The odsfile package: accessing of the opendocument spreadsheet from LaTeX documents*

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Contents

1 Introduction

This is LuaLaTeX package and lua library for working with opendocument spreadsheet (ods) documents from Open/Libre Office Calc. Their contents can be read as LaTeX tables, can be pass to macros, you can also add new data to existing spreadsheets.

ods format consist of number of xml files packed in the zip file. This package uses LuaTeX's zip library, LuaXML library[1] and lua scripting to read xml content from this archive, which means that it is not possible to use this package with pdfLaTeX or XƎLaTeX. On the other side, odsfile.lua library can be used from PlainTeX, ConTeXt or pure lua scripts.

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*Version 0.4, last revisited 2014-12-11.

[1]Pure lua library for working with xml files, it is available form CTAN or https://github.com/michal-h21/LuaXML

Creation of this package was motivated by question[2] on site `http://tex.stackexchange.com/`. Development version of the package can be found at `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

```
1 \begin{tabular}{l l}
2 \includespread[file=pokus.
    ods,sheet=List2]
3 \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

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

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

You can omit some or both of the numbers:

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

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

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

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

1	3
2	4
3	5
4	6
5	7

```
1 \begin{tabular}{ll}
2 \includespread[range=b2:c]
3 \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

```
1 \begin{tabular}{ll}
2 \includespread[range=b3:c
     5,columns=top]
3 \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

```
1 \begin{tabular}{lll}
2 \includespread[columns=
     top]
3 \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

```
1 \begin{tabular}{lll}
2 \includespread[columns=
     head,range=a:c3]
3 \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

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

columnbreak Command inserted in manual linebreaks in cells. Default value is `\linebreak`

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

newline Inserts blank line

user specified separator useful in conjunction with rowtemplate (p. 5), for example if you want to include sheets as plaintext or input for plotting functions.

Label	Position
Hello	1
World	2
AA	3
BB	4

```
1 \begin{tabular}{lll}
2 \includespread[columns=top,
      sheet=List1,
      rowseparator=hline,
      range=a2:b5]
3 \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

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

For more info about templates, see next section 3

coltypes When using template, column types are inferred automatically. If that doesn't work well in your case, you can specify them manually with `coltypes` option.

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

```
1  \includespread[columns=
       head, template=
       booktabs, coltypes=
       lrr]
```

rowtemplate Enables to convert tabular data to something different than LaTeX tables. Syntax for rowtemplates is similar to the table templates, variables are inserted with `-{number}`, where number is the position of the cell from beginning of the selection.

Hello:1, *World*:2, *AA*:3, *BB*:4, *CC*:5

```
1 \includespread[range=a2:b,
      rowseparator={,\ },
      rowtemplate={\textit
      {-{1}}:-{2}}]
```

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}`. The `p` column specifier is used for each column, where cell with manual line break occurs, `l` is used otherwise.

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}
}
```

4 Adding data

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

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
World	2	4
AA	3	5
BB	4	6
CC	5	7

```
1 \includespread[columns=head,
    template=booktabs]
2 \begin{AddRow}
3   \AddString{last row}{}
4 \end{AddRow}
5 \begin{AddRow}[3]
6   \AddString{third row}{}
7   \AddNumber{22}{2}
8 \end{AddRow}
9 \includespread[columns=head,
    template=booktabs]
```

5 Loading and saving of the ods file

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 luaLaTeX with lualatex --shell-escape filename. LuaLaTeX also 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[3], 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)
         level = level + 1
         printable(v, level)
      end
```

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

```
    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

v0.4
- Fixed bugs in loading sheets without ranges
- Fixed bugs in behaviour of empty cells[4]
- Fixed bug in row counting[5]
- Added support for children element in column paragraphs
- Added cell value escaping

v0.3
- Added support for multiline cells
- Improved automatic column types generation
- Added new options, `coltypes` and `columnbreak`

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

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[4]Thanks to TrippleWhy
[5]Thanks to yamsu