The odsfile package: inserting opendocument spreadsheet as LaTeX tables*

Michal Hoftich (michal.h21@gmail.com)

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1 Introduction

This is LuaLaTeX package and lua library for working with opendocument spreadsheet (ods) documents from Open/Libre Office Calc. They can be read as LaTeXtables, you can also add new data to them.

ods format consist of number of `xml` files packed in the `zip` file. This package uses LuaTeX's zip library and scripting to read `xml` content from this archive, which means that it is not possible to use this package with pdfLaTeX or XeLaTeX. On the other side, `odsfile.lua` library can be used from PlainTeX, ConTeXt or pure `lua` scripts.

Creation of this package was motivated by question[1] on site `http://tex.stackexchange.com/`. Development version of the package can be found at

*Version 0.1, last revisited 2012-07-22.

[1] `http://tex.stackexchange.com/questions/60378/insert-libreoffice-table-as-input`

https://github.com/michal-h21/odsfile, all contributions and comments are welcome.

2 Usage

You can load odsfile classically with

```
\usepackage{odsfile}
```

There are macros:

- \includespread
- \tabletemplate
- \loadodsfile
- \savespreadsheet
- AddRow environment

\includespread

Main command is \includespread. It's syntax is:
\includespread[⟨*key-value list*⟩]
Options are:

file Filename of file to be loaded. You should specify this only on first use of \includespread.

sheet Name of sheet to be loaded. If it's not specified on first use of \includespread, then first sheet from the file is loaded. The sheet remains selected until another use of sheet.

First	2,2
Second	3,1

```
\begin{tabular}{l l}
\includespread[file=pokus.
    ods,sheet=List2]
\end{tabular}
```

range Selects range from table to be inserted. Range is specified in format similar to spreadsheet processors, like a2:c4, selecting cells starting at first column, second row and ending and third column, fourth row.

Hello	1	3
World	2	4
AA	3	5

```
\begin{tabular}{lll}
\includespread[sheet=List1,
    range=a2:c4]
\end{tabular}
```

You can omit some or both of the numbers:

Label	Position	Count
Hello	1	3
World	2	4
AA	3	5

```
\begin{tabular}{lll}
\includespread[range=a:c4]
\end{tabular}
```

Label	Position
Hello	1
World	2
AA	3
BB	4
CC	5

```
\begin{tabular}{ll}
\includespread[range=a:b]
\end{tabular}
```

1	3
2	4
3	5
4	6
5	7

```
\begin{tabular}{ll}
\includespread[range=b2:c]
\end{tabular}
```

columns Column heading specification. It can be either `head`, `top`, or comma separated list of values.

top Use as headers first line from the table.

Position	Count
2	4
3	5
4	6

```
\begin{tabular}{ll}
\includespread[range=b3:c
    5,columns=top]
\end{tabular}
```

Note that if you include whole table, first line is included twice:

Label	Position	Count
Label	Position	Count
Hello	1	3
World	2	4
AA	3	5
BB	4	6
CC	5	7

```
\begin{tabular}{lll}
\includespread[columns=
    top]
\end{tabular}
```

in this case you can use

head use first row from selection as headings.

Label	Position	Count
Hello	1	3
World	2	4

```
\begin{tabular}{lll}
\includespread[columns=
    head,range=a:c3]
\end{tabular}
```

manually specified list If column headings are not specified in the file, you can set them manually.

title	amount
First	2,2
Second	3,1

```
\begin{tabular}{ll}
\includespread[columns=
    head,columns={title,
    amount},sheet=List2]
\end{tabular}
```

rowseparator Rows are normally separated with newlines, if you really want, you can separate them with hlines.

Possible values:

tableline (default) Inserts

character

hline Inserts

hline character

newline Inserts blank line

user specified separator useful in conjunction with rowtemplate (p. **??**), if you want to use data not as table, but as plaintext or input for plotting functions, for example.

Label	Position
Hello	1
World	2
AA	3
BB	4

```
\begin{tabular}{lll}
\includespread[columns=top,
    sheet=List1,
    rowseparator=hline,
    range=a2:b5]
\end{tabular}
```

template Templates are simple mechanism to insert whole tabular environment with column specification. All columns are aligned to the left, if you want to do more advanced stuff with column specifications, you must enter them manually as in all previous examples.

Label	Position	Count
World	2	4
AA	3	5
BB	4	6
CC	5	7

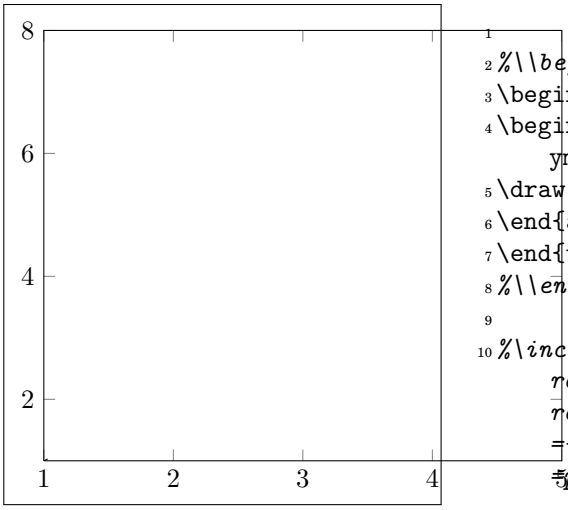
```
\includespread[columns=top,
    template=booktabs,range
    =a3]
```

For more info about templates, see next section 3

rowtemplate Enables to convert tabular data to something different than LaTeX tables.

:Hello:,:World:,:AA:,:BB:,:CC:

```
\includespread[range=a2,
    rowseparator={, },
    rowtemplate={:-{1}:}]
```




```
%\\begin{verbatim}
\begin{tikzpicture}
\begin{axis}[xmin=1,xmax=5,
    ymin=1,ymax=8]
\draw (1,1) --(3,3);
\end{axis}
\end{tikzpicture}
%\\end{verbatim}

%\includespread[range=b2:c,
    rowseparator=newline,
    rowtemplate
    ={(-{1},-{2})},template
    =plot]
```

3 Templates

If you don't want to specify tabular environment by hand, you can use simple templating mechanism to insert tabular environment by hand.

\tabletemplate

Templates are defined with macro
`\tabletemplate{`⟨*template name*⟩`}{`⟨*template code*⟩`}`
there is default template:

```
\tabletemplate{default}{-{colheading}-{rowsep}-{content}}
```

Code `-{variable name}` inserts one of the following variables:

coltypes This is code to be inserted in `\begin{tabular}{coltypes}`. In current version, it inserts `l` for left alignment column, for all columns of inserted table. It should be possible to use more intelligent method based on types of column content, or `ods` styles, maybe in future versions some of them will be used. If you want other alignment of columns now, you have to specify `\begin{tabular}{column types}` manually.

colheading Column headings.

rowsep It inserts row separator defined with `rowsepartor` key of `\includespread`. It is used in default style to delimit column headings and table contents.

content Tabular data.

More powerful template for the booktabs package

```
\tabletemplate{booktabs}{%
\\begin{tabular}{-{coltypes}}
\\toprule
-{colheading}
\\midrule
-{content}
\\\\ \\bottomrule
\\end{tabular}
}
```

Note use of the double \ in template definition – it is needed to pass them to the lua side.

4 Adding data

There is simple interface for adding new rows to the spreadsheet.

AddRow

`AddRow[`⟨*row number*⟩`]` environment for adding new row to the current sheet. Optional argument `[`⟨*row number*⟩`]` specifies where it should be inserted, if blank, it will be inserted at end.

Inside `AddRow`, you can use

- `\AddString{`⟨*text*⟩`}{`⟨*position*⟩`}`
- `\AddNumber{`⟨*number*⟩`}{`⟨*position*⟩`}`

Position specifies cell, where data should be added, if you leave it blank, it will be laced next to the previous one.

Label	Position	Count
Hello	1	3
World	2	4
AA	3	5
BB	4	6
CC	5	7

Label	Position	Count
Hello	1	3
third row		22
World	2	4
AA	3	5
BB	4	6
CC	5	7
last row		

```
\includespread[columns=head,
    template=booktabs]
\begin{AddRow}
  \AddString{last row}{}
\end{AddRow}
\begin{AddRow}[3]
  \AddString{third row}{}
  \AddNumber{22}{3}
\end{AddRow}
\includespread[columns=head,
    template=booktabs]
```

5 Loading and saving of the ods file

\loadodsfile

You can explicitly load ods file with \loadodsfile[⟨*key val list*⟩]{⟨*filename*⟩}. This can be useful, if you only want to write some data to the file, otherwise it is better to use \includespread.

\savespreadsheet

For saving spreadsheets modified with AddRow, you can use \savespreadsheet. This command uses call to external zip utility, so you should have installed it and you have to call luaLaTeXwith lualatex --shell-escape filename. LuaLaTeXalso must have write permissions for accessing the ods file. This command creates file content.xml in the current directory, so if externall call fails, you can run

```
zip -r filename.ods content.xml
```

by hand.

6 Lua library

The lua library uses luazip library integrated to LuaTeX and LuaXML[2], pure lua library for working with XML files.

To use library in your code, you can use:

```
require("odsfile")
```

Function odsfile.load(filename) returns odsfile object, with loadContent() method, which returns lua table representing content.xml file. We can select sheet from the spreadsheet with odsfile.getTable(xmlobject,sheet_name). If we omit sheet_name, first sheet from spreadsheet is selected.

Data from sheet can be read with odsfile.tableValues(sheet, x1, y1, x2, y2). x1 - y2 are range to be selected, they can be nil, in which case whole rows and cells are selected. For converting of standard range expressions of form a1:b2 to this representation, function odsfile.getRange(range) can be used.

Example usage – file odsexample.lua

```
require "odsfile"

-- Helper function to print structure of the table
function printable(tb, level)
  level = level or 1
  local spaces = string.rep(' ', level*2)
  for k,v in pairs(tb) do
      if type(v) ~= "table" then
         print(spaces .. k..'='..v)
      else
         print(spaces .. k)
```

[2] https://github.com/michal-h21/LuaXML

```
        level = level + 1
        printable(v, level)
      end
  end
end

local ods = odsfile.load("filename.ods")
local f, e = ods:loadContent()

-- Get First sheet from the table
body= odsfile.getTable(f)
-- Print structure of the range a4:b5
printable(odsfile.tableValues(body,odsfile.getRange("a4:b5")))
```

Run the example with `texlua odsexample.lua` from the command line, you should get following result:

```
  1
    1
      value=AA
      attr
        office:value-type=string
    2
        value=3
        attr
          office:value-type=float
          office:value=3
  2
      1
        value=BB
        attr
          office:value-type=string
      2
          value=4
          attr
            office:value-type=float
            office:value=4
```

To convert this structure to LaTeX tabular code, you can use following function:

```
function tableToTabular(values)
  local rowValues = function(row)
    local t={}
    for _,column in pairs(row) do table.insert(t,column.value) end
    return t
  end
  content = {}
  for i,row in pairs(values) do
    table.insert(content,table.concat(rowValues(row)," & "))
```

```
  end
  return table.concat(content,"\\\\\\n")
end
-- Now use it with objects from previous example
print(tableToTabular(odsfile.tableValues(body)))
```

This example yields

```
Label & Position & Count\\
Hello & 1 & 3\\
World & 2 & 4\\
AA & 3 & 5\\
BB & 4 & 6\\
CC & 5 & 7
```

7 Changes

v0.2

- LuaXML is now distributed as separate library, so other projects can use it.
- New `AddRow` environment for adding data to the ods file
- New command `\savespreadsheet` for saving ods file
- Bug fixes: corrected loading of the sheets, corrected behaviour of blank cell

v0.1 First version