

jss: A Document Class for Publications in the Journal of Statistical Software

Achim Zeileis

April 7, 2008

1 Introduction

The $\text{\LaTeX} 2_{\epsilon}$ document class **jss** is an extension of the standard $\text{\LaTeX} 2_{\epsilon}$ **article** class for publications in the Journal of Statistical Software (JSS, <http://www.jstatsoft.org/>). It provides infrastructure for all four kinds of publications in JSS: regular articles, code snippets, book reviews and software reviews. Each document requires several declarations to be made in the header (before `\begin{document}`) which are described in Section 2 separately for articles/code snippets and book/software reviews along with some general commands which can be used in all documents.

The final version of JSS papers should be prepared using this JSS style file; the submission of the final version needs to include the full sources (`.tex`, `.bib`, and all graphics). A quick check for the most important aspects of the JSS style is given in Section 2.1; authors should make sure that all of them are addressed in the final version.

All documents need to be processed by pdf \TeX , some useful information on this is provided in Section 3, which also contains some information on using BIB \TeX . BIB \TeX together with the style file `jss.bst` produces references and citations in the required format.

The actual code for the batch file (`jss.ins`), the driver (`jss.drv`) and the class (`jss.cls`) are briefly described in Section 4. Note, that usually you do not have to read that section when you want to prepare a submission for JSS.

2 Instructions for authors

To use the JSS styles, you have to include the class file `jss.cls`, the logo `jsslogo.jpg` and the BIB \TeX style `jss.bst` in your search path. This can either be your local working directory or in your `texmf` or `localtexmf` tree.

The \LaTeX documents have to include the `jss.cls` first by

```
\documentclass[type]{jss}
```

where *type* can be **article** (which is the default), **codesnippet**, **bookreview** or **softwarereview**. Templates with brief instructions are provided in `article.tex`, `codesnippet.tex`, `bookreview.tex` and `softwarereview.tex` respectively. The corresponding commands used for the header declarations are described in more detail in the following.

By using `jss.cls`, the packages **graphicx**, **a4wide**, **color**, **hyperref**, **ae**, **fancyverb** and **natbib** are loaded automatically. Authors may, of course, include further packages but should not change the page layout or change the font or font encoding. If the package **thumbpdf** is available, its inclusion is encouraged

The titles of JSS publications are capitalized, i.e., in title style, but the section headers are not and should be in sentence-style.

Acknowledgments should be included at the end of the paper before the references in a separate section set up via `\section*{Acknowledgments}`.

Hint. If you want to use markup in section headers you will usually have to escape it for the PDF bookmarks by giving the text for the bookmark explicitly without markup, e.g.,

```
\section[Calling C++ from R]{Calling \proglang{C++} from \proglang{R}}
```

Hint. If compilation with pdfTeX fails with an error at `\begin{document}` the reason is almost surely that some of the declarations in the header have not been made properly. For example, `\Plainauthor`, `\Plaintitle` or `\Plainkeywords` might be missing or still containing markup.

Hint. If you want to use the JSS style for a non-JSS paper (or a modification of an JSS paper, e.g., in a vignette), you can set the option `nojss` in the `\documentclass` statement to suppress JSS-specific layout.

2.1 Style checklist

A quick check for the most important aspects of the JSS style is given below. Authors should make sure that all of them are addressed in the final version. More details can be found in the remainder of this manual.

- The manuscript can be compiled by pdfTeX.
- `\proglang`, `\pkg` and `\code` has been used for highlighting throughout the paper (including references).
- References are provided in a `.bib` BIBTeX database and included in the text by `\cite`, `\citep`, `\citete`, etc.
- Titles and headers are formatted properly:
 - `\title` in title style,
 - `\section` etc. in sentence style,
 - all titles in the BIBTeX file in title style.
- Figures, tables and equations are marked with a `\label` and referred to by `\ref`, e.g., “Figure~`\ref{...}`”.
- Software packages are `\cite{}`d properly.

2.2 Articles and code snippets

For JSS articles and code snippets respectively, the following declarations have to be made in the header of the TeX sources (before `\begin{document}`). See also the template `article.tex` or `codesnippet.tex` respectively.

`\author` The command `\author` specifies the list of authors. The name of each author should be followed by a linebreak and his affiliation (only the university, in a single line). The authors should be separated by `\And` (instead of `\and`), e.g.,

```
\author{Achim Zeileis\\Wirtschaftsuniversit\"at Wien \And
        Second Author\\Plus Affiliation}
```

If not all authors fit into a single line, `\AND` (instead of `\And`) should be used in front of authors that should go into the next line.

`\Plainauthor` The list of authors without affiliations. It needs to be comma-separated and must not contain any markup (bold fonts etc.), e.g.,

```
\Plainauthor{Achim Zeileis, Second Author}
```

`\title` The title of the paper. It should be capitalized and may contain further markup (in particular markup such as `\pkg` and `\proglang`), e.g.,

```
\title{A Capitalized Title for a Package \pkg{foo}}
```

`\Plaintitle` The full title without any markup. The default is to use `\title`, therefore it needs to be specified only if it is different from `\title`, e.g.,

```
\Plaintitle{A Capitalized Title for a Package foo}
```

`\Shorttitle` A shorter version of the title to be used for page headings. The default is to use `\title`, therefore it needs to be specified only if it is different from `\title`, e.g.,

```
\Shorttitle{A Capitalized Title}
```

`\Abstract` Enter the abstract for your article here, e.g.,

```
\Abstract{
  The abstract of the article.
}
```

`\Keywords` A comma-separated list of (at least one) keyword(s) which should not be capitalized, e.g., `\Keywords{keywords, comma-separated, not capitalized}`.

`\Plainkeywords` The list of keywords without any markup. The default is to use `\Keywords`, therefore it needs to be specified only if it is different from `\Keywords`.

`\Volume` The JSS volume number in which the article is published, e.g., `\Volume{11}`. Note: This information will be provided upon acceptance or added by the technical editor. Prior to acceptance, do not use this command.

`\Issue` The JSS issue number in which the article is published, e.g., `\Issue{9}`. Note: This information will be provided upon acceptance or added by the technical editor. Prior to acceptance, do not use this command.

`\Month` The month in which the article is published, e.g., `\Month{September}`. Note: This information will be provided upon acceptance or added by the technical editor. Prior to acceptance, do not use this command.

`\Year` The year in which the article is published, e.g., `\Year{2004}`. Note: This information will be provided upon acceptance or added by the technical editor. Prior to acceptance, do not use this command.

`\Submitdate` The date of submission for the article, e.g., `\Submitdate{2004-09-29}`. Note: This information will be provided upon acceptance or added by the technical editor. Prior to acceptance, do not use this command.

`\Acceptdate` The date of acceptance for the article, e.g., `\Acceptdate{2004-09-29}`. Note: This information will be provided upon acceptance or added by the technical editor. Prior to acceptance, do not use this command.

\Address The address of (at least) one author should be given in the following format

```
\Address{
  Achim Zeileis\\
  Department of Statistics and Mathematics\\
  Wirtschaftsuniversit\"at Wien\\
  1090 Wien, Austria\\
  E-mail: \email{Achim.Zeileis@wu-wien.ac.at}\\
  URL: \url{http://statmath.wu-wien.ac.at/~zeileis/}
}
```

It is also possible to include your telephone and fax number, by adding them in the format

```
Telephone: +43/1/31336-5053
Fax: +43/1/31336-734
```

before the e-mail address.

Furthermore, if the document is prepared using the **Sweave** functions in R, something like the following line

```
%% need no \usepackage{Sweave.sty}
```

(with ‘%%’) needs to be included in the header.

2.3 Book and software reviews

For JSS book and software reviews respectively, the following declarations have to be made in the header of the \TeX sources (before `\begin{document}`). See also the template `bookreview.tex` or `softwarereview.tex` respectively. Note that some commands might differ between book and software reviews, this is always stated explicitly below.

\Reviewer The command `\Reviewer` specifies the name of the reviewer followed by a linebreak and his affiliation (only the university, in a single line), e.g.,

```
\Reviewer{Frederic Udina\\Pompeu Fabra University}
```

\Plainreviewer The name of the reviewer without affiliation. It must not contain any markup (bold fonts etc.), e.g.,

```
\Plainauthor{Frederic Udina}
```

The following five commands are just required for book reviews.

\Booktitle The title of the book. It should be capitalized and may contain further markup (in particular markup such as `\pkg` and `\proglang`), e.g.,

```
\Booktitle{Visualizing Categorical Data}
```

\Bookauthor Author(s) of the book, e.g.,

```
\Bookauthor{Michael Friendly}
```

| | |
|-----------------------------|--|
| | If there are several authors they should be comma-separated, and the last author separated by <i>and</i> , e.g., <code>\Bookauthor{A and B}</code> or <code>\Bookauthor{A, B and C}</code> . |
| <code>\Pubyear</code> | Year of publication, e.g., <code>\Pubyear{2000}</code> . |
| <code>\ISBN</code> | ISBN number, e.g., <code>\ISBN{1-58025-660-0}</code> . |
| <code>\Pages</code> | Number of pages, both arabic and roman (if available), e.g., <code>\Pages{456}</code> or <code>\Pages{xvi + 145}</code> . <i>The following command is just required for software reviews.</i> |
| <code>\Softwaretitle</code> | The title of the software. It should be capitalized and may contain further markup (in particular markup such as <code>\pkg</code> and <code>\proglang</code>), e.g., <code>\Softwaretitle{\pkg{Aabel} 1.5.7}</code> <i>The remaining commands are again required for both book and software reviews.</i> |
| <code>\Publisher</code> | Publisher of the book/software, e.g., <code>\Publisher{SAS Institute Inc.}</code> or <code>\Publisher{Gigawiz Ltd. Co.}</code> . |
| <code>\Pubaddress</code> | Address of the publisher of the book/software, e.g., <code>\Pubaddress{Carey, NC}</code> . |
| <code>\Price</code> | Price of the book/software. For books this might simply be <code>\Price{USD 69.95}</code> or <code>\Price{USD 69.95 (P)}</code> , but could also distinguish between hardcover and paperback versions <code>\Price{USD 69.95 (P), USD 89.95 (H)}</code> . Analogously, for a software it could be <code>\Price{USD 349 (standard), USD 249 (academic)}</code> . |
| <code>\URL</code> | A URL for the book or software, e.g., <code>\URL{http://www.math.yorku.ca/SCS/vcd/}</code> If no URL is available, use <code>\URL{}</code> . |
| <code>\Plaintitle</code> | The full book or software title without any markup (line breaks, bold fonts etc.). The default is to use <code>\Booktitle</code> or <code>\Softwaretitle</code> respectively, therefore it needs to be specified only if it is different from <code>\Booktitle</code> or <code>\Softwaretitle</code> , e.g., <code>\Plaintitle{Visualizing Categorical Data}</code> |
| <code>\Shorttitle</code> | A shorter version of the book or software title to be used for page headings. The default is to use <code>\Booktitle</code> or <code>\Softwaretitle</code> respectively, therefore it needs to be specified only if it is different from <code>\Booktitle</code> or <code>\Softwaretitle</code> , e.g., <code>\Shorttitle{Visualizing Categorical Data}</code> |
| <code>\Volume</code> | The JSS volume number in which the review is published, e.g., <code>\Volume{11}</code> . Note: This information will be provided upon acceptance or added by the technical editor. |
| <code>\Issue</code> | The JSS issue number in which the review is published, e.g., <code>\Issue{9}</code> . Note: This information will be provided upon acceptance or added by the technical editor. |
| <code>\Month</code> | The month in which the review is published, e.g., <code>\Month{September}</code> . Note: This information will be provided upon acceptance or added by the technical editor. |
| <code>\Year</code> | The year in which the review is published, e.g., <code>\Year{2004}</code> . Note: This information will be provided upon acceptance or added by the technical editor. |
| <code>\Submitdate</code> | The date of publication for the review, e.g., <code>\Submitdate{2004-09-29}</code> . Note: This information will be provided upon acceptance or added by the technical editor. |
| <code>\Address</code> | The address of (at least) one author should be given in the following format <code>\Address{</code> |

```

Achim Zeileis\\
Department f\"ur Statistik & Mathematik\\
Wirtschaftsuniversit\"at Wien\\
1090 Wien, Austria\\
E-mail: \email{Achim.Zeileis@wu-wien.ac.at}\\
URL: \url{http://statmath.wu-wien.ac.at/~zeileis/}
}

```

It is also possible to include your telephone and fax number, by adding them in the format

```

Telephone: +43/1/31336-5053
Fax: +43/1/31336-734

```

before the e-mail address.

2.4 Further commands

The `jss` package provides several commands for typesetting names related to software (programming languages, packages, code) and mathematical formulae.

Writing about software

- `\proglang` This should be used for typesetting the names of programming languages, e.g., `\proglang{Java}`, `\proglang{C++}` or `\proglang{R}`. This applies also to programmable environments which also have a GUI like `\proglang{SAS}`, `\proglang{Stata}` or `\proglang{S-PLUS}`.
- `\pkg` This should be used for typesetting the names of packages, e.g., `\pkg{CMreg}`, `\pkg{MATCH}` or `\pkg{strucchange}`.
- `\code` This should be used for typesetting code chunks within the text, e.g., `\code{plot(1:10)}`. Currently, this simply uses a typewriter font. Although it escapes most special characters, it might still lead to problems with some special characters. In such cases the code can also be set using `\verb`, e.g., `\verb/print("hello world")/`.

Layout of code

`jss.cls` only provides very simple means of including code which are mostly borrowed from **Sweave**. There are three verbatim environments for code: `Code`, `CodeInput` and `CodeOutput`. Furthermore, there is an environment `CodeChunk` which can be put around sequences of `CodeInputs` and `CodeOutputs` to (hopefully) keep L^AT_EX from page-breaking in the middle of a code chunk. In short, there are two options: a) if no distinction between input and output is necessary, the code is placed between `\begin{Code}` and `\end{Code}`. b) If input and output should be distinguished, this can be done like in the following example.

```

\begin{CodeChunk}
\begin{CodeInput}
first input first line
first input second line
\end{CodeInput}
\begin{CodeOutput}
output of first input
\end{CodeOutput}
\begin{CodeInput}
second input
\end{CodeInput}
\begin{CodeOutput}

```

```
second output
\end{CodeOutput}
\end{CodeChunk}
```

An example what this could look like, is the following R code. The first three lines are the input, the rest is output.

```
\begin{CodeChunk}
\begin{CodeInput}
R> data(cars)
R> fm <- lm(dist ~ speed, data = log(cars))
R> summary(fm)
\end{CodeInput}
\begin{CodeOutput}
Call:
lm(formula = dist ~ speed, data = log(cars))

Residuals:
    Min       1Q   Median       3Q      Max
-1.00215 -0.24578 -0.02898  0.20717  0.88289

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  -0.7297      0.3758  -1.941  0.0581 .
speed         1.6024      0.1395  11.484 2.26e-15 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.4053 on 48 degrees of freedom
Multiple R-Squared:  0.7331,    Adjusted R-squared:  0.7276
F-statistic: 131.9 on 1 and 48 DF,  p-value: 2.259e-15
\end{CodeOutput}
\end{CodeChunk}
```

If you prepare your paper using **Sweave** (which is recommended if you describe an R package) do *not* include **Sweave.sty** into your document, the necessary commands are already available within **jss.cls**. To prevent **Sweave** from including **Sweave.sty** automatically you need to include a line like

```
%% need no \usepackage{Sweave.sty}
```

(with ‘%%’) into the header of your document.

If this basic infrastructure for typesetting your code is not sufficient, you can also use other L^AT_EX packages like the **listings** package.

Mathematical formulae

Commonly used operators like E, VAR, COV, and P should be set using the commands **\E**, **\VAR**, **\COV** and **\Prob**. Beyond this, **jss** does not provide (or enforce) a certain mathematical notation. However, using the **statex** package (e.g., available from CTAN and in T_EX Live) could be useful.

3 Using pdf \TeX and Bib \TeX

Using pdf \TeX

A \LaTeX document (foo.tex, say) using jss.cls needs to be compiled using pdf \TeX , typically this will be done using either of the following commands:

```
pdflatex foo.tex

texi2dvi --pdf foo.tex

texi2pdf foo.tex
```

If you are not using command line tools but some integrated GUI editor for \LaTeX documents you will have to press the ‘pdf \LaTeX ’ button (as opposed to the ‘ \LaTeX ’ button).

All graphics included into the document have to be in a format pdf \TeX can deal with, i.e., PDF for vector graphics or JPG/PNG/etc. for bitmaps/raster graphics. If you cannot produce PDF graphics directly but only PS/EPS, these can be converted using ps2pdf or epstopdf (usually preferred).

Hint. If you are used to compiling your documents with standard \LaTeX and then getting automatic reloads of the resulting DVI document in your DVI viewer, which is not possible with PDF documents in many PDF viewers: you might want to look at **xpdf** (Linux) or **gsview** (Windows, see <http://www.cs.wisc.edu/~ghost/gsview/>) which have a reload function.

Hint. If you want to use markup in section headers you will usually have to escape it for the PDF bookmarks by giving the text for the bookmark explicitly without markup, e.g.,

```
\section[Calling C++ from R]{Calling \proglang{C++} from \proglang{R}}
```

Hint. If you know how to produce \LaTeX documents that can be processed with both \LaTeX and pdf \TeX , you can do so if you provide an EPS substitute for jsslogo.jpg (e.g. an empty or converted jsslogo.eps). Note, however, that the final document needs to be processed with pdf \TeX . Neither this manual nor the JSS encourage or support compilation of JSS documents with standard \LaTeX .

References with Bib \TeX

The format for references (e.g., articles, books, software, proceedings) should look like this

Brown RL, Durbin J, Evans JM (1975). “Techniques for Testing the Constancy of Regression Relationships over Time.” *Journal of the Royal Statistical Society B*, **37**, 149–163.

Friendly M (2000). *Visualizing Categorical Data*. SAS Institute, Cary, NC.

R Development Core Team (2004). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-00-3, URL <http://www.R-project.org/>.

Urbanek S, Theus M (2003). “iPlots – High Interaction Graphics for R.” In K Hornik, F Leisch, A Zeileis (eds.), “Proceedings of the 3rd International Workshop on Distributed Statistical Computing, Vienna, Austria,” ISSN 1609-395X, URL <http://www.ci.tuwien.ac.at/Conferences/DSC-2003/Proceedings/>.

Important. Note, that also the titles of papers are in title style (as opposed to sentence style), i.e., they are capitalized. The first word after a colon ‘:’ is always capitalized. Furthermore,

commands like `\proglang` and `\pkg` should also be used for the references. The names of journals or proceeding volumes should not be abbreviated.

The easiest way to achieve this is to use `BIBTEX` together with the style file `jss.bst`. To do so, the references just have to be included in a `BIBTEX` file, `foo.bib` say, which has to be included at the end of the `LATEX` document by `\bibliography{foo}`. Note, that to obtain references in the format above, the `title` field in your bib file, needs to be capitalized (contrary to the folklore, there are `BIBTEX` styles that rely on this even for `@Article` entries), i.e. the entry `title = {Visualizing Categorical Data}` is correct, while entries like `title = {Visualizing categorical data}` or (even worse) `title = {{Visualizing categorical data}}` are not.

The default in `jss.cls` is to use the `natbib` package with options `authoryear`, `round` and `longnamesfirst`. If you cite any article with six or more authors the latter option should be turned off. This can be done by using the option `shortnames` when loading the `jss.cls` class

```
\documentclass[article,shortnames]{jss}
```

4 The code

4.1 The batch file

First comes the code for creating the batch file `jss.ins` which in turn can be used for producing the package and driver files.

```
1 <*install>
2 \begin{filecontents}{\filename.ins}
3 % Simply TeX or LaTeX this file to extract various files from the source
4 % file 'jss.dtx'.
5 \def\filedate{2004/09/29}
6 \def\batchfile{jss.ins}
7 \input docstrip.tex
8 \generateFile{jss.drv}{t}{\from{jss.dtx}{driver}}
9 \generateFile{jss.cls}{t}{\from{jss.dtx}{class}}
10 \Msg{*****}
11 \Msg{* For documentation, run LaTeX on jss.dtx or jss.drv. *}
12 \Msg{*****}
13 \end{filecontents}
14 </install>
```

4.2 The driver

Next comes the documentation driver file for T_EX, i.e., the file that will produce the documentation you are currently reading. It will be extracted from this file by the `docstrip` program. Since it is the first code in the file one can alternatively process this file directly with L^AT_EX 2_ε to obtain the documentation.

```
15 <*driver>
16 \documentclass[a4paper]{ltxdoc}
17 \providecommand{\file}[1]{\texttt{#1}}
18 \providecommand{\pkg}[1]{\fontseries{b}\selectfont #1}
19 \usepackage{color,hyperref,a4wide}
20 \oddsidemargin1.2cm
21 \textwidth14.2cm
22 \textheight23.3cm
23 \topmargin-.7cm
24 \setlength{\parskip}{0.7ex plus0.1ex minus0.1ex}
25 \setlength{\parindent}{0em}
26 \begin{document}
27   \OnlyDescription
28   \DocInput{jss.dtx}
29 \end{document}
30 </driver>
```

4.3 The class

Next is the main part, the code for the class file.

It requires L^AT_EX 2_ε

```
31 <*class>
32 \NeedsTeXFormat{LaTeX2e}
33 \ProvidesClass{jss}[\filedate\space\fileversion\space jss class by Achim Zeileis]
34 </class>
```

and is based on the `article` class. But before we load the class we declare and process some options. These reflects whether we want to write an article, code snippet, a book re-

view or software review. The `shortnames` option is for loading `natbib` *without* the option `longnamesfirst`. The `nojss` option suppresses JSS header and footer.

```

35 <*class>
36 %% options
37 \newif\if@article
38 \newif\if@codesnippet
39 \newif\if@bookreview
40 \newif\if@softwarereview
41 \newif\if@review
42 \newif\if@shortnames
43 \newif\if@nojss
44
45 \@articletrue
46 \@codesnippetfalse
47 \@bookreviewfalse
48 \@softwarereviewfalse
49 \@reviewfalse
50 \@shortnamesfalse
51 \@nojssfalse
52
53 \DeclareOption{article}{\@articletrue%
54   \@codesnippetfalse \@bookreviewfalse \@softwarereviewfalse}
55 \DeclareOption{codesnippet}{\@articlefalse%
56   \@codesnippettrue \@bookreviewfalse \@softwarereviewfalse}
57 \DeclareOption{bookreview}{\@articlefalse%
58   \@codesnippetfalse \@bookreviewtrue \@softwarereviewfalse}
59 \DeclareOption{softwarereview}{\@articlefalse%
60   \@codesnippetfalse \@bookreviewfalse \@softwarereviewtrue}
61 \DeclareOption{shortnames}{\@shortnamestrue}
62 \DeclareOption{nojss}{\@nojsstrue}
63
64 \ProcessOptions
65 \LoadClass[11pt,a4paper,twoside]{article}
66 </class>

```

A few packages are required and the font encoding is specified.

```

67 <*class>
68 %% required packages
69 \RequirePackage{graphicx,a4wide,color,ae,fancyvrb}
70 \RequirePackage[T1]{fontenc}
71 \IfFileExists{upquote.sty}{\RequirePackage{upquote}}{}
72 </class>

```

In addition, `hyperref` is included later on. The bibliography is generated using `natbib` and the `BIBTEX` style `jss.bst`.

```

73 <*class>
74 %% bibliography
75 \if@shortnames
76   \usepackage[authoryear,round]{natbib}
77 \else
78   \usepackage[authoryear,round,longnamesfirst]{natbib}
79 \fi
80 \bibpunct{{}{}}{;}{a}{}{,}
81 \bibliographystyle{jss}
82 </class>

```

Paragraphs are not indented, instead `\parskip` is increased.

```

83 <*class>
84 %% paragraphs

```

```

85 \setlength{\parskip}{0.7ex plus0.1ex minus0.1ex}
86 \setlength{\parindent}{0em}
87 \end{class}

```

To process the meta information we need some new commands: for all publications,

```

88 \begin{class}
89 %% for all publications
90 \newcommand{\Address}[1]{\def\@Address{#1}}
91 \newcommand{\Plaintitle}[1]{\def\@Plaintitle{#1}}
92 \newcommand{\Shorttitle}[1]{\def\@Shorttitle{#1}}
93 \newcommand{\Plainauthor}[1]{\def\@Plainauthor{#1}}
94 \newcommand{\Volume}[1]{\def\@Volume{#1}}
95 \newcommand{\Year}[1]{\def\@Year{#1}}
96 \newcommand{\Month}[1]{\def\@Month{#1}}
97 \newcommand{\Issue}[1]{\def\@Issue{#1}}
98 \newcommand{\Submitdate}[1]{\def\@Submitdate{#1}}
99 \end{class}

```

for articles and code snippets,

```

100 \begin{class}
101 %% for articles and code snippets
102 \newcommand{\Acceptdate}[1]{\def\@Acceptdate{#1}}
103 \newcommand{\Abstract}[1]{\def\@Abstract{#1}}
104 \newcommand{\Keywords}[1]{\def\@Keywords{#1}}
105 \newcommand{\Plainkeywords}[1]{\def\@Plainkeywords{#1}}
106 \end{class}

```

for book and software reviews,

```

107 \begin{class}
108 %% for book and software reviews
109 \newcommand{\Reviewer}[1]{\def\@Reviewer{#1}}
110 \newcommand{\Booktitle}[1]{\def\@Booktitle{#1}}
111 \newcommand{\Bookauthor}[1]{\def\@Bookauthor{#1}}
112 \newcommand{\Publisher}[1]{\def\@Publisher{#1}}
113 \newcommand{\Pubaddress}[1]{\def\@Pubaddress{#1}}
114 \newcommand{\Pubyear}[1]{\def\@Pubyear{#1}}
115 \newcommand{\ISBN}[1]{\def\@ISBN{#1}}
116 \newcommand{\Pages}[1]{\def\@Pages{#1}}
117 \newcommand{\Price}[1]{\def\@Price{#1}}
118 \newcommand{\Plainreviewer}[1]{\def\@Plainreviewer{#1}}
119 \newcommand{\Softwaretitle}[1]{\def\@Softwaretitle{#1}}
120 \newcommand{\URL}[1]{\def\@URL{#1}}
121 \end{class}

```

and for internal use only.

```

122 \begin{class}
123 %% for internal use
124 \newcommand{\Seriesname}[1]{\def\@Seriesname{#1}}
125 \newcommand{\Hypersubject}[1]{\def\@Hypersubject{#1}}
126 \newcommand{\Hyperauthor}[1]{\def\@Hyperauthor{#1}}
127 \newcommand{\Footername}[1]{\def\@Footername{#1}}
128 \newcommand{\Firstdate}[1]{\def\@Firstdate{#1}}
129 \newcommand{\Seconddate}[1]{\def\@Seconddate{#1}}
130 \newcommand{\Reviewauthor}[1]{\def\@Reviewauthor{#1}}
131 \end{class}

```

Some defaults for theses commands are specified, which are (hopefully) a useful guidance when using the `jss.cls`.

```

132 \begin{class}

```

```

133 %% defaults
134 \author{Firstname Lastname\\Affiliation}
135 \title{Title}
136 \Abstract{---!!!---an abstract is required---!!!---}
137 \Plainauthor{\@author}
138 \Volume{VV}
139 \Year{YYYY}
140 \Month{MMMMMM}
141 \Issue{II}
142 \Submitdate{yyyy-mm-dd}
143 \Acceptdate{yyyy-mm-dd}
144 \Address{
145     Firstname Lastname\\
146     Affiliation\\
147     Address, Country\\
148     E-mail: \email{name@address}\\
149     URL: \url{http://link/to/webpage/}
150 }
151
152 \Reviewer{Firstname Lastname\\Affiliation}
153 \Plainreviewer{Firstname Lastname}
154 \Booktitle{Book Title}
155 \Bookauthor{Book Author}
156 \Publisher{Publisher}
157 \Pubaddress{Publisher's Address}
158 \Pubyear{YYY}
159 \ISBN{x-xxxxx-xxx-x}
160 \Pages{xv + 123}
161 \Price{USD 69.95 (P)}
162 \URL{http://link/to/webpage/}
163 \</class>

```

Conditional on the type of document several other defaults and some meta information is stored.

```

164 \<class>
165 \if@article
166     \Seriesname{Issue}
167     \Hypersubject{Journal of Statistical Software}
168     \Plaintitle{\@title}
169     \Shorttitle{\@title}
170     \Plainkeywords{\@Keywords}
171 \fi
172
173 \if@codesnippet
174     \Seriesname{Code Snippet}
175     \Hypersubject{Journal of Statistical Software -- Code Snippets}
176     \Plaintitle{\@title}
177     \Shorttitle{\@title}
178     \Plainkeywords{\@Keywords}
179 \fi
180
181 \if@bookreview
182     \Seriesname{Book Review}
183     \Hypersubject{Journal of Statistical Software -- Book Reviews}
184     \Plaintitle{\@Booktitle}
185     \Shorttitle{\@Booktitle}
186     \Reviewauthor{\@Bookauthor\\
187         \@Publisher, \@Pubaddress, \@Pubyear.\\
188         ISBN~\@ISBN. \@Pages~pp. \@Price.\\
189         \url{\@URL}}

```

```

190 \Plainkeywords{}
191 \@reviewtrue
192 \fi
193
194 \if@softwarereview
195 \Seriesname{Software Review}
196 \Hypersubject{Journal of Statistical Software -- Software Reviews}
197 \Plaintitle{\@Softwaretitle}
198 \Shorttitle{\@Softwaretitle}
199 \Booktitle{\@Softwaretitle}
200 \Reviewauthor{\@Publisher, \@Pubaddress. \@Price.\@
201 \url{\@URL}}
202 \Plainkeywords{}
203 \@reviewtrue
204 \fi
205
206 \if@review
207 \Hyperauthor{\@Plainreviewer}
208 \Keywords{}
209 \Footername{Reviewer}
210 \Firstdate{\textit{Published:} \@Submitdate}
211 \Seconddate{}
212 \else
213 \Hyperauthor{\@Plainauthor}
214 \Keywords{---!!!---at least one keyword is required---!!!---}
215 \Footername{Affiliation}
216 \Firstdate{\textit{Submitted:} \@Submitdate}
217 \Seconddate{\textit{Accepted:} \@Acceptdate}
218 \fi
219 \end{class}

```

For typesetting of code some basic infrastructure along the lines of Sweave is provided. First, the Sweave commands are provided explicitly,

```

220 \begin{class}
221 %% Sweave(-like)
222 \DefineVerbatimEnvironment{Sinput}{Verbatim}{fontshape=s1}
223 \DefineVerbatimEnvironment{Soutput}{Verbatim}{}
224 \DefineVerbatimEnvironment{Scode}{Verbatim}{fontshape=s1}
225 \newenvironment{Schunk}{}{}
226 \end{class}

```

and analogous commands with more neutral names for general pieces of code.

```

227 \begin{class}
228 \DefineVerbatimEnvironment{Code}{Verbatim}{}
229 \DefineVerbatimEnvironment{CodeInput}{Verbatim}{fontshape=s1}
230 \DefineVerbatimEnvironment{CodeOutput}{Verbatim}{}
231 \newenvironment{CodeChunk}{}{}
232 \setkeys{Gin}{width=0.8\textwidth}
233 \end{class}

```

The header and footer of JSS publications displays the logo, the publication information and some further links. Here, we define the footer first (because it must be included before `hyperref` in `TeXLive`). It contains the somewhat extended publication information (from the header), preceded by the address of the author/reviewer.

```

234 \begin{class}
235 %% footer
236 \newlength{\footerskip}
237 \setlength{\footerskip}{2.5\baselineskip plus 2ex minus 0.5ex}
238

```

```

239 \newcommand{\makefooter}{%
240   \vspace{\footerskip}
241
242   \if@nojss
243     \begin{samepage}
244       \textbf{\large \@Footername: \nopagebreak}\[\.3\baselineskip] \nopagebreak
245       \@Address \nopagebreak
246     \end{samepage}
247   \else
248     \begin{samepage}
249       \textbf{\large \@Footername: \nopagebreak}\[\.3\baselineskip] \nopagebreak
250       \@Address \nopagebreak
251       \vfill
252       \hrule \nopagebreak
253       \vspace{.1\baselineskip}
254       {\fontfamily{pzc} \fontsize{13}{15} \selectfont Journal of Statistical Software}
255       \hfill
256       \url{http://www.jstatsoft.org/}\[\.3\baselineskip] \nopagebreak
257       published by the American Statistical Association
258       \hfill
259       \url{http://www.amstat.org/}\[\.3\baselineskip] \nopagebreak
260       {Volume~\@Volume, \@Seriesname~\@Issue}
261       \hfill
262       \@Firstdate\[\.3\baselineskip] \nopagebreak
263       {\@Month{ } \@Year}
264       \hfill
265       \@Seconddate \nopagebreak
266       \vspace{.3\baselineskip}
267       \hrule
268     \end{samepage}
269   \fi
270 }
271 \end{class}

```

We include the footer at the end of the document.

```

272 \end{class}
273 \AtEndDocument{\makefooter}
274 \end{class}

```

After defining this, we can require the `hyperref` package.

```

275 \begin{class}
276 %% required packages
277 \RequirePackage{hyperref}
278 \end{class}

```

and proceed to define the header.

The header for all JSS publications has the logo `jsslogo.jpg` along with the publication information.

```

279 \begin{class}
280 %% new \maketitle
281 \def\@myoddhead{
282   {\color{white} JSS}\[-1.42cm]
283   \hspace{-2em} \includegraphics[height=23mm,keepaspectratio]{jsslogo} \hfill
284   \parbox[b][23mm]{118mm}{\hrule height 3pt
285     \center{
286       {\fontfamily{pzc} \fontsize{28}{32} \selectfont Journal of Statistical Software}
287       \vfill
288       {\it \small \@Month{ } \@Year, Volume~\@Volume, \@Seriesname~\@Issue.%
289         \hfill \href{http://www.jstatsoft.org/}{http://www.jstatsoft.org/}}}\[0.1cm]

```

```

290     \hrule height 3pt}}
291 </class>

```

This header is then used in the re-defined \maketitle:

```

292 <*class>
293 \if@review
294   \renewcommand{\maketitle}{
295     \if@nojss
296       %% \@oddhead{\@myoddhead}\[3\baselineskip]
297     \else
298       \@oddhead{\@myoddhead}\[3\baselineskip]
299     \fi
300     {\large
301      \noindent
302      Reviewer: \@Reviewer
303      \vspace{\baselineskip}
304      \hrule
305      \vspace{\baselineskip}
306      \textbf{\@Booktitle}
307      \begin{quotation} \noindent
308        \@Reviewauthor
309      \end{quotation}
310      \vspace{0.7\baselineskip}
311      \hrule
312      \vspace{1.3\baselineskip}
313    }
314
315    \thispagestyle{empty}
316    \if@nojss
317      \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hyperauthor}}
318    \else
319      \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hypersubject}}
320    \fi
321    \pagestyle{myheadings}
322  }
323 \else
324   \def\maketitle{
325     \if@nojss
326       %% \@oddhead{\@myoddhead} \par
327     \else
328       \@oddhead{\@myoddhead} \par
329     \fi
330     \begingroup
331       \def\thefootnote{\fnsymbol{footnote}}
332       \def\@makefnmark{\hbox to 0pt{$^{\@thefnmark}$}\hss}
333       \long\def\@makefntext#1{\parindent 1em\noindent
334                                \hbox to 1.8em{\hss $\m@th ^{\@thefnmark}$}\#1}
335       \@maketitle \@thanks
336     \endgroup
337     \setcounter{footnote}{0}
338     \thispagestyle{empty}
339     \if@nojss
340       \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hyperauthor}}
341     \else
342       \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hypersubject}}
343     \fi
344     \pagestyle{myheadings}
345
346     \let\maketitle\relax \let\@maketitle\relax
347     \gdef\@thanks{}\gdef\@author{}\gdef\@title{}\let\thanks\relax

```



```

348 }
349
350 \def\@maketitle{\vbox{\hsize\textwidth \linewidth\hsize
351 \if@nojss
352   %% \vskip 1in
353 \else
354   \vskip 1in
355 \fi
356 {\centering
357 {\LARGE\bf \@title\par}
358 \vskip 0.2in plus 1fil minus 0.1in
359 {
360   \def\and{\unskip\enspace{\rm and}\enspace}%
361   \def\And{\end{tabular}\hss \egroup \hskip 1in plus 2fil
362     \hbox to 0pt\bgroup\hss \begin{tabular}[t]{c}\large\bf\rule{\z@}{24pt}\ignorespaces}%
363   \def\AND{\end{tabular}\hss\egroup \hfil\hfil\egroup
364     \vskip 0.1in plus 1fil minus 0.05in
365     \hbox to \linewidth\bgroup\rule{\z@}{10pt} \hfil\hfil
366     \hbox to 0pt\bgroup\hss \begin{tabular}[t]{c}\large\bf\rule{\z@}{24pt}\ignorespaces}
367     \hbox to \linewidth\bgroup\rule{\z@}{10pt} \hfil\hfil
368     \hbox to 0pt\bgroup\hss \begin{tabular}[t]{c}\large\bf\rule{\z@}{24pt}\@author
369     \end{tabular}\hss\egroup
370   \hfil\hfil\egroup}
371   \vskip 0.3in minus 0.1in
372   \hrule
373   \begin{abstract}
374   \@Abstract
375   \end{abstract}}
376   \textit{Keywords}:~\@Keywords.
377   \vskip 0.1in minus 0.05in
378   \hrule
379   \vskip 0.2in minus 0.1in
380 }}}
381 \fi
382 \</class>

```

The appearance of sections, subsections and subsubsections is controlled by

```

383 \<class>
384 %% sections, subsections, and subsubsections
385 \newlength{\preXLskip}
386 \newlength{\preLskip}
387 \newlength{\preMskip}
388 \newlength{\preSskip}
389 \newlength{\postMskip}
390 \newlength{\postSskip}
391 \setlength{\preXLskip}{1.8\baselineskip plus 0.5ex minus 0ex}
392 \setlength{\preLskip}{1.5\baselineskip plus 0.3ex minus 0ex}
393 \setlength{\preMskip}{1\baselineskip plus 0.2ex minus 0ex}
394 \setlength{\preSskip}{.8\baselineskip plus 0.2ex minus 0ex}
395 \setlength{\postMskip}{.5\baselineskip plus 0ex minus 0.1ex}
396 \setlength{\postSskip}{.3\baselineskip plus 0ex minus 0.1ex}
397
398
399 \newcommand{\jsssec}[2][default]{\vskip \preXLskip%
400 \pdfbookmark[1]{#1}{Section.\thesection.#1}%
401 \refstepcounter{section}%
402 \centerline{\textbf{\Large \thesection. #2}} \nopagebreak
403 \vskip \postMskip \nopagebreak}
404 \newcommand{\jsssecnn}[1]{\vskip \preXLskip%
405 \centerline{\textbf{\Large #1}} \nopagebreak

```

```

406 \vskip \postMskip \nopagebreak}
407
408 \newcommand{\jsssubsec}[2][default]{\vskip \preMskip%
409 \pdfbookmark[2]{#1}{Subsection.\thesubsection.#1}%
410 \refstepcounter{subsection}%
411 \textbf{\large \thesubsection. #2} \nopagebreak
412 \vskip \postSskip \nopagebreak}
413 \newcommand{\jsssubsecnn}[1]{\vskip \preMskip%
414 \textbf{\large #1} \nopagebreak
415 \vskip \postSskip \nopagebreak}
416
417 \newcommand{\jsssubsubsec}[2][default]{\vskip \preSskip%
418 \pdfbookmark[3]{#1}{Subsubsection.\thesubsubsection.#1}%
419 \refstepcounter{subsubsection}%
420 {\large \textit{#2}} \nopagebreak
421 \vskip \postSskip \nopagebreak}
422 \newcommand{\jsssubsubsecnn}[1]{\vskip \preSskip%
423 {\textit{\large #1}} \nopagebreak
424 \vskip \postSskip \nopagebreak}
425
426 \newcommand{\jsssimplesec}[2][default]{\vskip \preLskip%
427 %% \pdfbookmark[1]{#1}{Section.\thesection.#1}%
428 \refstepcounter{section}%
429 \textbf{\large #1} \nopagebreak
430 \vskip \postSskip \nopagebreak}
431 \newcommand{\jsssimplesecnn}[1]{\vskip \preLskip%
432 \textbf{\large #1} \nopagebreak
433 \vskip \postSskip \nopagebreak}
434
435 \if@review
436 \renewcommand{\section}{\secdef \jsssimplesec \jsssimplesecnn}
437 \renewcommand{\subsection}{\secdef \jsssimplesec \jsssimplesecnn}
438 \renewcommand{\subsubsection}{\secdef \jsssimplesec \jsssimplesecnn}
439 \else
440 \renewcommand{\section}{\secdef \jsssec \jsssecnn}
441 \renewcommand{\subsection}{\secdef \jsssubsec \jsssubsecnn}
442 \renewcommand{\subsubsection}{\secdef \jsssubsubsec \jsssubsubsecnn}
443 \fi
444 \end{class}

```

The hypersetup uses some modified colors

```

445 \begin{class}
446 %% colors
447 \definecolor{Red}{rgb}{0.5,0,0}
448 \definecolor{Blue}{rgb}{0,0,0.5}
449 \end{class}

```

and is then defined by

```

450 \begin{class}
451 \if@review
452 \hypersetup{%
453   hyperindex = {true},
454   colorlinks = {true},
455   linktocpage = {true},
456   plainpages = {false},
457   linkcolor = {Blue},
458   citecolor = {Blue},
459   urlcolor = {Red},
460   pdfstartview = {Fit},
461   pdfpagemode = {None},

```

```

462 pdfview = {XYZ null null null}
463 }
464 \else
465 \hypersetup{%
466 hyperindex = {true},
467 colorlinks = {true},
468 linktocpage = {true},
469 plainpages = {false},
470 linkcolor = {Blue},
471 citecolor = {Blue},
472 urlcolor = {Red},
473 pdfstartview = {Fit},
474 pdfpagemode = {UseOutlines},
475 pdfview = {XYZ null null null}
476 }
477 \fi
478 \</class>

```

The information for the hyper summary requires some information which has not been processed before the beginning of the document. Therefore, we need a second `\hypersetup`.

```

479 \< *class>
480 \if@nojss
481 \AtBeginDocument{
482 \hypersetup{%
483 pdfauthor = {\@Hyperauthor},
484 pdftitle = {\@Plaintitle},
485 pdfkeywords = {\@Plainkeywords}
486 }
487 }
488 \else
489 \AtBeginDocument{
490 \hypersetup{%
491 pdfauthor = {\@Hyperauthor},
492 pdftitle = {\@Plaintitle},
493 pdfsubject = {\@Hypersubject},
494 pdfkeywords = {\@Plainkeywords}
495 }
496 }
497 \fi
498 \</class>

```

We put the header at the beginning of the document (for footer see above).

```

499 \< *class>
500 \AtBeginDocument{\maketitle}
501 \</class>

```

Finally, some additional commands are provided for writing about software (code, programming languages, packages),

```

502 \< *class>
503 %% commands
504 \makeatletter
505 \newcommand\code{\bgroup\@makeother\_ \@makeother\~ \@makeother\$\@codex}
506 \def\@codex#1{\fontfamily\hyphenchar\font=-1 #1\egroup}
507 \makeatother
508 %%\let\code=\texttt
509 \let\proglang=\textsf
510 \newcommand{\pkg}[1]{\fontseries{b}\selectfont #1}
511 \</class>

```

for specifying e-mail addresses,

```

512 <*class>
513 \newcommand{\email}[1]{\href{mailto:#1}{\normalfont\texttt{#1}}}
514 </class>

digital object identifiers (DOIs),

515 <*class>
516 \newcommand{\doi}[1]{\href{http://dx.doi.org/#1}{\normalfont\texttt{doi:#1}}}
517 </class>

and for mathematical notation.

518 <*class>
519 \newcommand{\E}{\mathsf{E}}
520 \newcommand{\VAR}{\mathsf{VAR}}
521 \newcommand{\COV}{\mathsf{COV}}
522 \newcommand{\Prob}{\mathsf{P}}
523 </class>

```