in a workbook*

---

## Description

Checks if the specified worksheets are visible in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,character'  
isSheetVisible(object, sheet)  
## S4 method for signature 'workbook,numeric'  
isSheetVisible(object, sheet)
```

## Arguments

<code>object</code>	The <a href="#">workbook</a> to use
<code>sheet</code>	The name or index of the sheet to check

## Details

Returns TRUE if the specified named sheet is visible (not hidden and not very hidden), otherwise FALSE. `sheet` is vectorized such that multiple worksheets can be queried with one method call. An exception is thrown if the specified sheet does not exist.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [hideSheet](#), [unhideSheet](#), [isSheetHidden](#), [isSheetVeryHidden](#)

## Examples

```
## Not run:  
# Load workbook (create if not existing)  
wb <- loadWorkbook("isSheetVisible.xlsx", create = TRUE)  
  
# Write a couple of built-in data.frame's into sheets  
# with corresponding name  
for(obj in c("CO2", "airquality", "swiss")) {  
  createSheet(wb, name = obj)  
  writeWorksheet(wb, get(obj), sheet = obj)  
}
```

```

# Hide sheet 'CO2'
hideSheet(wb, sheet = "CO2", veryHidden = FALSE)

# Very hide sheet 'airquality'
hideSheet(wb, sheet = "airquality", veryHidden = TRUE)

# Check if sheet 'swiss' is visible;
# this should obviously return TRUE
isSheetVisible(wb, "swiss")

# Check if sheet 'CO2' is visible;
# this should obviously return FALSE
isSheetVisible(wb, "CO2")

# Check if sheet 'airquality' is visible;
# this should obviously return FALSE
isSheetVisible(wb, "airquality")

# clean up
file.remove("isSheetVisible.xlsx")

## End(Not run)

```

---

loadWorkbook

*Loading Microsoft Excel workbooks*


---

## Description

Loads or creates a Microsoft Excel [workbook](#) for further manipulation.

## Usage

```
loadWorkbook(filename, create = FALSE, password = NULL)
```

## Arguments

filename	Filename (absolute or relative) of Excel workbook to be loaded. Supported are Excel '97 (*.xls) and OOXML (Excel 2007+, *.xlsx) file formats. Paths are expanded using <code>path.expand</code> .
create	Specifies if the file should be created if it does not already exist (default is FALSE). Note that <code>create = TRUE</code> has no effect if the specified file exists, i.e. an existing file is loaded and not being recreated if <code>create = TRUE</code> .
password	Password to use when opening password protected files. The default NULL means no password is being used. This argument is ignored when creating new files using <code>create = TRUE</code> .

## Value

Returns a [workbook](#) object for further manipulation.

**Note**

loadWorkbook is basically just a shortcut form of new("workbook", filename, create) with some additional error checking. As such it is the preferred way of creating [workbook](#) instances.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**References**

Wikipedia: Office Open XML  
[https://en.wikipedia.org/wiki/Office\\_Open\\_XML](https://en.wikipedia.org/wiki/Office_Open_XML)

**See Also**

[workbook](#), [saveWorkbook](#)

**Examples**

```
## Not run:
# Load existing demo Excel file 'mtcars.xlsx' from the XLConnect package
wb.mtcars <- loadWorkbook(system.file("demoFiles/mtcars.xlsx",
                                     package = "XLConnect"))

# Create new workbook
wb.new <- loadWorkbook("myNewExcelFile.xlsx", create = TRUE)

# NOTE: The above statement does not write the file to disk!
# saveWorkbook(wb.new) would need to be called in order to write/save
# the file to disk!

# clean up
file.remove("myNewExcelFile.xlsx")

## End(Not run)
```

---

mergeCells-methods      *Merging cells*

---

**Description**

Merges cells in a worksheet.

**Usage**

```
## S4 method for signature 'workbook,character'
mergeCells(object, sheet, reference)
## S4 method for signature 'workbook,numeric'
mergeCells(object, sheet, reference)
```

**Arguments**

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet on which to merge cells
reference	A cell range specification (character) in the form 'A1:B8'

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [unmergeCells](#), [idx2cref](#)

**Examples**

```
## Not run:  
# Load workbook (create if not existing)  
wb <- loadWorkbook("mergeCells.xlsx", create = TRUE)  
  
# Create a worksheet called 'merge'  
createSheet(wb, name = "merge")  
  
# Merge the cells A1:B8 on the worksheet created above  
mergeCells(wb, sheet = "merge", reference = "A1:B8")  
  
# Save workbook  
saveWorkbook(wb)  
  
# clean up  
file.remove("mergeCells.xlsx")  
  
## End(Not run)
```

---

mirai

*Mirai Solutions GmbH*

---

**Description**

Utility object to easily get to the Mirai Solutions GmbH web page. Just enter mirai in the R console.

**Usage**

```
mirai
```

**References**

Mirai Solutions GmbH <https://mirai-solutions.ch>

---

onErrorCell-methods     *Behavior when error cells are detected*

---

## Description

This function defines the behavior when reading data from a worksheet and error cells are detected.

## Usage

```
## S4 method for signature 'workbook'  
onErrorCell(object,behavior)
```

## Arguments

object	The <a href="#">workbook</a> to use
behavior	The behavior to follow when an error cell is detected. This is normally specified by a corresponding <a href="#">XLC</a> error constant, i.e. either <code>XLC\$"ERROR.WARN"</code> or <code>XLC\$"ERROR.STOP"</code> . <code>XLC\$"ERROR.WARN"</code> means the error cell will be read as missing value (NA) and a corresponding warning will be generated (this is the default behavior). <code>XLC\$"ERROR.STOP"</code> means that an exception will be thrown and further execution will be stopped immediately.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [readNamedRegion](#), [readNamedRegionFromFile](#), [readWorksheet](#),  
[readWorksheetFromFile](#)

## Examples

```
## Not run:  
# errorCell.xlsx file from demoFiles subfolder of package XLConnect  
demoExcelFile <- system.file("demoFiles/errorCell.xlsx",  
  package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(demoExcelFile)  
  
# Set error behavior to XLC$ERROR.WARN when detecting error cells  
# Note: this is the default behavior  
onErrorCell(wb, XLC$ERROR.WARN)  
# Alternatively: wb$onErrorCell(XLC$ERROR.WARN)  
  
# Read named region 'MyData' (with default header = TRUE)  
data <- readNamedRegion(wb, name = "MyData")
```

```
# Now set error behavior to XLC$ERROR.STOP to immediately
# issue an exception and stop in case an error cell is
# detected
onErrorCell(wb, XLC$ERROR.STOP)
# Alternatively: wb$onErrorCell(XLC$ERROR.STOP)

# Read (again) named region 'MyData' (with default header = TRUE)
res <- try(readNamedRegion(wb, name = "MyData"))
# Did we get an error?
print(is(res, "try-error"))

## End(Not run)
```

---

print-methods

*Print a workbook's filename*

---

## Description

Prints the [workbook](#)'s underlying filename.

## Usage

```
## S4 method for signature 'workbook'
print(x,...)
```

## Arguments

x	The <a href="#">workbook</a> to print
...	Arguments passed on to standard print

## Details

Prints the specified [workbook](#)'s filename (see also the S4 filename slot of the [workbook](#) class).

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#)



**Examples**

```
## Not run:
# Load existing demo Excel file 'mtcars.xlsx' from the XLConnect package
wb.mtcars <- loadWorkbook(system.file("demoFiles/mtcars.xlsx",
                                     package = "XLConnect"))

# Print the workbook's underlying filename
print(wb.mtcars)

## End(Not run)
```

---

readNamedRegion	<i>Reading named regions from a workbook</i>
-----------------	--

---

**Description**

Reads named regions from a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook'
readNamedRegion(object, name, header, rownames, colTypes, forceConversion,
                 dateTimeFormat, check.names, useCachedValues, keep, drop, simplify, readStrategy)
```

**Arguments**

object	The <a href="#">workbook</a> to use
name	The name of the named region to read
header	The argument header specifies if the first row should be interpreted as column names. The default value is TRUE.
rownames	Index (numeric) or name (character) of column that should be used as row names. The corresponding column will be removed from the data set. Defaults to NULL which means that no row names are applied. Row names must be either integer or character. Non-numeric columns will be coerced to character.
colTypes	Column types to use when reading in the data. Specified as a character vector of the corresponding type names (see <a href="#">XLC</a> ; <code>XLC\$DATA_TYPE.&lt;?&gt;</code> ). You may also use R class names such as <code>numeric</code> , <code>character</code> , <code>logical</code> and <code>POSIXt</code> . The types are applied in the given order to the columns - elements are recycled if necessary. Defaults to <code>character(0)</code> meaning that column types are determined automatically (see the Note section for more information). By default, type conversions are only applied if the specified column type is a more generic type (e.g. from <code>Numeric</code> to <code>String</code> ) - otherwise <code>NA</code> is returned. The <code>forceConversion</code> flag can be set to force conversion into less generic types where possible.

forceConversion	logical specifying if conversions to less generic types should be forced. Defaults to FALSE meaning that if a column is specified to be of a certain type via the colTypes argument and a more generic type is detected in the column, then NA will be returned (example: column is specified to be DateTime but a more generic String is found). Specifying forceConversion = TRUE will try to enforce a conversion - if it succeeds the corresponding (converted) value will be returned, otherwise NA. See the Note section for some additional information.
dateTimeFormat	Date/time format used when doing date/time conversions. Defaults to getOption("XLConnect.dateTimeFormat"). This should be a POSIX format specifier according to <a href="#">strptime</a> although not all specifications have been implemented yet - the most important ones however are available.
check.names	logical specifying if column names of the resulting data.frame should be checked to ensure that they are syntactically valid variable names and are not duplicated. See the check.names argument of <a href="#">data.frame</a> . Defaults to TRUE.
useCachedValues	logical specifying whether to read cached formula results from the workbook instead of re-evaluating them. This is particularly helpful in cases for reading data produced by Excel features not supported in XLConnect like references to external workbooks. Defaults to FALSE, which means that formulas will be evaluated by XLConnect.
keep	List of column names or indices to be kept in the output data frame. It is possible to specify either keep or drop, but not both at the same time. Defaults to NULL. If a vector is passed as argument, it will be wrapped into a list. This list gets replicated to match the length of the other arguments. Example: if name = c("NamedRegion1", "NamedRegion2", "NamedRegion3") and keep = c(1,2), keep will be internally converted into list(c(1,2)) and then replicated to match the number of named regions, i.e. keep = list(c(1,2), c(1,2), c(1,2)). The result is that the first two columns of each named region are kept. If keep = list(1,2) is specified, it will be replicated as list(1,2,1), i.e. respectively the first, second and first column of the named regions "NamedRegion1", "NamedRegion2", "NamedRegion3" will be kept.
drop	List of column names or indices to be dropped in the output data frame. It is possible to specify either keep or drop, but not both at the same time. Defaults to NULL. If a vector is passed as argument, it will be wrapped into a list. This list gets replicated to match the length of the other arguments. Example: if name = c("NamedRegion1", "NamedRegion2", "NamedRegion3") and drop = c(1,2), drop will be internally converted into list(c(1,2)) and then replicated to match the number of named regions, i.e. drop = list(c(1,2), c(1,2), c(1,2)). The result is that the first two columns of each named region are dropped. If drop = list(1,2) is specified, it will be replicated as list(1,2,1), i.e. respectively the first, second and first column of the named regions "NamedRegion1", "NamedRegion2", "NamedRegion3" will be dropped.
simplify	logical specifying if the result should be simplified, e.g. in case the data.frame would only have one row or one column (and data types match). Simplifying here is identical to calling unlist on the otherwise resulting data.frame (using use.names = FALSE). The default is FALSE.

- readStrategy character specifying the reading strategy to use. Currently supported strategies are:
- "default" (default): Can handle all supported data types incl. date/time values and can deal directly with missing value identifiers (see [setMissingValue](#))
  - "fast": Increased read performance. Date/time values are read as numeric (number of days since 1900-01-01; fractional days represent hours, minutes, and seconds) and only blank cells are recognized as missing (missing value identifiers as set in [setMissingValue](#) are ignored)

### Details

The arguments name and header are vectorized. As such, multiple named regions can be read with one method call. If only one single named region is read, the return value is a `data.frame`. If multiple named regions are specified, the return value is a (named) list of `data.frame`'s returned in the order they have been specified with the argument name.

### Note

If no specific column types (see argument `colTypes`) are specified, `readNamedRegion` tries to determine the resulting column types based on the read cell types. If different cell types are found in a specific column, the most general of those is used and mapped to the corresponding R data type. The order of data types from least to most general is Boolean (logical) < DateTime (POSIXct) < Numeric (numeric) < String (character). E.g. if a column is read that contains cells of type Boolean, Numeric and String then the resulting column in R would be character since character is the most general type.

Some additional information with respect to forcing data type conversion using `forceConversion = TRUE`:

- Forcing conversion from String to Boolean: TRUE is returned if and only if the target string is "true" (ignoring any capitalization). Any other string will return FALSE.
- Forcing conversion from Numeric to DateTime: since Excel understands Dates/Times as Numerics with some additional formatting, a conversion from a Numeric to a DateTime is actually possible. Numerics in this case represent the number of days since 1900-01-00 (yes, day 00! - see <http://www.cpearson.com/excel/datetime.htm>). Note that in R 0 is represented as 1899-12-31 since there is no 1900-01-00. Fractional days represent hours, minutes, and seconds.

### Author(s)

Martin Studer  
Thomas Themel  
Nicola Lambiase  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### References

What are named regions/ranges?  
[https://www.officearticles.com/excel/named\\_ranges\\_in\\_microsoft\\_excel.htm](https://www.officearticles.com/excel/named_ranges_in_microsoft_excel.htm)

How to create named regions/ranges?

<https://www.youtube.com/watch?v=iAE9a0uRtpM>

### See Also

[workbook](#), [readWorksheet](#), [writeNamedRegion](#),  
[writeWorksheet](#), [readNamedRegionFromFile](#), [readTable](#), [onErrorCell](#)

### Examples

```
## Not run:
## Example 1:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Read named region 'mtcars' (with default header = TRUE)
data <- readNamedRegion(wb, name = "mtcars")

## Example 2;
# conversion xlsx file from demoFiles subfolder of package XLConnect
excelFile <- system.file("demoFiles/conversion.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(excelFile)

# Read named region 'conversion' with pre-specified column types
# Note: in the worksheet all data was entered as strings!
# forceConversion = TRUE is used to force conversion from String
# into the less generic data types Numeric, DateTime & Boolean
df <- readNamedRegion(wb, name = "conversion", header = TRUE,
                      colTypes = c(XLC$DATA_TYPE.NUMERIC,
                                   XLC$DATA_TYPE.DATETIME,
                                   XLC$DATA_TYPE.BOOLEAN),
                      forceConversion = TRUE,
                      dateTimeFormat = "%Y-%m-%d %H:%M:%S")

## Example 3:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Read the columns 1, 3 and 5 of the named region 'mtcars' (with default header = TRUE)
data <- readNamedRegion(wb, name = "mtcars", keep=c(1,3,5))

## End(Not run)
```

---

`readNamedRegionFromFile`*Reading named regions from an Excel file (wrapper function)*

---

### Description

Reads named regions from an Excel file.

### Usage

```
readNamedRegionFromFile(file, ...)
```

### Arguments

<code>file</code>	The file name of the workbook to read
<code>...</code>	Arguments passed to <a href="#">readNamedRegion</a>

### Details

This is a convenience wrapper to read named regions from a file without creating an intermediate [workbook](#) object. See [readNamedRegion](#) for more details.

### Author(s)

Thomas Themel  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### See Also

[readNamedRegion](#), [readWorksheetFromFile](#), [writeNamedRegionToFile](#),  
[writeWorksheetToFile](#), [onErrorCell](#)

### Examples

```
## Not run:  
# multiregion xlsx file from demoFiles subfolder of package XLConnect  
demoExcelFile <- system.file("demoFiles/multiregion.xlsx",  
                             package = "XLConnect")  
  
# Load a single named region into a single data.frame.  
df <- readNamedRegionFromFile(demoExcelFile, name="Iris")  
  
# Load multiple regions at once - returns a (named) list  
# of data.frames.  
df <- readNamedRegionFromFile(demoExcelFile,  
                              name=c("Calendar", "Iris", "IQ"))  
  
## End(Not run)
```

readTable

*Reading Excel tables from a workbook***Description**

Reads Excel tables (Office 2007+) from a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook,numeric'
readTable(object, sheet, table, header, rownames, colTypes, forceConversion,
dateTimeFormat, check.names, useCachedValues, keep, drop, simplify, readStrategy)
## S4 method for signature 'workbook,character'
readTable(object, sheet, table, header, rownames, colTypes, forceConversion,
dateTimeFormat, check.names, useCachedValues, keep, drop, simplify, readStrategy)
```

**Arguments**

object	The <a href="#">workbook</a> to use
sheet	The index or name of the worksheet on which to look for the specified table
table	The name of the table to read
header	The argument header specifies if the first row should be interpreted as column names. The default value is TRUE.
rownames	Index (numeric) or name (character) of column that should be used as row names. The corresponding column will be removed from the data set. Defaults to NULL which means that no row names are applied.
colTypes	Column types to use when reading in the data. Specified as a character vector of the corresponding type names (see <a href="#">XLC</a> ; <code>XLC\$DATA_TYPE.&lt;?&gt;</code> ). You may also use R class names such as <code>numeric</code> , <code>character</code> , <code>logical</code> and <code>POSIXt</code> . The types are applied in the given order to the columns - elements are recycled if necessary. Defaults to <code>character(0)</code> meaning that column types are determined automatically (see the Note section for more information). By default, type conversions are only applied if the specified column type is a more generic type (e.g. from <code>Numeric</code> to <code>String</code> ) - otherwise <code>NA</code> is returned. The <code>forceConversion</code> flag can be set to force conversion into less generic types where possible.
forceConversion	logical specifying if conversions to less generic types should be forced. Defaults to <code>FALSE</code> meaning that if a column is specified to be of a certain type via the <code>colTypes</code> argument and a more generic type is detected in the column, then <code>NA</code> will be returned (example: column is specified to be <code>DateTime</code> but a more generic <code>String</code> is found). Specifying <code>forceConversion = TRUE</code> will try to enforce a conversion - if it succeeds the corresponding (converted) value will be returned, otherwise <code>NA</code> . See the Note section for some additional information.

dateTimeFormat	Date/time format used when doing date/time conversions. Defaults to <code>getOption("XLConnect.dateTimeFormat")</code> . This should be a POSIX format specifier according to <code>strptime</code> although not all specifications have been implemented yet - the most important ones however are available.
check.names	logical specifying if column names of the resulting <code>data.frame</code> should be checked to ensure that they are syntactically valid valid variable names and are not duplicated. See the <code>check.names</code> argument of <code>data.frame</code> . Defaults to <code>TRUE</code> .
useCachedValues	logical specifying whether to read cached formula results from the workbook instead of re-evaluating them. This is particularly helpful in cases for reading data produced by Excel features not supported in XLConnect like references to external workbooks. Defaults to <code>FALSE</code> , which means that formulas will be evaluated by XLConnect.
keep	List of column names or indices to be kept in the output data frame. It is possible to specify either <code>keep</code> or <code>drop</code> , but not both at the same time. Defaults to <code>NULL</code> . If a vector is passed as argument, it will be wrapped into a list. This list gets replicated to match the length of the other arguments.
drop	List of column names or indices to be dropped in the output data frame. It is possible to specify either <code>keep</code> or <code>drop</code> , but not both at the same time. Defaults to <code>NULL</code> . If a vector is passed as argument, it will be wrapped into a list. This list gets replicated to match the length of the other arguments.
simplify	logical specifying if the result should be simplified, e.g. in case the <code>data.frame</code> would only have one row or one column (and data types match). Simplifying here is identical to calling <code>unlist</code> on the otherwise resulting <code>data.frame</code> (using <code>use.names = FALSE</code> ). The default is <code>FALSE</code> .
readStrategy	character specifying the reading strategy to use. Currently supported strategies are: <ul style="list-style-type: none"> <li>• "default" (default): Can handle all supported data types incl. date/time values and can deal directly with missing value identifiers (see <a href="#">setMissingValue</a>)</li> <li>• "fast": Increased read performance. Date/time values are read as numeric (number of days since 1900-01-01; fractional days represent hours, minutes, and seconds) and only blank cells are recognized as missing (missing value identifiers as set in <a href="#">setMissingValue</a> are ignored)</li> </ul>

### Note

If no specific column types (see argument `colTypes`) are specified, `readNamedRegion` tries to determine the resulting column types based on the read cell types. If different cell types are found in a specific column, the most general of those is used and mapped to the corresponding R data type. The order of data types from least to most general is `Boolean (logical) < DateTime (POSIXct) < Numeric (numeric) < String (character)`. E.g. if a column is read that contains cells of type `Boolean`, `Numeric` and `String` then the resulting column in R would be `character` since `character` is the most general type.

Some additional information with respect to forcing data type conversion using `forceConversion = TRUE`:

- Forcing conversion from String to Boolean: TRUE is returned if and only if the target string is "true" (ignoring any capitalization). Any other string will return FALSE.
- Forcing conversion from Numeric to DateTime: since Excel understands Dates/Times as Numerics with some additional formatting, a conversion from a Numeric to a DateTime is actually possible. Numerics in this case represent the number of days since 1900-01-01. Fractional days represent hours, minutes, and seconds.

### Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### References

Overview of Excel tables

<https://support.microsoft.com/en-us/office/overview-of-excel-tables-7ab0bb7d-3a9e-4b56-a3c9-6c94330c8sassetid=ha010048546&correlationid=ecf0d51a-596f-42e5-9c05-8653648bb180&ui=en-us&rs=en-us&ad=us>

### See Also

[workbook](#), [readNamedRegion](#), [readWorksheet](#), [writeNamedRegion](#),  
[writeWorksheet](#), [readNamedRegionFromFile](#), [onErrorCell](#)

### Examples

```
## Not run:  
# mtcars.xlsx file from demoFiles subfolder of package XLConnect  
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(demoExcelFile)  
  
# Read table 'MtcarsTable' from sheet 'mtcars_table'  
data <- readTable(wb, sheet = "mtcars_table", table = "MtcarsTable")  
  
## End(Not run)
```

---

readWorksheet-methods *Reading data from worksheets*

---

### Description

Reads data from worksheets of a [workbook](#).



**Usage**

```
## S4 method for signature 'workbook,numeric'
readWorksheet(object, sheet, startRow, startCol, endRow, endCol, autofitRow, autofitCol,
  region, header, rownames, colTypes, forceConversion, dateTimeFormat, check.names,
  useCachedValues, keep, drop, simplify, readStrategy)
## S4 method for signature 'workbook,character'
readWorksheet(object, sheet, startRow, startCol, endRow, endCol, autofitRow, autofitCol,
  region, header, rownames, colTypes, forceConversion, dateTimeFormat, check.names,
  useCachedValues, keep, drop, simplify, readStrategy)
```

**Arguments**

object	The <a href="#">workbook</a> to use
sheet	The name or index of the worksheet to read from
startRow	The index of the first row to read from. Defaults to 0 meaning that the start row is determined automatically.
startCol	The index of the first column to read from. Defaults to 0 meaning that the start column is determined automatically.
endRow	The index of the last row to read from. Defaults to 0 meaning that the end row is determined automatically.
endCol	The index of the last column to read from. Defaults to 0 meaning that the end column is determined automatically.
autofitRow	logical specifying if leading and trailing empty rows should be skipped. Defaults to TRUE.
autofitCol	logical specifying if leading and trailing empty columns should be skipped. Defaults to TRUE.
region	A range specifier in the form 'A10:B18'. This provides an alternative way to specify startRow, startCol, endRow and endCol. Range specifications take precedence over index specifications.
header	Interpret the first row of the specified area as column headers. The default is TRUE.
rownames	Index (numeric) or name (character) of column that should be used as row names. The corresponding column will be removed from the data set. Defaults to NULL which means that no row names are applied. Row names must be either integer or character. Non-numeric columns will be coerced to character.
colTypes	Column types to use when reading in the data. Specified as a character vector of the corresponding type names (see <a href="#">XLC</a> ; <code>XLC\$DATA_TYPE.&lt;?&gt;</code> ). You may also use R class names such as <code>numeric</code> , <code>character</code> , <code>logical</code> and <code>POSIXt</code> . The types are applied in the given order to the columns - elements are recycled if necessary. Defaults to <code>character(0)</code> meaning that column types are determined automatically (see the Note section for more information). By default, type conversions are only applied if the specified column type is a more generic type (e.g. from <code>Numeric</code> to <code>String</code> ) - otherwise <code>NA</code> is returned. The <code>forceConversion</code> flag can be set to force conversion into less generic types where possible.

<code>forceConversion</code>	logical specifying if conversions to less generic types should be forced. Defaults to FALSE meaning that if a column is specified to be of a certain type via the <code>colTypes</code> argument and a more generic type is detected in the column, then NA will be returned (example: column is specified to be <code>DateTime</code> but a more generic <code>String</code> is found). Specifying <code>forceConversion = TRUE</code> will try to enforce a conversion - if it succeeds the corresponding (converted) value will be returned, otherwise NA. See the Note section for some additional information.
<code>dateTimeFormat</code>	Date/time format used when doing date/time conversions. Defaults to <code>getOption("XLConnect.dateTimeFormat")</code> . This should be a POSIX format specifier according to <a href="#">strptime</a> although not all specifications have been implemented yet - the most important ones however are available. When using the <code>'%OS'</code> specification for fractional seconds (without an additional integer) 3 digits will be used by default ( <code>getOption("digits.secs")</code> is not considered).
<code>check.names</code>	logical specifying if column names of the resulting <code>data.frame</code> should be checked to ensure that they are syntactically valid variable names and are not duplicated. See the <code>check.names</code> argument of <a href="#">data.frame</a> . Defaults to TRUE.
<code>useCachedValues</code>	logical specifying whether to read cached formula results from the workbook instead of re-evaluating them. This is particularly helpful in cases for reading data produced by Excel features not supported in XLConnect like references to external workbooks. Defaults to FALSE, which means that formulas will be evaluated by XLConnect.
<code>keep</code>	Vector of column names or indices to be kept in the output data frame. It is possible to specify either <code>keep</code> or <code>drop</code> , but not both at the same time. Defaults to NULL. If a vector is passed as argument, it will be wrapped into a list. This list gets replicated to match the length of the other arguments. Example: if <code>sheet = c("Sheet1", "Sheet2", "Sheet3")</code> and <code>keep = c(1, 2)</code> , <code>keep</code> will be internally converted into <code>list(c(1, 2))</code> and then replicated to match the number of sheets, i.e. <code>keep = list(c(1, 2), c(1, 2), c(1, 2))</code> . The result is that the first two columns of each sheet are kept. If <code>keep = list(1, 2)</code> is specified, it will be replicated as <code>list(1, 2, 1)</code> , i.e. respectively the first, second and first column of the sheets "Sheet1", "Sheet2", "Sheet3" will be kept.
<code>drop</code>	Vector of column names or indices to be dropped in the output data frame. It is possible to specify either <code>keep</code> or <code>drop</code> , but not both at the same time. Defaults to NULL. If a vector is passed as argument, it will be wrapped into a list. This list gets replicated to match the length of the other arguments. Example: if <code>sheet = c("Sheet1", "Sheet2", "Sheet3")</code> and <code>drop = c(1, 2)</code> , <code>drop</code> will be internally converted into <code>list(c(1, 2))</code> and then replicated to match the number of sheets, i.e. <code>drop = list(c(1, 2), c(1, 2), c(1, 2))</code> . The result is that the first two columns of each sheet are dropped. If <code>drop = list(1, 2)</code> is specified, it will be replicated as <code>list(1, 2, 1)</code> , i.e. respectively the first, second and first column of the sheets "Sheet1", "Sheet2", "Sheet3" will be dropped.
<code>simplify</code>	logical specifying if the result should be simplified, e.g. in case the <code>data.frame</code> would only have one row or one column (and data types match). Simplifying here is identical to calling <code>unlist</code> on the otherwise resulting <code>data.frame</code> (using <code>use.names = FALSE</code> ). The default is FALSE.

- `readStrategy` character specifying the reading strategy to use. Currently supported strategies are:
- "default" (default): Can handle all supported data types incl. date/time values and can deal directly with missing value identifiers (see [setMissingValue](#))
  - "fast": Increased read performance. Date/time values are read as numeric (number of days since 1900-01-01; fractional days represent hours, minutes, and seconds) and only blank cells are recognized as missing (missing value identifiers as set in [setMissingValue](#) are ignored)

### Details

Reads data from the worksheet specified by `sheet`. Data is read starting at the top left corner specified by `startRow` and `startCol` down to the bottom right corner specified by `endRow` and `endCol`. If `header = TRUE`, the first row is interpreted as column names of the resulting `data.frame`. If `startRow <= 0` then the first available row in the sheet is assumed. If `endRow = 0` then the last available row in the sheet is assumed. For `endRow = -n` with `n > 0`, the 'last row' - `n` rows is assumed. This is useful in cases where you want to skip the last `n` rows. If `startCol <= 0` then the minimum column between `startRow` and `endRow` is assumed. If `endCol = 0` then the maximum column between `startRow` and `endRow` is assumed. If `endCol = -n` with `n > 0`, the maximum column between `startRow` and `endRow` except for the last `n` columns is assumed.

In other words, if no boundaries are specified `readWorksheet` assumes the "bounding box" of the data as the corresponding boundaries.

The arguments `autoFitRow` and `autoFitCol` (both defaulting to `TRUE`) can be used to skip leading and trailing empty rows even in case `startRow`, `endRow`, `startCol` and `endCol` are specified to values `> 0`. This can be useful if data is expected within certain given boundaries but the exact location is not available.

If all four coordinate arguments are missing this behaves as above with `startRow = 0`, `startCol = 0`, `endRow = 0` and `endCol = 0`. In this case `readWorksheet` assumes the "bounding box" of the data as the corresponding boundaries.

All arguments (except `object`) are vectorized. As such, multiple worksheets (and also multiple data regions from the same worksheet) can be read with one method call. If only one single data region is read, the return value is a `data.frame`. If multiple data regions are specified, the return value is a list of `data.frame`'s returned in the order they have been specified. If worksheets have been specified by name, the list will be a named list named by the corresponding worksheets.

### Note

If no specific column types (see argument `colTypes`) are specified, `readWorksheet` tries to determine the resulting column types based on the read cell types. If different cell types are found in a specific column, the most general of those is used and mapped to the corresponding R data type. The order of data types from least to most general is `Boolean (logical) < DateTime (POSIXct) < Numeric (numeric) < String (character)`. E.g. if a column is read that contains cells of type `Boolean`, `Numeric` and `String` then the resulting column in R would be `character` since `character` is the most general type.

Some additional information with respect to forcing data type conversion using `forceConversion = TRUE`:

- Forcing conversion from String to Boolean: TRUE is returned if and only if the target string is "true" (ignoring any capitalization). Any other string will return FALSE.
- Forcing conversion from Numeric to DateTime: since Excel understands Dates/Times as Numerics with some additional formatting, a conversion from a Numeric to a DateTime is actually possible. Numerics in this case represent the number of days since 1900-01-00 (yes, day 00! - see <http://www.cpearson.com/excel/datetime.htm>). Note that in R 0 is represented as 1899-12-31 since there is no 1900-01-00. Fractional days represent hours, minutes, and seconds.

### Author(s)

Martin Studer  
Thomas Themel  
Nicola Lambiase  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### See Also

[workbook](#), [writeWorksheet](#), [readNamedRegion](#), [writeNamedRegion](#),  
[readWorksheetFromFile](#), [readTable](#), [onErrorCell](#)

### Examples

```
## Not run:
## Example 1:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Read worksheet 'mtcars' (providing no specific area bounds;
# with default header = TRUE)
data <- readWorksheet(wb, sheet = "mtcars")

## Example 2:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Read worksheet 'mtcars' (providing area bounds; with default header = TRUE)
data <- readWorksheet(wb, sheet = "mtcars", startRow = 1, startCol = 3,
                      endRow = 15, endCol = 8)
```

```
## Example 3:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Read worksheet 'mtcars' (providing area bounds using the region argument;
# with default header = TRUE)
data <- readWorksheet(wb, sheet = "mtcars", region = "C1:H15")

## Example 4:
# conversion xlsx file from demoFiles subfolder of package XLConnect
excelFile <- system.file("demoFiles/conversion.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(excelFile)

# Read worksheet 'Conversion' with pre-specified column types
# Note: in the worksheet all data was entered as strings!
# forceConversion = TRUE is used to force conversion from String
# into the less generic data types Numeric, DateTime & Boolean
df <- readWorksheet(wb, sheet = "Conversion", header = TRUE,
                    colTypes = c(XLC$DATA_TYPE.NUMERIC,
                                XLC$DATA_TYPE.DATETIME,
                                XLC$DATA_TYPE.BOOLEAN),
                    forceConversion = TRUE,
                    dateTimeFormat = "%Y-%m-%d %H:%M:%S")

## Example 5:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Read the columns 1, 3 and 5 from the sheet 'mtcars' (with default header = TRUE)
data <- readWorksheet(wb, sheet = "mtcars", keep=c(1,3,5))

## End(Not run)
```

---

readWorksheetFromFile *Reading data from worksheets in an Excel file (wrapper function)*

---

## Description

Reads data from worksheets in an Excel file.

**Usage**

```
readWorksheetFromFile(file, ...)
```

**Arguments**

file	The path name of the file to read from.
...	Arguments passed to <a href="#">readWorksheet</a>

**Details**

See [readWorksheet](#) for more information.

**Author(s)**

Thomas Themel  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[readWorksheet](#), [readNamedRegionFromFile](#), [writeWorksheetToFile](#),  
[writeNamedRegionToFile](#), [onErrorCell](#)

**Examples**

```
## Not run:  
# multiregion.xlsx file from demoFiles subfolder of  
# package XLConnect  
demoExcelFile <- system.file("demoFiles/multiregion.xlsx",  
                             package = "XLConnect")  
  
# Read single area from first sheet of existing file,  
# "B2:C3" in Excel speak  
df.one <- readWorksheetFromFile(demoExcelFile, sheet = 1,  
                               header = FALSE, startCol = 2,  
                               startRow = 2, endCol = 3,  
                               endRow = 3)  
  
# Read three data sets in one from known positions  
df.list <- readWorksheetFromFile(demoExcelFile,  
                                sheet = c("FirstSheet",  
                                           "FirstSheet",  
                                           "SecondSheet"),  
                                header = TRUE,  
                                startRow = c(2,2,3),  
                                startCol = c(2,5,2),  
                                endCol = c(5,8,6),  
                                endRow = c(9,15,153))  
  
## End(Not run)
```

---

removeName-methods      *Removing names from workbooks*

---

## Description

Removes a name from a [workbook](#).

## Usage

```
## S4 method for signature 'workbook'  
removeName(object, name)
```

## Arguments

object	The <a href="#">workbook</a> to use
name	The name to delete

## Details

Removes the name named name from the specified workbook object if it does exist. Multiple names can be specified to be removed.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [createName](#), [existsName](#),  
[getDefinedNames](#), [readNamedRegion](#), [writeNamedRegion](#)

## Examples

```
## Not run:  
# mtcars.xlsx file from demoFiles subfolder of package XLConnect  
mtcarsFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(mtcarsFile)  
  
# Remove the named region called 'mtcars' from the above file  
# (this named region is defined as 'mtcars!$A$1:$K$33')  
removeName(wb, name = "mtcars")  
  
## End(Not run)
```

---

removePane-methods      *Removing panes from worksheet*

---

### Description

Removes the split pane/freeze pane from the specified worksheet.

### Usage

```
## S4 method for signature 'workbook,character'  
removePane(object,sheet)  
## S4 method for signature 'workbook,numeric'  
removePane(object,sheet)
```

### Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet from which to remove the split pane/freeze pane

### Note

To keep an area of a worksheet visible while you scroll to another area of the worksheet, you can lock specific rows or columns in one area by freezing or splitting panes.

When you freeze panes, you keep specific rows or columns visible when you scroll in the worksheet. For example, you might want to keep row and column labels visible as you scroll.

When you split panes, you create separate worksheet areas that you can scroll within, while rows or columns in the non-scrolled area remain visible.

### Author(s)

Nicola Lambiase  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### References

How to create a freeze pane/split pane in Office 2007 <https://support.microsoft.com/en-us/office/freeze-panes-to-lock-rows-and-columns-dab2ffc9-020d-4026-8121-67dd25f2508f?ocmsassetid=hp001217048&correlationid=b4f5baeb-b622-4487-a96f-514d2f00208a&ui=en-us&rs=en-us&ad=us>

### See Also

[workbook](#) [createFreezePane](#) [createSplitPane](#)



## Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("removePaneTest.xlsx", create = TRUE)

# Create a worksheet named 'Sheet1'
createSheet(wb, name = "Sheet1")

# Create a split pane on Sheet1, with coordinates (10000, 5000) expressed as 1/20th of a point,
# 10 (-> J) as left column visible in right pane and 10 as top row visible in bottom pane
createSplitPane(wb, "Sheet1", 10000, 5000, 10, 10)

# Remove the split pane from Sheet1
removePane(wb, "Sheet1")

# Save workbook (this actually writes the file to disk). Now the workbook has no split pane.
saveWorkbook(wb)

# clean up
file.remove("removePaneTest.xlsx")

## End(Not run)
```

---

removeSheet-methods    *Removing worksheets from workbooks*

---

## Description

Removes a worksheet from a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,character'
removeSheet(object,sheet)
## S4 method for signature 'workbook,numeric'
removeSheet(object,sheet)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet to remove

## Note

When removing a worksheet that is the currently active sheet then **XLConnect** resets the active sheet to the first possible worksheet in the [workbook](#).

Also note that deleting worksheets may result in invalid name references.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [createSheet](#), [existsSheet](#), [getSheets](#), [renameSheet](#), [cloneSheet](#), [setActiveSheet](#)

**Examples**

```
## Not run:  
# mtcars xlsx file from demoFiles subfolder of package XLConnect  
mtcarsFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(mtcarsFile)  
  
# Remove the worksheet called 'mtcars' from the above file  
removeSheet(wb, sheet = "mtcars")  
  
## End(Not run)
```

---

renameSheet-methods    *Renaming worksheets from workbooks*

---

**Description**

Renames a worksheet from a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook,character'  
renameSheet(object,sheet,newName)  
## S4 method for signature 'workbook,numeric'  
renameSheet(object,sheet,newName)
```

**Arguments**

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet to rename
newName	The new name of the sheet

**Note**

Note that renaming worksheets may result in invalid name references.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [createSheet](#), [existsSheet](#), [getSheets](#), [removeSheet](#), [cloneSheet](#), [setActiveSheet](#)

**Examples**

```
## Not run:
# mtcars.xlsx file from demoFiles subfolder of package XLConnect
mtcarsFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(mtcarsFile)

# Rename the worksheet called 'mtcars' from the above file to 'MyCars'
renameSheet(wb, sheet = "mtcars", newName = "MyCars")

## End(Not run)
```

---

saveWorkbook-methods    *Saving Microsoft Excel workbooks*

---

**Description**

Saves a [workbook](#) to the corresponding Excel file. This method actually writes the [workbook](#) object to disk.

**Usage**

```
## S4 method for signature 'workbook,missing'
saveWorkbook(object,file)
## S4 method for signature 'workbook,character'
saveWorkbook(object,file)
```

**Arguments**

object	The <a href="#">workbook</a> to save
file	The file to which to save the <a href="#">workbook</a> ("save as"). If not specified (missing), the workbook will be saved to the <a href="#">workbook</a> 's underlying file which is the file specified in <a href="#">loadWorkbook</a> (also see the <a href="#">workbook</a> class for more information). Note that due to currently missing functionality in Apache POI, workbooks can only be saved in the same file format - i.e. if the workbooks underlying file format is xls, then the file argument may only specify another xls file. Also note that when specifying the file argument the <a href="#">workbook</a> 's underlying filename changes to reflect the "save as" behavior. Paths are expanded using <code>path.expand</code> .

## Details

Saves the specified `workbook` object to disk.

## Note

As already mentioned in the documentation of the `workbook` class, a `workbook`'s underlying Excel file is not saved (or being created in case the file did not exist and `create = TRUE` has been specified) unless the `saveWorkbook` method has been called on the object. This provides more flexibility to the user to decide when changes are saved and also provides better performance in that several changes can be written in one go (normally at the end, rather than after every operation causing the file to be rewritten again completely each time). This is due to the fact that workbooks are manipulated in-memory and are only written to disk with specifically calling `saveWorkbook`.

Further note that calling `saveWorkbook` more than once leads to an exception. This is due to a current issue in the underlying POI libraries. However, with **XLConnect** there should be no need to call `saveWorkbook` more than once so virtually this is no issue.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

`workbook`, `loadWorkbook`

## Examples

```
## Not run:  
# Create a new workbook 'saveMe.xlsx'  
# (assuming the file to not exist already)  
wb <- loadWorkbook("saveMe.xlsx", create = TRUE)  
  
# Create a worksheet called 'mtcars'  
createSheet(wb, name = "mtcars")  
  
# Write built-in dataset 'mtcars' to sheet 'mtcars' created above  
writeWorksheet(wb, mtcars, sheet = "mtcars")  
  
# Save workbook - this actually writes the file 'saveMe.xlsx' to disk  
saveWorkbook(wb)  
  
# clean up  
file.remove("saveMe.xlsx")  
  
## End(Not run)
```

---

`setActiveSheet-methods`*Setting the active worksheet in a workbook*

---

## Description

Sets the active worksheet of a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,character'  
setActiveSheet(object, sheet)  
## S4 method for signature 'workbook,numeric'  
setActiveSheet(object, sheet)
```

## Arguments

<code>object</code>	The <a href="#">workbook</a> to use
<code>sheet</code>	The name or index of the sheet to activate

## Note

The active worksheet of a [workbook](#) is the worksheet that is displayed when the corresponding Excel file is opened.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [createSheet](#), [removeSheet](#), [renameSheet](#), [existsSheet](#), [getSheets](#)

## Examples

```
## Not run:  
# mtcars.xlsx file from demoFiles subfolder of package XLConnect  
mtcarsFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(mtcarsFile)  
  
# Sets the active sheet to the sheet 'mtcars3'  
setActiveSheet(wb, sheet = "mtcars3")  
  
## End(Not run)
```

---

setAutoFilter-methods *Setting auto-filters on worksheets*

---

## Description

Sets an auto-filter on a specified worksheet.

## Usage

```
## S4 method for signature 'workbook,character'  
setAutoFilter(object,sheet,reference)  
## S4 method for signature 'workbook,numeric'  
setAutoFilter(object,sheet,reference)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet on which to set the auto-filter
reference	A cell range specification (character) in the form 'A1:B8'

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#)

## Examples

```
## Not run:  
# Load workbook (create if not existing)  
wb <- loadWorkbook("autofilter.xlsx", create = TRUE)  
  
# Create a worksheet named 'mtcars'  
createSheet(wb, name = "mtcars")  
  
# Create a named region called 'mtcars' on the sheet called 'mtcars'  
createName(wb, name = "mtcars", formula = "mtcars!$A$1")  
  
# Write built-in data set 'mtcars' to the above defined named region  
# (using header = TRUE)  
writeNamedRegion(wb, mtcars, name = "mtcars")  
  
# Set an auto-filter for the named region written above  
setAutoFilter(wb, sheet = "mtcars", reference = aref("A1", dim(mtcars)))
```

```
# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up
file.remove("autofilter.xlsx")

## End(Not run)
```

---

setBorder-methods      *Specifying borders for cell styles*

---

## Description

Specifies borders for a [cellstyle](#).

## Usage

```
## S4 method for signature 'cellstyle'
setBorder(object, side, type, color)
```

## Arguments

object	The <a href="#">cellstyle</a> to edit
side	A vector with any combination of {"bottom", "left", "right", "top", "all" }
type	Specifies the border type to be used - it is normally specified by a corresponding <a href="#">XLC</a> constant (see the <a href="#">XLC</a> border constant, e.g. <code>XLC\$"BORDER.MEDIUM_DASHED"</code> )
color	Defines the border color and is normally also specified via an <a href="#">XLC</a> constant.

## Details

Specifies the border for a [cellstyle](#). Note that the arguments `type` and `color` should be of the same length as `side`. In other words, for each specified `side` there should be a corresponding specification of `type` and `color`. If this is not the case the arguments will be automatically replicated to the length of `side`.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [cellstyle](#), [setCellStyle](#), [setStyleAction](#), [XLC](#)

**Examples**

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("setBorder.xlsx", create = TRUE)

# Create a worksheet
createSheet(wb, name = "cellstyles")

# Create a custom anonymous cell style
cs <- createCellStyle(wb)

# Specify the border for the cell style created above
setBorder(cs, side = c("bottom", "right"), type = XLC$"BORDER.THICK",
          color = c(XLC$"COLOR.BLACK", XLC$"COLOR.RED"))

# Set the cell style created above for the top left cell (A1) in the
# 'cellstyles' worksheet
setCellStyle(wb, sheet = "cellstyles", row = 1, col = 1, cellstyle = cs)

# Save the workbook
saveWorkbook(wb)

# clean up
file.remove("setBorder.xlsx")

## End(Not run)
```

---

 setCellFormula-methods

*Setting cell formulas*


---

**Description**

Sets cell formulas for specific cells in a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook,character'
setCellFormula(object,sheet,row,col,formula)
## S4 method for signature 'workbook,numeric'
setCellFormula(object,sheet,row,col,formula)
```

**Arguments**

object	The <a href="#">workbook</a> to use
sheet	Name or index of the sheet the cell is on
row	Row index of the cell to edit
col	Column index of the cell to edit
formula	The formula to apply to the cell, without the initial = character used in Excel



## Details

Note that the arguments are vectorized such that multiple cells can be set with one method call.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [getCellFormula](#),

## Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("setCellFormula.xls", create = TRUE)

# Create a sheet named 'mtcars'
createSheet(wb, name = "mtcars")

# Create a named region called 'mtcars' referring to the sheet
# called 'mtcars'
createName(wb, name = "mtcars", formula = "mtcars!$A$1")

# Write built-in data set 'mtcars' to the above defined named region.
writeNamedRegion(wb, mtcars, name = "mtcars")

# Now, let us get Excel to calculate average weights.
# Where did we write the dataset?
corners <- getReferenceCoordinatesForName(wb, "mtcars")
# Put the average under the wt column
colIndex <- which(names(mtcars) == "wt")
rowIndex <- corners[2,1] + 1

# Construct the input range & formula
input <- paste(idx2cref(c(corners[1,1], colIndex,
                        corners[2,1], colIndex)), collapse=":")
formula <- paste("AVERAGE(", input, ")", sep="")

setCellFormula(wb, "mtcars", rowIndex, colIndex, formula)

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up
file.remove("setCellFormula.xls")

## End(Not run)
```

---

**setCellStyle-methods** *Setting cell styles*

---

**Description**

Sets cell styles for specific cells in a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook,missing,character'  
setCellStyle(object,formula,sheet,row,col,cellstyle)  
## S4 method for signature 'workbook,missing,numeric'  
setCellStyle(object,formula,sheet,row,col,cellstyle)  
## S4 method for signature 'workbook,character,missing'  
setCellStyle(object,formula,sheet,row,col,cellstyle)
```

**Arguments**

object	The <a href="#">workbook</a> to use
formula	A formula specification in the form Sheet!B8:C17. Use either the argument formula or the combination of sheet, row and col.
sheet	Name or index of the sheet the cell is on. Use either the argument formula or the combination of sheet, row and col.
row	Row index of the cell to apply the cellstyle to.
col	Column index of the cell to apply the cellstyle to.
cellstyle	<a href="#">cellstyle</a> to apply

**Details**

Sets the specified [cellstyle](#) for the specified cell (row, col) on the specified sheet or alternatively for the cells referred to by formula. Note that the arguments are vectorized such that multiple cells can be styled with one method call. Use either the argument formula or the combination of sheet, row and col.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [cellstyle](#), [createCellStyle](#), [setDataFormat](#), [setBorder](#),  
[setFillBackgroundColor](#), [setFillForegroundColor](#), [setFillPattern](#),  
[setWrapText](#)

**Examples**

```

## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("setCellStyle.xlsx", create = TRUE)

# We don't set a specific style action in this demo, so the default
# 'XLConnect' will be used (XLC$"STYLE_ACTION.XLCONNECT")

# Create a sheet named 'mtcars'
createSheet(wb, name = "mtcars")

# Create a named region called 'mtcars' referring to the sheet
# called 'mtcars'
createName(wb, name = "mtcars", formula = "mtcars!$C$4")

# Write built-in data set 'mtcars' to the above defined named region.
# This will use the default style action 'XLConnect'.
writeNamedRegion(wb, mtcars, name = "mtcars")

# Now let's color all weight cells of cars with a weight > 3.5 in red
# (mtcars$wt > 3.5)

# First, create a corresponding (named) cell style
heavyCar <- createCellStyle(wb, name = "HeavyCar")

# Specify the cell style to use a solid foreground color
setFillPattern(heavyCar, fill = XLC$"FILL.SOLID_FOREGROUND")

# Specify the foreground color to be used
setFillForegroundColor(heavyCar, color = XLC$"COLOR.RED")

# Which cars have a weight > 3.5 ?
rowIndex <- which(mtcars$wt > 3.5)

# NOTE: The mtcars data.frame has been written offset with
# top left cell C4 - and we have also written a header row!
# So, let's take that into account appropriately. Obviously,
# the two steps could be combined directly into one ...
rowIndex <- rowIndex + 4

# The same holds for the column index
colIndex <- which(names(mtcars) == "wt") + 2

# Set the 'HeavyCar' cell style for the corresponding cells.
# Note: the row and col arguments are vectorized!
setCellStyle(wb, sheet = "mtcars", row = rowIndex, col = colIndex,
             cellstyle = heavyCar)

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up

```

```
file.remove("setCellStyle.xlsx")  
  
## End(Not run)
```

---

## setCellStyleForType-methods

*Setting the cell style per data type for the DATATYPE style action*

---

### Description

Sets the cell style for a specific data type as used by the DATATYPE style action.

### Usage

```
## S4 method for signature 'workbook'  
setCellStyleForType(object, type, style)
```

### Arguments

object	The <a href="#">workbook</a> to use
type	The data type for which to set the style
style	The <a href="#">cellstyle</a> to set

### Details

Based on the (cell) data type the DATATYPE style action (see [setStyleAction](#)) sets the [cellstyle](#) for the corresponding cells. The data type is normally specified via a corresponding data type constant from the [XLC](#) object.

### Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### See Also

[workbook](#), [getCellStyleForType](#), [setStyleAction](#)

### Examples

```
## Not run:  
file.copy(system.file("demoFiles/template2.xlsx",  
                      package = "XLConnect"),  
          "datatype.xlsx", overwrite = TRUE)  
  
# Load workbook  
wb <- loadWorkbook("datatype.xlsx")
```

```

# Create a new cell style to be used
cs <- createCellStyle(wb, name = "mystyle")

# Set data format (number format) as numbers with aligned fractions
setDataFormat(cs, format = "# ???/???")

# Define the above created cell style as style to be used for
# numerics
setCellStyleForType(wb, type = XLC$"DATA_TYPE.NUMERIC", style = cs)
# Could also say cs <- setCellStyleForType(wb, "numeric")

# Set style action to 'datatype'
setStyleAction(wb, XLC$"STYLE_ACTION.DATATYPE")

# Write built-in data set 'mtcars' to the named region
# 'mtcars' as defined by the Excel template.
writeNamedRegion(wb, mtcars, name = "mtcars")

# Save workbook
saveWorkbook(wb)

# clean up
file.remove("datatype.xlsx")

## End(Not run)

```

---

setColumnWidth-methods

*Setting the width of a column in a worksheet*

---

### Description

Sets the width of a column in a worksheet.

### Usage

```

## S4 method for signature 'workbook,character'
setColumnWidth(object,sheet,column,width)
## S4 method for signature 'workbook,numeric'
setColumnWidth(object,sheet,column,width)

```

### Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet
column	The index of the column to resize
width	The width of the specified column in units of 1/256th of a character width. If width = -1 (default), the column is auto-sized. If negative otherwise, the column will be sized to the sheet's default column width.

## Details

Note that the arguments `sheet`, `column` and `width` are vectorized. As such the column width of multiple columns (potentially on different sheets) can be set with one method call.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [setRowHeight](#)

## Examples

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
mtcarsFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(mtcarsFile)

# Sets the column width of the 3rd column on sheet 'mtcars'
# to 4000/256th (= 15.625) character width
setColumnWidth(wb, sheet = "mtcars", column = 3, width = 4000)

## End(Not run)
```

---

setDataFormat-methods *Specifying custom data formats for cell styles*

---

## Description

Specifies a custom data format for a [cellstyle](#).

## Usage

```
## S4 method for signature 'cellstyle'
setDataFormat(object, format)
```

## Arguments

<code>object</code>	The <a href="#">cellstyle</a> to use
<code>format</code>	A data format string

## Details

Specifies the data format to be used by the corresponding [cellstyle](#). Data formats are specified the standard Excel way. Refer to the Excel help or to the link below for more information.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**References**

Excel custom data formats:  
<https://www.excelefficiency.com/custom-number-format-guide/>

**See Also**

[workbook](#), [cellstyle](#), [setCellStyle](#), [setStyleAction](#)

**Examples**

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("setDataFormat.xlsx", create = TRUE)

# Create a worksheet
createSheet(wb, name = "cellstyles")

# Create a dummy data set with the current date/time (as POSIXct)
now <- data.frame(Now = Sys.time())

# Write the value to the 'cellstyles' worksheet in the top left
# corner (cell A1)
writeWorksheet(wb, now, sheet = "cellstyles", startRow = 1,
               startCol = 1, header = FALSE)

# Create a custom anonymous cell style
cs <- createCellStyle(wb)

# Specify a custom data format
setDataFormat(cs, format = "dddd d-m-yyyy h:mm AM/PM")

# Set the cell style created above for the top left cell (A1) in
# the 'cellstyles' worksheet
setCellStyle(wb, sheet = "cellstyles", row = 1, col = 1, cellstyle = cs)

# Set column width to display whole time/date string
setColumnWidth(wb, sheet = "cellstyles", column = 1, width = 6000)

# Save the workbook
saveWorkbook(wb)

# clean up
file.remove("setDataFormat.xlsx")

## End(Not run)
```

---

setDataFormatForType-methods

*Setting the data format for the DATA\_FORMAT\_ONLY style action*

---

## Description

Sets the data format for a specific data type as used by the DATA\_FORMAT\_ONLY style action.

## Usage

```
## S4 method for signature 'workbook'  
setDataFormatForType(object, type, format)
```

## Arguments

object	The <a href="#">workbook</a> to use
type	The data type for which to set the format.
format	A data format string

## Details

Based on the (cell) data type the DATA\_FORMAT\_ONLY style action (see [setStyleAction](#)) sets the data format for the corresponding cells. The data type is normally specified via a corresponding data type constant from the [XLC](#) object. Data formats are specified the standard Excel way. Refer to the Excel help or to the link below for more information.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## References

Excel custom data formats:  
<https://www.excelefficiency.com/custom-number-format-guide/>

## See Also

[workbook](#), [setStyleAction](#)

## Examples

```
## Not run:  
# Copy existing Excel template to working directory  
file.copy(system.file("demoFiles/template2.xlsx",  
                      package = "XLConnect"),  
          "dataformat.xlsx", overwrite = TRUE)
```



```
# Load workbook
wb <- loadWorkbook("dataformat.xlsx")

# Set the data format for numeric columns (cells)
# (keeping the defaults for all other data types)
setDataFormatForType(wb, type = XLC$"DATA_TYPE.NUMERIC",
                      format = "0.00")

# Set style action to 'data format only'
setStyleAction(wb, XLC$"STYLE_ACTION.DATA_FORMAT_ONLY")

# Write built-in data set 'mtcars' to the named region
# 'mtcars' as defined by the Excel template.
writeNamedRegion(wb, mtcars, name = "mtcars")

# Save workbook
saveWorkbook(wb)

# clean up
file.remove("dataformat.xlsx")

## End(Not run)
```

---

setFillBackgroundColor-methods

*Specifying the fill background color for cell styles*

---

## Description

Specifies the fill background color for a [cellstyle](#).

## Usage

```
## S4 method for signature 'cellstyle,numeric'
setFillBackgroundColor(object,color)
```

## Arguments

object	The <a href="#">cellstyle</a> to manipulate
color	The fill background color to use for the <a href="#">cellstyle</a> . The color is normally specified via a corresponding color constant from the <a href="#">XLC</a> object.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [cellstyle](#), [setCellStyle](#), [setStyleAction](#), [XLC](#)

## Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("setFillBackgroundColor.xlsx", create = TRUE)

# Create a worksheet
createSheet(wb, name = "cellstyles")

# Create a custom anonymous cell style
cs <- createCellStyle(wb)

# Specify the fill background color for the cell style created above
setFillBackgroundColor(cs, color = XLC$"COLOR.CORNFLOWER_BLUE")

# Specify the fill foreground color
setFillForegroundColor(cs, color = XLC$"COLOR.YELLOW")

# Specify the fill pattern
setFillPattern(cs, fill = XLC$"FILL.BIG_SPOTS")

# Set the cell style created above for the top left cell (A1) in the
# 'cellstyles' worksheet
setCellStyle(wb, sheet = "cellstyles", row = 1, col = 1, cellstyle = cs)

# Save the workbook
saveWorkbook(wb)

# clean up
file.remove("setFillBackgroundColor.xlsx")

## End(Not run)
```

---

setFillForegroundColor-methods

*Specifying the fill foreground color for cell styles*

---

## Description

Specifies the fill foreground color for a [cellstyle](#).

## Usage

```
## S4 method for signature 'cellstyle,numeric'
setFillForegroundColor(object,color)
```

## Arguments

object	The <a href="#">cellstyle</a> to manipulate
color	The fill foreground color to use for the <a href="#">cellstyle</a> . The color is normally specified via a corresponding color constant from the <a href="#">XLC</a> object.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [cellstyle](#), [setCellStyle](#), [setStyleAction](#), [XLC](#)

**Examples**

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("setFillForegroundColor.xlsx", create = TRUE)

# Create a worksheet
createSheet(wb, name = "cellstyles")

# Create a custom anonymous cell style
cs <- createCellStyle(wb)

# Specify the fill background color for the cell style created above
setFillBackgroundColor(cs, color = XLC$"COLOR.CORNFLOWER_BLUE")

# Specify the fill foreground color
setFillForegroundColor(cs, color = XLC$"COLOR.YELLOW")

# Specify the fill pattern
setFillPattern(cs, fill = XLC$"FILL.BIG_SPOTS")

# Set the cell style created above for the top left cell (A1) in the
# 'cellstyles' worksheet
setCellStyle(wb, sheet = "cellstyles", row = 1, col = 1, cellstyle = cs)

# Save the workbook
saveWorkbook(wb)

# clean up
file.remove("setFillForegroundColor.xlsx")

## End(Not run)
```

---

setFillPattern-methods

*Specifying the fill pattern for cell styles*

---

**Description**

Specifies the fill pattern for a [cellstyle](#).

## Usage

```
## S4 method for signature 'cellstyle'  
setFillPattern(object,fill)
```

## Arguments

object	The <code>cellstyle</code> to manipulate
fill	The fill pattern to use for the <code>cellstyle</code> . fill is normally specified via a corresponding fill constant from the <code>XLC</code> object.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [cellstyle](#), [setCellStyle](#), [setStyleAction](#), [XLC](#)

## Examples

```
## Not run:  
# Load workbook (create if not existing)  
wb <- loadWorkbook("setFillPattern.xlsx", create = TRUE)  
  
# Create a worksheet  
createSheet(wb, name = "cellstyles")  
  
# Create a custom anonymous cell style  
cs <- createCellStyle(wb)  
  
# Specify the fill background color for the cell style created above  
setFillBackgroundColor(cs, color = XLC$"COLOR.CORNFLOWER_BLUE")  
  
# Specify the fill foreground color  
setFillForegroundColor(cs, color = XLC$"COLOR.YELLOW")  
  
# Specify the fill pattern  
setFillPattern(cs, fill = XLC$"FILL.BIG_SPOTS")  
  
# Set the cell style created above for the top left cell (A1) in the  
# 'cellstyles' worksheet  
setCellStyle(wb, sheet = "cellstyles", row = 1, col = 1, cellstyle = cs)  
  
# Save the workbook  
saveWorkbook(wb)  
  
# clean up  
file.remove("setFillPattern.xlsx")  
  
## End(Not run)
```

---

`setForceFormulaRecalculation-methods`*Forcing Excel to recalculate formula values when opening a workbook*

---

## Description

This function controls a flag that forces Excel to recalculate formula values when a workbook is opened.

## Usage

```
## S4 method for signature 'workbook,character'  
setForceFormulaRecalculation(object,sheet,value)  
## S4 method for signature 'workbook,numeric'  
setForceFormulaRecalculation(object,sheet,value)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet for which to force formula recalculation. If sheet = "*", the flag is set for all sheets in the <a href="#">workbook</a> .
value	logical specifying if formula recalculation should be forced or not

## Details

The arguments sheet and value are vectorized such that multiple worksheets can be controlled with one method call.

## Note

A typical use for this flag is forcing Excel into updating formulas that reference cells affected by [writeWorksheet](#) or [writeNamedRegion](#). The exact behavior of Excel when the flag is set depends on version and file format.

## Author(s)

Thomas Themel  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [getForceFormulaRecalculation](#)

**Examples**

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(demoExcelFile)

# Tell Excel to automatically recalculate formulas on sheet mtcars
setForceFormulaRecalculation(wb, sheet = "mtcars", TRUE)
# The same with a numerical sheet index
setForceFormulaRecalculation(wb, sheet = 1, TRUE)

## End(Not run)
```

---

setHyperlink-methods *Setting hyperlinks*

---

**Description**

Sets hyperlinks for specific cells in a [workbook](#).

**Usage**

```
## S4 method for signature 'workbook,missing,character'
setHyperlink(object, formula, sheet, row, col, type, address)
## S4 method for signature 'workbook,missing,numeric'
setHyperlink(object, formula, sheet, row, col, type, address)
## S4 method for signature 'workbook,character,missing'
setHyperlink(object, formula, sheet, row, col, type, address)
```

**Arguments**

object	The <a href="#">workbook</a> to use
formula	A formula specification in the form Sheet!B8:C17. Use either the argument formula or the combination of sheet, row and col.
sheet	Name or index of the sheet the cell is on. Use either the argument formula or the combination of sheet, row and col.
row	Row index of the cell to apply the cellstyle to.
col	Column index of the cell to apply the cellstyle to.
type	Hyperlink type. See the corresponding "HYPERLINK.*" constants from the <a href="#">XLC</a> object.
address	Hyperlink address. This needs to be a valid URI including scheme. E.g. for email <code>mailto:myself@me.org</code> , for a URL <code>https://www.somewhere.net</code> or for a file <code>file:///a/b/c.dat</code>

## Details

Sets a hyperlink for the specified cells. Note that `cellstyles` for hyperlinks can be defined independently using `setCellStyle`. The arguments are vectorized such that multiple hyperlinks can be set in one method call. Use either the argument `formula` or the combination of `sheet`, `row` and `col`.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [setCellStyle](#)

## Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("setHyperlink.xlsx", create = TRUE)

# Create a sheet named 'mtcars'
createSheet(wb, name = "mtcars")

# Write built-in data set 'mtcars' to the above defined worksheet
writeWorksheet(wb, mtcars, sheet = "mtcars", rownames = "Car")

# Set hyperlinks
links <- paste0("https://www.google.com?q=", gsub(" ", "+", rownames(mtcars)))
setHyperlink(wb, sheet = "mtcars", row = seq_len(nrow(mtcars)) + 1, col = 1,
  type = XLC$HYPERLINK.URL, address = links)

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up
file.remove("setHyperlink.xlsx")

## End(Not run)
```

---

setMissingValue-methods

*Setting missing value identifiers*

---

## Description

Defines the set of missing values (character or numeric) used when reading and writing data.

## Usage

```
## S4 method for signature 'workbook,ANY'  
setMissingValue(object, value)
```

## Arguments

object	The <a href="#">workbook</a> to use
value	vector or list of missing value identifiers (either character or numeric) that are recognized as missing (NA) when reading data. The first element of this vector will be used as missing value identifier when writing data. If value = NULL (default), missing values are represented by blank cells and only blank cells are recognized as missing.

## Details

If there are no specific missing value identifiers defined the default behavior is to map missing values to blank (empty) cells. Otherwise, each string or numeric cell is checked if it matches one of the defined missing value identifiers. In addition, the first missing value identifier (i.e. the first element of the value argument) is used to represent missing values when writing data. Note that the missing value identifiers have to be either character or numeric.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [writeNamedRegion](#), [writeWorksheet](#)

## Examples

```
## Not run:  
# Load workbook (create if not existing)  
wb <- loadWorkbook("missingValue.xlsx", create = TRUE)  
  
# Create a worksheet named 'airquality'  
createSheet(wb, name = "airquality")  
  
# Create a named region called 'airquality' on the sheet called  
# 'airquality'  
createName(wb, name = "airquality", formula = "airquality!$A$1")  
  
# Set the missing value string to 'missing'  
setMissingValue(wb, value = "missing")  
  
# Write built-in data set 'airquality' to the above defined named region  
writeNamedRegion(wb, airquality, name = "airquality")  
  
# Save workbook
```



```
saveWorkbook(wb)

# clean up
file.remove("missingValue.xlsx")

## End(Not run)
```

---

setRowHeight-methods    *Setting the height of a row in a worksheet*

---

### Description

Sets the height of a row in a worksheet.

### Usage

```
## S4 method for signature 'workbook,character'
setRowHeight(object,sheet,row,height)
## S4 method for signature 'workbook,numeric'
setRowHeight(object,sheet,row,height)
```

### Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet to edit
row	The index of the row to resize
height	The height in points. If height < 0 (default: -1), the row will be sized to the sheet's default row height.

### Details

Note that the arguments sheet, row and height are vectorized. As such the row height of multiple rows (potentially on different worksheets) can be set with one method call.

### Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### See Also

[workbook](#), [setColumnWidth](#)

## Examples

```
## Not run:
# mtcars xlsx file from demoFiles subfolder of package XLConnect
mtcarsFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")

# Load workbook
wb <- loadWorkbook(mtcarsFile)

# Sets the row height of the 1st row on sheet 'mtcars'
# to 20 points
setRowHeight(wb, sheet = "mtcars", row = 1, height = 20)

## End(Not run)
```

---

setSheetColor-methods *Setting colors on worksheet tabs*

---

## Description

Sets a color on a specified worksheet tab. This only works for xlsx files.

## Usage

```
## S4 method for signature 'workbook,character'
setSheetColor(object, sheet, color)
## S4 method for signature 'workbook,numeric'
setSheetColor(object, sheet, color)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet on which to set the tab color
color	The color to use for the sheet tab. The color is normally specified via a corresponding color constant from the <a href="#">XLC</a> object.

## Author(s)

Nicola Lambiase  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [XLC](#)

## Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("sheetcolor.xlsx", create = TRUE)

# Create a worksheet named 'Sheet1'
createSheet(wb, name = "Sheet1")

# Set the "Sheet1" tab color as red
setSheetColor(wb, "Sheet1", XLC$COLOR.RED)

# Create a worksheet named 'Sheet2'
createSheet(wb, name = "Sheet2")

# Set the tab color of the second workbook sheet as green
setSheetColor(wb, 2, XLC$COLOR.GREEN)

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up
file.remove("sheetcolor.xlsx")

## End(Not run)
```

---

setSheetPos-methods     *Setting worksheet position*

---

## Description

Sets the position of a worksheets in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,character,numeric'
setSheetPos(object,sheet,pos)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name of the worksheet (character) whose position to set. This argument is vectorized such that the positions of multiple worksheets can be set with one method call.
pos	The position index to set for the corresponding sheet. If missing, sheets will be positioned in the order they are specified in the argument sheet.

## Details

It is important to note that the worksheet positions will be applied one after the other in the order they have been specified.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [getSheetPos](#), [getSheets](#)

## Examples

```
## Not run:  
# mtcars.xlsx file from demoFiles subfolder of package XLConnect  
demoExcelFile <- system.file("demoFiles/mtcars.xlsx", package = "XLConnect")  
  
# Load workbook  
wb <- loadWorkbook(demoExcelFile)  
  
# Move the 'mtcars3' worksheet to the front  
setSheetPos(wb, sheet = "mtcars3", pos = 1)  
  
## End(Not run)
```

---

setStyleAction-methods

*Controlling application of cell styles when writing data to Excel*

---

## Description

Controls the application of [cellstyles](#) when writing data to Excel.

## Usage

```
## S4 method for signature 'workbook'  
setStyleAction(object, type)
```

## Arguments

object	The <a href="#">workbook</a> to use
type	Defines the style action to be used when writing data ( <a href="#">writeNamedRegion</a> , <a href="#">writeWorksheet</a> ) to the specified workbook object

## Details

The following style actions are supported:

- `XLCS$"STYLE_ACTION.XLCONNECT"`: This is the default. `data.frame` headers (if specified to be written) are colored in solid light grey (25 percent). character, numeric and logical vectors are written using Excel's "General" data format. Time/date vectors e.g. `Date` or `POSIXt` are written with the "mm/dd/yyyy hh:mm:ss" data format. All cells are specified to wrap the text if necessary. The corresponding custom cell styles are called *XLConnect.Header*, *XLConnect.String*, *XLConnect.Numeric*, *XLConnect.Boolean* and *XLConnect.Date*.
- `XLCS$"STYLE_ACTION.DATATYPE"`: This style action instructs **XLConnect** to apply `cellstyles` per data type as set by the `setCellStyleForType` methods. In contrast to the `XLCS$"STYLE_ACTION.DATA_FORMAT_ONLY"` style action (see below) which only sets a data format to an existing cell style, this action actually sets a new `cellstyle`.
- `XLCS$"STYLE_ACTION.NONE"`: This style action instructs **XLConnect** to apply no cell styles when writing data. Cell styles are kept as they are. This is useful in a scenario where all styling is predefined in an Excel template which is then only filled with data.
- `XLCS$"STYLE_ACTION.PREDEFINED"`: This style action instructs **XLConnect** to use existing (predefined) `cellstyles` when writing headers and columns. This is useful in a template-based approach where an Excel template with predefined `cellstyles` for headers and columns is available. Normally, this would be used when the column dimensions (and potentially also the row dimensions) of the data tables are known up-front and as such a layout and corresponding cell styles can be pre-specified.  
If a `data.frame` is written including its header, it is assumed that the Excel file being written to has predefined `cellstyles` in the header row. Furthermore, the first row of data is assumed to contain the cell styles to be replicated for any additional rows. As such, this style action may only be useful if the same column cell style should be applied across all rows. Please refer to the available demos for some examples.
- `XLCS$"STYLE_ACTION.NAME_PREFIX"`: This style action instructs **XLConnect** to look for custom (named) `cellstyles` with a specified prefix when writing columns and headers. This style name prefix can be set via the method `setStyleNamePrefix`.

For column headers, it first checks if there is a cell style named

`<STYLE_NAME_PREFIX>.Header.<COLUMN_NAME>`.

If there is no such cell style, it checks for a cell style named  
`<STYLE_NAME_PREFIX>.Header.<COLUMN_INDEX>`.

Again, if there is no such cell style, it checks for

`<STYLE_NAME_PREFIX>.Header`

(no specific column discrimination). As a final resort, it just takes the workbook default cell style.

For columns, **XLConnect** first checks the availability of a cell style named

`<STYLE_NAME_PREFIX>.Column.<COLUMN_NAME>`.

If there is no such cell style, it checks for

`<STYLE_NAME_PREFIX>.Column.<COLUMN_INDEX>`.

If again there is no such cell style, it checks for

`<STYLE_NAME_PREFIX>.Column.<COLUMN_DATA_TYPE>`

with `<COLUMN_DATA_TYPE>` being the corresponding data type from the set: `{Numeric, String, Boolean, DateTime}`. As a last resort, it would make use of the workbook's default cell style.

- `XLC$"STYLE_ACTION.DATA_FORMAT_ONLY"`: This style action instructs **XLConnect** to only set the data format for a cell but not to apply any other styling but rather keep the existing one. The data format to apply is determined by the data type of the cell (which is in turn determined by the corresponding R data type). The data format for a specific type can be set via the method `setDataFormatForType`. The default data format is "General" for the data types `Numeric`, `String` and `Boolean` and is "mm/dd/yyyy hh:mm:ss" for the data type `DateTime`.

### Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### See Also

[workbook](#), [cellstyle](#), [createCellStyle](#), [writeNamedRegion](#), [writeWorksheet](#), [setStyleNamePrefix](#), [setCellStyleForType](#), [setDataFormatForType](#)

### Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("styleaction.xlsx", create = TRUE)

# Set style action to 'name prefix'
setStyleAction(wb, XLC$"STYLE_ACTION.NAME_PREFIX")
# Set the name prefix to 'MyPersonalStyle'
setStyleNamePrefix(wb, "MyPersonalStyle")

# We now create a named cell style to be used for the header
# (column names) of a data.frame
headerCellStyle <- createCellStyle(wb,
                                   name = "MyPersonalStyle.Header")

# Specify the cell style to use a solid foreground color
setFillPattern(headerCellStyle,
               fill = XLC$"FILL.SOLID_FOREGROUND")

# Specify the foreground color to be used
setFillForegroundColor(headerCellStyle,
                       color = XLC$"COLOR.LIGHT_CORNFLOWER_BLUE")

# Specify a thick black bottom border
setBorder(headerCellStyle, side = "bottom",
          type = XLC$"BORDER.THICK",
          color = XLC$"COLOR.BLACK")

# We now create a named cell style to be used for
# the column named 'wt' (as you will see below, we will
```

```
# write the built-in data.frame 'mtcars')
wtColumnCellStyle <- createCellStyle(wb,
                                     name = "MyPersonalStyle.Column.wt")

# Specify the cell style to use a solid foreground color
setFillPattern(wtColumnCellStyle,
               fill = XLC$"FILL.SOLID_FOREGROUND")

# Specify the foreground color to be used
setFillForegroundColor(wtColumnCellStyle,
                       color = XLC$"COLOR.LIGHT_ORANGE")

# We now create a named cell style to be used for
# the 3rd column in the data.frame
wtColumnCellStyle <- createCellStyle(wb,
                                     name = "MyPersonalStyle.Column.3")

# Specify the cell style to use a solid foreground color
setFillPattern(wtColumnCellStyle,
               fill = XLC$"FILL.SOLID_FOREGROUND")

# Specify the foreground color to be used
setFillForegroundColor(wtColumnCellStyle,
                       color = XLC$"COLOR.LIME")

# Create a sheet named 'mtcars'
createSheet(wb, name = "mtcars")

# Create a named region called 'mtcars' referring to
# the sheet called 'mtcars'
createName(wb, name = "mtcars", formula = "mtcars!$A$1")

# Write built-in data set 'mtcars' to the above defined named region.
# The style action 'name prefix' will be used when writing the data
# as defined above.
writeNamedRegion(wb, mtcars, name = "mtcars")

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up
file.remove("styleaction.xlsx")

## End(Not run)
```

---

setStyleNamePrefix-methods

*Setting the style name prefix for the "name prefix" style action*

---

**Description**

Sets the style name prefix for the "name prefix" style action.

**Usage**

```
## S4 method for signature 'workbook'
setStyleNamePrefix(object,prefix)
```

**Arguments**

object	The <a href="#">workbook</a> to use
prefix	The name prefix

**Details**

Sets the prefix for the "name prefix" style action. See the method [setStyleAction](#) for more information.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [cellstyle](#), [setStyleAction](#), [createCellStyle](#)

---

setWrapText-methods    *Specifying text wrapping behaviour*

---

**Description**

Specifies if text should be wrapped in a cell.

**Usage**

```
## S4 method for signature 'cellstyle'
setWrapText(object,wrap)
```

**Arguments**

object	The <a href="#">cellstyle</a> to manipulate
wrap	If wrap = TRUE, the text is wrapped if it exceeds the width of the cell - otherwise not.



**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [cellstyle](#), [setCellStyle](#), [setStyleAction](#)

**Examples**

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("setWrapText.xlsx", create = TRUE)

# Create a worksheet
createSheet(wb, name = "cellstyles")

# Create a dummy data set with some long text
text <- data.frame(
  Text = "Some very very very very very very very long text")

# Write the value to the 'cellstyles' worksheet in the
# top left corner (cell A1)
writeWorksheet(wb, text, sheet = "cellstyles", startRow = 1,
               startCol = 1, header = FALSE)

# Create a custom anonymous cell style
cs <- createCellStyle(wb)

# Specify to wrap the text
setWrapText(cs, wrap = TRUE)

# Set the cell style created above for the top left cell (A1)
# in the 'cellstyles' worksheet
setCellStyle(wb, sheet = "cellstyles", row = 1, col = 1,
             cellstyle = cs)

# Save the workbook
saveWorkbook(wb)

# clean up
file.remove("setWrapText.xlsx")

## End(Not run)
```

**Description**

Displays a [workbook](#) by printing it. This actually calls the [workbook](#)'s [print](#) method.

**Usage**

```
## S4 method for signature 'workbook'  
show(object)
```

**Arguments**

object            The [workbook](#) to display

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [print](#)

**Examples**

```
## Not run:  
# Load existing demo Excel file 'mtcars.xlsx' from the XLConnect package  
wb.mtcars <- loadWorkbook(system.file("demoFiles/mtcars.xlsx",  
                                     package = "XLConnect"))  
  
# Display the wb.mtcars object  
wb.mtcars  
  
# Alternatively, show can be called explicitly  
show(wb.mtcars)  
  
## End(Not run)
```

---

summary-methods

*Summarizing workbook objects*

---

**Description**

Outputs a [workbook](#) summary including the underlying Excel filename, contained worksheets, hidden sheets, very hidden sheets, defined names and the active sheet name.

**Usage**

```
## S4 method for signature 'workbook'  
summary(object)
```

**Arguments**

object            The [workbook](#) to summarize

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [getSheets](#), [isSheetHidden](#), [isSheetVeryHidden](#), [getDefinedNames](#), [getActiveSheetName](#)

**Examples**

```
## Not run:  
# Load existing demo Excel file 'mtcars.xlsx' from the XLConnect package  
wb.mtcars <- loadWorkbook(system.file("demoFiles/mtcars.xlsx",  
                                     package = "XLConnect"))  
  
# Print a workbook summary  
summary(wb.mtcars)  
  
## End(Not run)
```

---

swissfranc

*Historical Exchange Rates: CHF vs EUR, USD and GBP*

---

**Description**

This data set provides historical exchange rates (CHF vs EUR, USD, GBP) in the time frame from January 1, 2014 to February 24, 2015. The exchange rates reflect bid prices with a 0% interbank rate.

**Usage**

```
swissfranc
```

**Format**

A data.frame with daily exchange rates in the mentioned time frame.

**Source**

<https://www.oanda.com/currency/historical-rates/>

---

unhideSheet-methods     *Unhiding worksheets in a workbook*

---

## Description

Unhides the specified worksheets in a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,character'  
unhideSheet(object,sheet)  
## S4 method for signature 'workbook,numeric'  
unhideSheet(object,sheet)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet to unhide

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [hideSheet](#), [isSheetHidden](#), [isSheetVeryHidden](#), [isSheetVisible](#)

## Examples

```
## Not run:  
# Load workbook (create if not existing)  
wb <- loadWorkbook("unhideWorksheet.xlsx", create = TRUE)  
  
# Create sheet 'airquality'  
createSheet(wb, name = "airquality")  
  
# Write the built-in data set airquality to worksheet  
# 'airquality'  
writeWorksheet(wb, airquality, sheet = "airquality")  
  
# Create sheet 'CO2'  
createSheet(wb, name = "CO2")  
  
# Write the built-in data set CO2 to worksheet 'CO2'  
writeWorksheet(wb, CO2, sheet = "CO2")  
  
# Hide sheet 'airquality'  
hideSheet(wb, sheet = "airquality")
```

```
# Unhide sheet 'airquality'
unhideSheet(wb, sheet = "airquality")

# clean up
file.remove("unhideWorksheet.xlsx")

## End(Not run)
```

---

unmergeCells-methods    *Unmerging cells*

---

## Description

Unmerges cells in a worksheet.

## Usage

```
## S4 method for signature 'workbook,character'
unmergeCells(object,sheet,reference)
## S4 method for signature 'workbook,numeric'
unmergeCells(object,sheet,reference)
```

## Arguments

object	The <a href="#">workbook</a> to use
sheet	The name or index of the sheet on which to unmerge cells
reference	A cell range specification (character) in the form 'A1:B8'. Note that the specification must exactly correspond to the range of the merged cells.

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[workbook](#), [mergeCells](#), [idx2cref](#)

## Examples

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("unmergeCells.xlsx", create = TRUE)

# Create a worksheet called 'merge'
createSheet(wb, name = "merge")
```

```
# Merge the cells A1:B8 on the worksheet created above
mergeCells(wb, sheet = "merge", reference = "A1:B8")

# Unmerge the cells A1:B8
unmergeCells(wb, sheet = "merge", reference = "A1:B8")

# clean up
file.remove("unmergeCells.xlsx")

## End(Not run)
```

---

with.workbook

*Evaluate an R expression in a workbook environment*

---

## Description

Evaluate an R expression in an environment constructed from the named regions of an Excel workbook.

## Usage

```
## S3 method for class 'workbook'
with(data, expr, ...)
```

## Arguments

data	A workbook object, as returned by <a href="#">loadWorkbook</a> .
expr	expression to evaluate
...	Additional arguments passed to <a href="#">readNamedRegion</a>

## Details

This method will read all named regions from the workbook when creating the environment. Names in the workbook will be processed through [make.names](#) to obtain the variable names.

Changes to the variables representing named regions will not affect the workbook contents and need to be saved explicitly using [writeNamedRegion](#) and [saveWorkbook](#). If the workbook contains names that do not map to R identifiers,

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## See Also

[getDefinedNames](#), [readNamedRegion](#),

**Examples**

```
## Not run:
# multiregion xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/multiregion.xlsx",
                             package = "XLConnect")

# load workbook
wb <- loadWorkbook(demoExcelFile)

# named regions: Calendar, IQ, Iris
print(getDefinedNames(wb))

# named regions as variables
with(wb, {
  print(Calendar)
  summary(IQ)
  summary(Iris)
})

## End(Not run)
```

---

workbook-class	<i>Class "workbook"</i>
----------------	-------------------------

---

**Description**

This is **XLConnect**'s main entity representing a Microsoft Excel workbook. S4 objects of this class and corresponding methods are used to manipulate the underlying Excel workbook instances.

**Objects from the Class**

Objects can be created by calls of the form `loadWorkbook(filename, create)`. This is a shortcut form of `new("workbook", filename, create)` with some additional error checking.

**Slots**

**filename:** Object of class character which represents the filename of the underlying Microsoft Excel workbook.

**jobj:** Object of class jobjRef (see package **rJava**) which represents a Java object reference that is used in the back-end to manipulate the underlying Excel workbook instance.

Note: The jobj slot should not be accessed directly. workbook objects should only be manipulated via the corresponding methods.

**Note**

**XLConnect** supports both Excel 97-2003 (\*.xls) and OOXML (Excel 2007+, \*.xlsx) file formats.

A workbook's underlying Excel file is not saved (or being created in case the file did not exist and `create = TRUE` has been specified) unless the `saveWorkbook` method has been called on the object. This provides more flexibility to the user to decide when changes are saved and also provides better performance in that several changes can be written in one go (normally at the end, rather than after every operation causing the file to be rewritten again completely each time). This is due to the fact that workbooks are manipulated in-memory and are only written to disk with specifically calling `saveWorkbook`.

### Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

### References

Wikipedia: Office Open XML  
[https://en.wikipedia.org/wiki/Office\\_Open\\_XML](https://en.wikipedia.org/wiki/Office_Open_XML)

### See Also

[loadWorkbook](#), [saveWorkbook](#)

### Examples

```
## Not run:
# Create a new workbook 'myWorkbook.xlsx'
# (assuming the file to not exist already)
wb <- loadWorkbook("myWorkbook.xlsx", create = TRUE)

# Create a worksheet called 'mtcars'
createSheet(wb, name = "mtcars")

# Write built-in dataset 'mtcars' to sheet 'mtcars' created above
writeWorksheet(wb, mtcars, sheet = "mtcars")

# Save workbook - this actually writes the file 'myWorkbook.xlsx' to disk
saveWorkbook(wb)

# clean up
file.remove("myWorkbook.xlsx")

## End(Not run)
```

---

writeNamedRegion-methods

*Writing named regions to a workbook*

---

### Description

Writes named regions to a [workbook](#).



## Usage

```
## S4 method for signature 'workbook,ANY'  
writeNamedRegion(object, data, name, header, rownames)
```

## Arguments

object	The <a href="#">workbook</a> to use
data	Data to write
name	Name of the named region to write to
header	Specifies if the column names should be written. The default is TRUE.
rownames	Name (character) of column to use for the row names of the provided data object. If specified, the row names of the data object ( <code>data.frame</code> ) will be included as an additional column with the specified name. If <code>rownames = NULL</code> (default), no row names will be included. May also be a list in case multiple data objects are written in one call (see below).

## Details

Writes data to the named region specified by name. Note that data is assumed to be a `data.frame` and is coerced to one if this is not already the case. The argument `header` specifies if the column names should be written. Note also that the arguments are vectorized and as such multiple named regions can be written with one call. In this case data is assumed to be a list of data objects (`data.frame`'s).

## Note

Named regions are automatically redefined to the area occupied by the written cells. This guarantees that the complete set of data can be re-read using [readNamedRegion](#). Also, this allows the named region just to be defined as the top left cell to be written to. There is no need to know the exact size of the data in advance.

When writing data to Excel, `writeNamedRegion` further applies cell styles to the cells as defined by the `workbook`'s "style action" (see [setStyleAction](#)).

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

## References

What are named regions/ranges?  
[https://www.officearticles.com/excel/named\\_ranges\\_in\\_microsoft\\_excel.htm](https://www.officearticles.com/excel/named_ranges_in_microsoft_excel.htm)  
How to create named regions/ranges?  
<https://www.youtube.com/watch?v=iAE9a0uRtpM>

**See Also**

[workbook](#), [writeWorksheet](#), [appendNamedRegion](#), [appendWorksheet](#), [readNamedRegion](#), [readWorksheet](#), [writeNamedRegionToFile](#)

**Examples**

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("writeNamedRegion.xlsx", create = TRUE)

# Create a worksheet named 'mtcars'
createSheet(wb, name = "mtcars")

# Create a named region called 'mtcars' on the sheet called 'mtcars'
createName(wb, name = "mtcars", formula = "mtcars!$A$1")

# Write built-in data set 'mtcars' to the above defined named region
# (using header = TRUE)
writeNamedRegion(wb, mtcars, name = "mtcars")

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up
file.remove("writeNamedRegion.xlsx")

## End(Not run)
```

---

writeNamedRegionToFile

*Writing named regions to an Excel file (wrapper function)*

---

**Description**

Writes named regions to an Excel file.

**Usage**

```
writeNamedRegionToFile(file, data, name, formula=NA, ...,
styleAction = XLC$STYLE_ACTION.XLCONNECT, clearNamedRegions=FALSE)
```

**Arguments**

file	The path name of the file to write to
data	Data to write
name	Name of the named region to write to

formula	If formula is specified, each item defines the formula of the named region identified by the corresponding entry of name. Use this if you want to create the document from scratch instead of writing to a template!
...	Additional arguments passed to <a href="#">writeNamedRegion</a>
styleAction	Style action to be used when writing the data. The default is XLC\$STYLE_ACTION.XLCONNECT. See <a href="#">setStyleAction</a> for more information.
clearNamedRegions	TRUE to clear content of existing named regions before writing data

**Author(s)**

Thomas Themel  
 Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[writeNamedRegion](#), [writeWorksheetToFile](#), [readNamedRegionFromFile](#),  
[readWorksheetFromFile](#)

**Examples**

```
## Not run:
# multiregion.xlsx file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/multiregion.xlsx",
                             package = "XLConnect")

template <- "template-ws.xlsx"
file.copy(demoExcelFile, template)

# Write single data.frame to a named region in an existing file
writeNamedRegionToFile(template, name = "Iris", iris)

# Write to a new file, defining the sheet and named region as we write.
# Format according to XLConnect defaults
writeNamedRegionToFile("iris.xlsx", name = "Iris", data = iris,
                       formula = "IrisData!$C$4",
                       styleAction = "XLCONNECT")

# clean up
file.remove("iris.xlsx")
file.remove("template-ws.xlsx")

## End(Not run)
```

---

writeWorksheet-methods

*Writing data to worksheets*

---

## Description

Writes data to worksheets of a [workbook](#).

## Usage

```
## S4 method for signature 'workbook,ANY,character'  
writeWorksheet(object,data,sheet,startRow,startCol,header,rownames)  
## S4 method for signature 'workbook,ANY,numeric'  
writeWorksheet(object,data,sheet,startRow,startCol,header,rownames)
```

## Arguments

object	The <a href="#">workbook</a> to write to
data	Data to write
sheet	The name or index of the sheet to write to
startRow	Index of the first row to write to. The default is startRow = 1.
startCol	Index of the first column to write to. The default is startCol = 1.
header	Specifies if the column names should be written. The default is TRUE.
rownames	Name (character) of column to use for the row names of the provided data object. If specified, the row names of the data object (data.frame) will be included as an additional column with the specified name. If rownames = NULL (default), no row names will be included. May also be a list in case multiple data objects are written in one call (see below).

## Details

Writes data to the worksheet specified by sheet. data is assumed to be a data.frame and is coerced to one if this is not already the case. startRow and startCol define the top left corner of the data region to be written. Note that the arguments are vectorized and as such multiple data objects (data.frame's) can be written to different worksheets in one call. In this case data is assumed to be a list of data.frames.

## Note

When writing data to Excel, writeWorksheet further applies cell styles to the cells as defined by the [workbook](#)'s "style action" (see [setStyleAction](#)).

## Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#), [writeNamedRegion](#), [appendWorksheet](#), [appendNamedRegion](#), [readWorksheet](#), [readNamedRegion](#), [writeWorksheetToFile](#)

**Examples**

```
## Not run:
# Load workbook (create if not existing)
wb <- loadWorkbook("writeWorksheet.xlsx", create = TRUE)

# Create a worksheet called 'CO2'
createSheet(wb, name = "CO2")

# Write built-in data set 'CO2' to the worksheet created above;
# offset from the top left corner and with default header = TRUE
writeWorksheet(wb, CO2, sheet = "CO2", startRow = 4, startCol = 2)

# Save workbook (this actually writes the file to disk)
saveWorkbook(wb)

# clean up
file.remove("writeWorksheet.xlsx")

## End(Not run)
```

---

writeWorksheetToFile *Writing data to worksheets in an Excel file (wrapper function)*

---

**Description**

Writes data to worksheets in an Excel file.

**Usage**

```
writeWorksheetToFile(file, data, sheet, ..., styleAction = XLC$STYLE_ACTION.XLCONNECT,
clearSheets = FALSE)
```

**Arguments**

file	The path name of the file to write to.
data	Data to write
sheet	The name or index of the sheet to write to
...	Additional arguments passed to <a href="#">writeWorksheet</a>
styleAction	Style action to be used when writing the data - not vectorized! The default is XLC\$STYLE_ACTION.XLCONNECT. See <a href="#">setStyleAction</a> for more information.
clearSheets	TRUE to clear sheets before writing data.

**Author(s)**

Thomas Themel  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[writeWorksheet](#), [writeNamedRegionToFile](#), [readWorksheetFromFile](#),  
[readNamedRegionFromFile](#)

**Examples**

```
## Not run:
# multiregion excel file from demoFiles subfolder of package XLConnect
demoExcelFile <- system.file("demoFiles/multiregion.xlsx",
                             package = "XLConnect")

# create a copy of the template
template <- "template-ws.xlsx"
file.copy(demoExcelFile, template)

# Write single data.frame to a specified location in an existing file
writeWorksheetToFile(template, data=iris, sheet="FirstSheet",
                    startRow=9, startCol = 9)

# create a copy of the template
template <- "template-multi-ws.xlsx"

# Write a few copies of the data.frame all over a new file
writeWorksheetToFile(template, data = list(i1 = iris, i2 = iris, i3 = iris),
                    sheet = c("FirstSheet", "SecondSheet", "FirstSheet"),
                    startRow = c(1,101,201), startCol = c(1,11,21))

# clean up
file.remove("template-multi-ws.xlsx")
file.remove("template-ws.xlsx")

## End(Not run)
```

---

XLC

*XLConnect Constants*

---

**Description**

List structure defining several constants used across **XLConnect**.

**Format**

The format is:

## List of 90

```
$ ERROR.WARN : chr "WARN"
$ ERROR.STOP : chr "STOP"
$ DATA_TYPE.BOOLEAN : chr "BOOLEAN"
$ DATA_TYPE.NUMERIC : chr "NUMERIC"
$ DATA_TYPE.STRING : chr "STRING"
$ DATA_TYPE.DATETIME : chr "DATETIME"
$ STYLE_ACTION.XLCONNECT : chr "XLCONNECT"
$ STYLE_ACTION.NONE : chr "NONE"
$ STYLE_ACTION.PREDEFINED : chr "PREDEFINED"
$ STYLE_ACTION.NAME_PREFIX : chr "STYLE_NAME_PREFIX"
$ STYLE_ACTION.DATA_FORMAT_ONLY: chr "DATA_FORMAT_ONLY"
$ BORDER.DASHED : num 3
$ BORDER.DASH_DOT : num 9
$ BORDER.DASH_DOT_DOT : num 11
$ BORDER.DOTTED : num 7
$ BORDER.DOUBLE : num 6
$ BORDER.HAIR : num 4
$ BORDER.MEDIUM : num 2
$ BORDER.MEDIUM_DASHED : num 8
$ BORDER.MEDIUM_DASH_DOT : num 10
$ BORDER.MEDIUM_DASH_DOT_DOT : num 12
$ BORDER.NONE : num 0
$ BORDER.SLANTED_DASH_DOT : num 13
$ BORDER.THICK : num 5
$ BORDER.THIN : num 1
$ COLOR.BLACK : num 8
$ COLOR.WHITE : num 9
$ COLOR.RED : num 10
$ COLOR.BRIGHT_GREEN : num 11
$ COLOR.BLUE : num 12
$ COLOR.YELLOW : num 13
$ COLOR.PINK : num 14
$ COLOR.TURQUOISE : num 15
$ COLOR.DARK_RED : num 16
$ COLOR.GREEN : num 17
$ COLOR.DARK_BLUE : num 18
$ COLOR.DARK_YELLOW : num 19
$ COLOR.VIOLET : num 20
$ COLOR.TEAL : num 21
$ COLOR.GREY_25_PERCENT : num 22
$ COLOR.GREY_50_PERCENT : num 23
$ COLOR.CORNFLOWER_BLUE : num 24
$ COLOR.MAROON : num 25
$ COLOR.LEMON_CHIFFON : num 26
$ COLOR.ORCHID : num 28
$ COLOR.CORAL : num 29
$ COLOR.ROYAL_BLUE : num 30
```

\$ COLOR.LIGHT_CORNFLOWER_BLUE	: num 31
\$ COLOR.SKY_BLUE	: num 40
\$ COLOR.LIGHT_TURQUOISE	: num 41
\$ COLOR.LIGHT_GREEN	: num 42
\$ COLOR.LIGHT_YELLOW	: num 43
\$ COLOR.PALE_BLUE	: num 44
\$ COLOR.ROSE	: num 45
\$ COLOR.LAVENDER	: num 46
\$ COLOR.TAN	: num 47
\$ COLOR.LIGHT_BLUE	: num 48
\$ COLOR.AQUA	: num 49
\$ COLOR.LIME	: num 50
\$ COLOR.GOLD	: num 51
\$ COLOR.LIGHT_ORANGE	: num 52
\$ COLOR.ORANGE	: num 53
\$ COLOR.BLUE_GREY	: num 54
\$ COLOR.GREY_40_PERCENT	: num 55
\$ COLOR.DARK_TEAL	: num 56
\$ COLOR.SEA_GREEN	: num 57
\$ COLOR.DARK_GREEN	: num 58
\$ COLOR.OLIVE_GREEN	: num 59
\$ COLOR.BROWN	: num 60
\$ COLOR.PLUM	: num 61
\$ COLOR.INDIGO	: num 62
\$ COLOR.GREY_80_PERCENT	: num 63
\$ COLOR.AUTOMATIC	: num 64
\$ FILL.NO_FILL	: num 0
\$ FILL.SOLID_FOREGROUND	: num 1
\$ FILL.FINE_DOTS	: num 2
\$ FILL.ALT_BARS	: num 3
\$ FILL.SPARSE_DOTS	: num 4
\$ FILL.THICK_HORZ_BANDS	: num 5
\$ FILL.THICK_VERT_BANDS	: num 6
\$ FILL.THICK_BACKWARD_DIAG	: num 7
\$ FILL.THICK_FORWARD_DIAG	: num 8
\$ FILL.BIG_SPOTS	: num 9
\$ FILL.BRICKS	: num 10
\$ FILL.THIN_HORZ_BANDS	: num 11
\$ FILL.THIN_VERT_BANDS	: num 12
\$ FILL.THIN_BACKWARD_DIAG	: num 13
\$ FILL.THIN_FORWARD_DIAG	: num 14
\$ FILL.SQUARES	: num 15
\$ FILL.DIAMONDS	: num 16

## Details

The XLC list structure defines several constants used throughout **XLConnect**. The general convention for enumeration types is to address corresponding constants via `XLC$"<ENUM_TYPE>.<VALUE>"`



where `<ENUM_TYPE>` specifies the name of the enumeration and `<VALUE>` specifies a corresponding enumeration value. An example is `XLC$"COLOR.RED"` where "COLOR" is the enumeration type and "RED" is the corresponding color enumeration value.

### Author(s)

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

---

xlcDump

*Dumping data sets to Excel files*

---

### Description

Dumps data sets to Excel files by writing each object to a separate worksheet.

### Usage

```
xlcDump(list, ..., file = "dump.xlsx", pos = -1, overwrite = FALSE)
```

### Arguments

<code>list</code>	character vector of names of objects inside environment <code>pos</code> to dump into an Excel file. Objects will be written using <code>writeWorksheet</code> - as such any object will be coerced to a <code>data.frame</code> . If missing, the list of objects will be determined via the function <code>ls</code> which takes any arguments specified via <code>...</code>
<code>...</code>	Arguments that will be passed to the <code>ls</code> function for getting a list of object names in case the <code>list</code> argument is missing.
<code>file</code>	Excel file to which objects will be dumped. Can be an existing or a new file. Defaults to "dump.xlsx".
<code>pos</code>	Environment in which to look for objects. Can be specified either as an integer specifying the position in the search list, as a character naming an element in the search list or as an environment. Defaults to -1 which refers to the current environment.
<code>overwrite</code>	logical specifying if data should be overwritten if objects with the same name have already been dumped to the Excel file.

### Details

Each object is written to a separate worksheet named by the name of the object. Objects are written using the `writeWorksheet` method - as such any object will be coerced to `data.frame`.

### Value

Named logical vector specifying if objects have been dumped or not. An object may not be dumped because there was an issue with the coercion to a `data.frame` or the object already existed (and `overwrite = FALSE`) in the workbook.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[xlRestore](#), [writeNamedRegion](#), [writeWorksheet](#), [writeNamedRegionToFile](#), [writeWorksheetToFile](#),  
[xlcEdit](#)

**Examples**

```
## Not run:
require(datasets)
xlcDump(c("airquality", "CO2", "iris", "PlantGrowth", "swiss"),
        file = "myDump.xlsx", pos = "package:datasets")
xlRestore(file = "myDump.xlsx", overwrite = TRUE)
# clean up
file.remove("myDump.xlsx")

## End(Not run)
```

---

xlcEdit

*Editing data sets in an Excel file editor*

---

**Description**

Provides the capability to edit an object/data.frame in an Excel file editor. After editing, the object is restored in the R session with the corresponding changes.

**Usage**

```
xlcEdit(obj, pos = globalenv(), ext = ".xlsx")
```

**Arguments**

obj	Object (data.frame) to edit.
pos	Where to look for the object specified by obj. See pos argument of <a href="#">get</a> for more information.
ext	Extension to use for the Excel file being created. Defaults to ".xlsx".

**Details**

This function uses [xlDump](#) and [xlRestore](#) to dump objects to and restore objects from Excel files. An OS command is invoked to open the temporary Excel file in the default editor. Changes to the file have to be saved in order for them to take effect in the restored object.

**Value**

Invisibly returns the value of the `xlcRestore` operation.

**Note**

This function only works under Windows and MacOS with a corresponding Excel file editor, e.g. MS Excel or LibreOffice. Attempts to use this function under another OS will result in an error being thrown.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[xlcDump](#), [xlcRestore](#), [writeNamedRegion](#), [writeWorksheet](#), [writeNamedRegionToFile](#), [writeWorksheetToFile](#)

**Examples**

```
## Not run:  
myObj = mtcars  
xlcEdit(myObj)  
  
## End(Not run)
```

---

xlcFreeMemory

*Freeing Java Virtual Machine memory*

---

**Description**

Frees Java Virtual Machine (JVM) memory.

**Usage**

```
xlcFreeMemory(...)
```

**Arguments**

... Further arguments to be passed to R's garbage collector (`gc`).

**Details**

This function uses Java's Runtime class to run the garbage collector. Java memory is freed by first running R's garbage collector ([gc](#)) and then Java's garbage collector. This sequence is important as R's [gc](#) may release objects which in turn allows Java's garbage collector to release some objects.

Note, in general there should be no need to make active use of this with **XLConnect**. Both R and Java automatically perform garbage collection at times. However, this function might be useful to reclaim memory after removing a large data object that has been written/read to/from Excel.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[xlcMemoryReport](#), [gc](#)

**Examples**

```
## Not run:  
xlcFreeMemory()  
  
## End(Not run)
```

---

xlcMemoryReport

*Reporting free Java Virtual Machine memory*

---

**Description**

Reports the amount of free memory in the Java Virtual Machine (JVM).

**Usage**

```
xlcMemoryReport()
```

**Details**

This function uses Java's Runtime class to query the free JVM memory.

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[xlcFreeMemory](#)

**Examples**

```
## Not run:
xlcmemoryreport()

## End(Not run)
```

---

XLConnect-deprecated    *Deprecated functions in package* **XLConnect**

---

**Description**

These functions are provided for compatibility with older versions of **XLConnect** only, and will be defunct in a later release.

**Details**

The following functions are deprecated and will be made defunct. Use the replacements as indicated.

- `getReferenceCoordinates`: [getReferenceCoordinatesForName](#)

---

`xlcrestore`                    *Restoring objects from Excel files*

---

**Description**

Restores objects from Excel files that have been dumped using `xlcdump`.

**Usage**

```
xlcrestore(file = "dump.xlsx", pos = -1, overwrite = FALSE)
```

**Arguments**

<code>file</code>	Excel file from which to restore objects. This is normally a file that has been produced with <code>xlcdump</code> . Defaults to "dump.xlsx".
<code>pos</code>	Environment into which to restore objects. Can be specified either as an integer specifying the position in the search list, as a character naming an element in the search list or as an environment. Defaults to -1 which refers to the current environment.
<code>overwrite</code>	logical specifying if data objects should be overwritten if they already exist inside the environment <code>pos</code> .

**Value**

Named logical vector specifying if objects have been restored or not. An object may not be restored because there was an issue with reading the data from the worksheet or the object already existed in the environment `pos` (and `overwrite = FALSE`).

**Author(s)**

Martin Studer  
 Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[xlsDump](#), [readNamedRegion](#), [readWorksheet](#), [readNamedRegionFromFile](#),  
[readWorksheetFromFile](#), [xlsEdit](#)

**Examples**

```
## Not run:
require(datasets)
xlsDump(c("airquality", "CO2", "iris", "PlantGrowth", "swiss"),
        file = "myDump.xlsx", pos = "package:datasets")
xlsRestore(file = "myDump.xlsx", overwrite = TRUE)
# clean up
file.remove("myDump.xlsx")

## End(Not run)
```

---

\$-methods

*Executing workbook methods in object\$method(...) form*

---

**Description**

Allows to execute [workbook](#) methods in `workbook-object$method(...)` form.

**Arguments**

`x` The object ([workbook](#), [cellstyle](#)) to use

**Details**

`x$method(...)` (where `x` is a [workbook](#)-object) is equivalent to `method(x, ...)`

**Note**

The [workbook](#) \$-operator allows to call [workbook](#)-methods in `workbook-object$method(...)` form. This form might be considered more convenient or readable for programmers coming from other object-oriented languages such as Java, C#, ...

**Author(s)**

Martin Studer  
Mirai Solutions GmbH <https://mirai-solutions.ch>

**See Also**

[workbook](#)

**Examples**

```
## Not run:  
# Load workbook (create if not existing)  
wb <- loadWorkbook("dollar.xlsx", create = TRUE)  
  
# Create a worksheet called 'CO2'  
wb$createSheet(name = "CO2")  
  
# Write built-in data set 'CO2' to the worksheet created above  
wb$writeWorksheet(CO2, sheet = "CO2", startRow = 4, startCol = 2)  
  
# Save workbook  
wb$saveWorkbook()  
  
# clean up  
file.remove("dollar.xlsx")  
  
## End(Not run)
```

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