

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

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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/>). Additionally, the JSS-specific header/footer can be easily switched off so that the document class can easily be used for other publications, e.g., R package vignettes.

The document class 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. A list of frequently asked questions (FAQ) is available online <http://www.jstatsoft.org/style> that provides additional details and tries to address typical problems.

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 pdf \TeX 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 a 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 pdf \TeX .
- `\proglang`, `\pkg` and `\code` have been used for highlighting throughout the paper (including titles and references), except where explicitly escaped.
- References are provided in a `.bib` BIB \TeX database and included in the text by `\cite`, `\citep`, `\citet`, etc.
- Titles and headers are formatted properly:
 - `\title` in title style,
 - `\section` etc. in sentence style,
 - all titles in the BIB \TeX 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\\Universit\at Innsbruck \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{foo: 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\\
  Faculty of Economics and Statistics\\
  Universit\at Innsbruck\\
  6020 Innsbruck, Austria\\
  E-mail: \email{Achim.Zeileis@uibk.ac.at}\\
  URL: \url{http://eeecon.uibk.ac.at/~zeileis/}
}
```

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

```
Telephone: +43/512/507-7103
Fax: +43/512/507-2851
```

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 T_EX 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 *and*, e.g., `\Bookauthor{A and B}` or `\Bookauthor{A, B and C}`.

`\Pubyear` Year of publication, e.g., `\Pubyear{2000}`.

`\ISBN` ISBN number, e.g., `\ISBN{1-58025-660-0}`.

`\Pages` Number of pages, both arabic and roman (if available), e.g., `\Pages{456}` or `\Pages{xvi + 145}`.

The following command is just required for software reviews.

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

`\Softwaretitle{\pkg{Aabel} 1.5.7}`

The remaining commands are again required for both book and software reviews.

`\Publisher` Publisher of the book/software, e.g., `\Publisher{SAS Institute Inc.}` or `\Publisher{Gigawiz Ltd. Co.}`.

`\Pubaddress` Address of the publisher of the book/software, e.g., `\Pubaddress{Carey, NC}`.

`\Price` Price of the book/software. For books this might simply be `\Price{USD 69.95}` or `\Price{USD 69.95 (P)}`, but could also distinguish between hardcover and paperback versions `\Price{USD 69.95 (P), USD 89.95 (H)}`. Analogously, for a software it could be `\Price{USD 349 (standard), USD 249 (academic)}`.

`\URL` A URL for the book or software, e.g.,

`\URL{http://www.math.yorku.ca/SCS/vcd/}`

If no URL is available, use `\URL{}`.

`\Plaintitle` The full book or software title without any markup (line breaks, bold fonts etc.). The default is to use `\Booktitle` or `\Softwaretitle` respectively, therefore it needs to be specified only if it is different from `\Booktitle` or `\Softwaretitle`, e.g.,

`\Plaintitle{Visualizing Categorical Data}`

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

`\Shorttitle{Visualizing Categorical Data}`

`\Volume` The JSS volume number in which the review is published, e.g., `\Volume{11}`. Note: This information will be provided upon acceptance or added by the technical editor.

`\Issue` The JSS issue number in which the review is published, e.g., `\Issue{9}`. Note: This information will be provided upon acceptance or added by the technical editor.

`\Month` The month in which the review is published, e.g., `\Month{September}`. Note: This information will be provided upon acceptance or added by the technical editor.

`\Year` The year in which the review is published, e.g., `\Year{2004}`. Note: This information will be provided upon acceptance or added by the technical editor.

`\Submitdate` The date of publication for the review, e.g., `\Submitdate{2004-09-29}`. Note: This information will be provided upon acceptance or added by the technical editor.

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

`\Address{`

```

Achim Zeileis\\
Department of Statistics and Mathematics\\
Faculty of Economics and Statistics\\
Universit\\at Innsbruck\\
6020 Innsbruck, Austria\\
E-mail: \email{Achim.Zeileis@uibk.ac.at}\\
URL: \url{http://eeecon.uibk.ac.at/~zeileis/}
}

```

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

```

Telephone: +43/512/507-7103
Fax: +43/512/507-2851

```

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{CMregr}`, `\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 AMS packages (**amsmath**, **amssymb**, etc.) 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 citations with all names should be avoided. This can either be done by declaring `\shortcites{...}` for the particular references or by turning the `longnamesfirst` option off completely. The latter 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\batchfile{jss.ins}
6 \input docstrip.tex
7 \generateFile{jss.drv}{t}{\from{jss.dtx}{driver}}
8 \generateFile{jss.cls}{t}{\from{jss.dtx}{class}}
9 \Msg{*****}
10 \Msg{* For documentation, run LaTeX on jss.dtx or jss.drv. *}
11 \Msg{*****}
12 \end{filecontents}
13 </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.

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

4.3 The class

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

It requires L^AT_EX 2_ε

```
30 <*class>
31 \NeedsTeXFormat{LaTeX2e}
32 \ProvidesClass{jss}[\filedate\space\fileversion\space jss class by Achim Zeileis]
33 </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 review or software review. The `shortnames` option is for loading `natbib` *without* the option `longnamesfirst`. The `nojss` option suppresses JSS header and footer. The `notitle` option

suppresses the automatic `\maketitle` at the beginning of the document. The `noheadnings` option suppresses headings on the pages. The `nofooter` option suppresses the automatic `\makefooter` at the end of the document.

```

34 <*class>
35 %% options
36 \newif\if@article
37 \newif\if@codesnippet
38 \newif\if@bookreview
39 \newif\if@softwarereview
40 \newif\if@review
41 \newif\if@shortnames
42 \newif\if@nojss
43 \newif\if@notitle
44 \newif\if@noheadnings
45 \newif\if@nofooter
46
47 \@articletrue
48 \@codesnippetfalse
49 \@bookreviewfalse
50 \@softwarereviewfalse
51 \@reviewfalse
52 \@shortnamesfalse
53 \@nojssfalse
54 \@notitlefalse
55 \@noheadningsfalse
56 \@nofooterfalse
57
58 \DeclareOption{article}{\@articletrue%
59   \@codesnippetfalse \@bookreviewfalse \@softwarereviewfalse}
60 \DeclareOption{codesnippet}{\@articlefalse%
61   \@codesnippettrue \@bookreviewfalse \@softwarereviewfalse}
62 \DeclareOption{bookreview}{\@articlefalse%
63   \@codesnippetfalse \@bookreviewtrue \@softwarereviewfalse}
64 \DeclareOption{softwarereview}{\@articlefalse%
65   \@codesnippetfalse \@bookreviewfalse \@softwarereviewtrue}
66 \DeclareOption{shortnames}{\@shortnamestrue}
67 \DeclareOption{nojss}{\@nojsstrue}
68 \DeclareOption{notitle}{\@notitletrue}
69 \DeclareOption{noheadnings}{\@noheadingstrue}
70 \DeclareOption{nofooter}{\@nofootertrue}
71
72 \ProcessOptions
73 \LoadClass[11pt,a4paper,twoside]{article}
74 </class>

```

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

```

75 <*class>
76 %% required packages
77 \RequirePackage{graphicx,a4wide,color,ae,fancyvrb}
78 \RequirePackage[T1]{fontenc}
79 \IfFileExists{upquote.sty}{\RequirePackage{upquote}}{}
80 </class>

```

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

```

81 <*class>
82 %% bibliography
83 \if@shortnames
84   \usepackage[authoryear,round]{natbib}

```

```

85 \else
86   \usepackage[authoryear,round,longnamesfirst]{natbib}
87 \fi
88 \bibpunct{(}{)}{;}{a}{-}{,}
89 \bibliographystyle{jss}
90 \end{class}

```

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

```

91 \begin{class}
92 %% paragraphs
93 \setlength{\parskip}{0.7ex plus0.1ex minus0.1ex}
94 \setlength{\parindent}{0em}
95 \end{class}

```

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

```

96 \begin{class}
97 %% for all publications
98 \newcommand{\Address}[1]{\def\@Address{#1}}
99 \newcommand{\Plaintitle}[1]{\def\@Plaintitle{#1}}
100 \newcommand{\Shorttitle}[1]{\def\@Shorttitle{#1}}
101 \newcommand{\Plainauthor}[1]{\def\@Plainauthor{#1}}
102 \newcommand{\Volume}[1]{\def\@Volume{#1}}
103 \newcommand{\Year}[1]{\def\@Year{#1}}
104 \newcommand{\Month}[1]{\def\@Month{#1}}
105 \newcommand{\Issue}[1]{\def\@Issue{#1}}
106 \newcommand{\Submitdate}[1]{\def\@Submitdate{#1}}
107 \end{class}

```

for articles and code snippets,

```

108 \begin{class}
109 %% for articles and code snippets
110 \newcommand{\Acceptdate}[1]{\def\@Acceptdate{#1}}
111 \newcommand{\Abstract}[1]{\def\@Abstract{#1}}
112 \newcommand{\Keywords}[1]{\def\@Keywords{#1}}
113 \newcommand{\Plainkeywords}[1]{\def\@Plainkeywords{#1}}
114 \end{class}

```

for book and software reviews,

```

115 \begin{class}
116 %% for book and software reviews
117 \newcommand{\Reviewer}[1]{\def\@Reviewer{#1}}
118 \newcommand{\Booktitle}[1]{\def\@Booktitle{#1}}
119 \newcommand{\Bookauthor}[1]{\def\@Bookauthor{#1}}
120 \newcommand{\Publisher}[1]{\def\@Publisher{#1}}
121 \newcommand{\Pubaddress}[1]{\def\@Pubaddress{#1}}
122 \newcommand{\Pubyear}[1]{\def\@Pubyear{#1}}
123 \newcommand{\ISBN}[1]{\def\@ISBN{#1}}
124 \newcommand{\Pages}[1]{\def\@Pages{#1}}
125 \newcommand{\Price}[1]{\def\@Price{#1}}
126 \newcommand{\Plainreviewer}[1]{\def\@Plainreviewer{#1}}
127 \newcommand{\Softwaretitle}[1]{\def\@Softwaretitle{#1}}
128 \newcommand{\URL}[1]{\def\@URL{#1}}
129 \end{class}

```

and for internal use only.

```

130 \begin{class}
131 %% for internal use
132 \newcommand{\Seriesname}[1]{\def\@Seriesname{#1}}
133 \newcommand{\Hypersubject}[1]{\def\@Hypersubject{#1}}

```

```

134 \newcommand{\Hyperauthor}[1]{\def\@Hyperauthor{#1}}
135 \newcommand{\Footername}[1]{\def\@Footername{#1}}
136 \newcommand{\Firstdate}[1]{\def\@Firstdate{#1}}
137 \newcommand{\Seconddate}[1]{\def\@Seconddate{#1}}
138 \newcommand{\Reviewauthor}[1]{\def\@Reviewauthor{#1}}
139 \end{class}

```

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

```

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

```

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

```

172 \begin{class}
173 \if@article
174   \Seriesname{Issue}
175   \Hypersubject{Journal of Statistical Software}
176   \Plaintitle{\@title}
177   \Shorttttitle{\@title}
178   \Plainkeywords{\@Keywords}
179 \fi
180
181 \if@codesnippet
182   \Seriesname{Code Snippet}
183   \Hypersubject{Journal of Statistical Software -- Code Snippets}
184   \Plaintitle{\@title}
185   \Shorttttitle{\@title}
186   \Plainkeywords{\@Keywords}
187 \fi

```

```

188
189 \if@bookreview
190   \Seriesname{Book Review}
191   \Hypersubject{Journal of Statistical Software -- Book Reviews}
192   \Plaintitle{\@Booktitle}
193   \Shorttitle{\@Booktitle}
194   \Reviewauthor{\@Bookauthor\@
195                 \@Publisher, \@Pubaddress, \@Pubyear.\@
196                 ISBN~\@ISBN. \@Pages~pp. \@Price.\@
197                 \url{\@URL}}
198   \Plainkeywords{}
199   \@reviewtrue
200 \fi
201
202 \if@softwarereview
203   \Seriesname{Software Review}
204   \Hypersubject{Journal of Statistical Software -- Software Reviews}
205   \Plaintitle{\@Softwaretitle}
206   \Shorttitle{\@Softwaretitle}
207   \Booktitle{\@Softwaretitle}
208   \Reviewauthor{\@Publisher, \@Pubaddress. \@Price.\@
209                 \url{\@URL}}
210   \Plainkeywords{}
211   \@reviewtrue
212 \fi
213
214 \if@review
215   \Hyperauthor{\@Plainreviewer}
216   \Keywords{}
217   \Footername{Reviewer}
218   \Firstdate{\textit{Published:} \@Submitdate}
219   \Seconddate{}
220 \else
221   \Hyperauthor{\@Plainauthor}
222   \Keywords{---!!!---at least one keyword is required---!!!---}
223   \Footername{Affiliation}
224   \Firstdate{\textit{Submitted:} \@Submitdate}
225   \Seconddate{\textit{Accepted:} \@Acceptdate}
226 \fi
227 \end{class}

```

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

```

228 \begin{class}
229 %% Sweave(-like)
230 \DefineVerbatimEnvironment{Sinput}{Verbatim}{fontshape=s1}
231 \DefineVerbatimEnvironment{Soutput}{Verbatim}{}
232 \DefineVerbatimEnvironment{Scode}{Verbatim}{fontshape=s1}
233 \newenvironment{Schunk}{}{}
234 \end{class}

```

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

```

235 \begin{class}
236 \DefineVerbatimEnvironment{Code}{Verbatim}{}
237 \DefineVerbatimEnvironment{CodeInput}{Verbatim}{fontshape=s1}
238 \DefineVerbatimEnvironment{CodeOutput}{Verbatim}{}
239 \newenvironment{CodeChunk}{}{}
240 \setkeys{Gin}{width=0.8\textwidth}
241 \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.

```

242 <*class>
243 %% footer
244 \newlength{\footerskip}
245 \setlength{\footerskip}{2.5\baselineskip plus 2ex minus 0.5ex}
246
247 \newcommand{\makefooter}{%
248   \vspace{\footerskip}
249
250   \if@nojss
251     \begin{samepage}
252       \textbf{\large \@Footername: \nopagebreak}\!\! [.3\baselineskip] \nopagebreak
253       \@Address \nopagebreak
254     \end{samepage}
255   \else
256     \begin{samepage}
257       \textbf{\large \@Footername: \nopagebreak}\!\! [.3\baselineskip] \nopagebreak
258       \@Address \nopagebreak
259       \vfill
260       \hrule \nopagebreak
261       \vspace{.1\baselineskip}
262       {\fontfamily{pzc} \fontsize{13}{15} \selectfont Journal of Statistical Software}
263       \hfill
264       \url{http://www.jstatsoft.org/}\!\! \nopagebreak
265       published by the American Statistical Association
266       \hfill
267       \url{http://www.amstat.org/}\!\! [.3\baselineskip] \nopagebreak
268       {Volume~\@Volume, \Seriesname~\@Issue}
269       \hfill
270       \@Firstdate\!\! \nopagebreak
271       {\@Month{}} \@Year{ }
272       \hfill
273       \@Seconddate \nopagebreak
274       \vspace{.3\baselineskip}
275       \hrule
276     \end{samepage}
277   \fi
278 }
279 </class>

```

We include the footer at the end of the document (for title see below).

```

280 <*class>
281 \if@nofooter
282   %% \AtEndDocument{\makefooter}
283 \else
284   \AtEndDocument{\makefooter}
285 \fi
286 </class>

```

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

```

287 <*class>
288 %% required packages
289 \RequirePackage{hyperref}
290 </class>

```

and proceed to define the header.

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

```

291 <*class>
292 %% new \maketitle
293 \def\@myoddhead{
294   {\color{white} JSS}\[-1.42cm]
295   \hspace{-2em} \includegraphics[height=23mm,keepaspectratio]{jsslogo} \hfill
296   \parbox[b][23mm]{118mm}{\hrule height 3pt
297     \center{
298       {\fontfamily{pzc} \fontsize{28}{32} \selectfont Journal of Statistical Software}
299       \vfill
300       {\it \small \@Month{} \@Year, Volume~\@Volume, \@Seriesname~\@Issue.%
301         \hfill \href{http://www.jstatsoft.org/}{http://www.jstatsoft.org/}}}\[0.1cm]
302       \hrule height 3pt}}
303 </class>

```

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

```

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

```



```

346          \hbox to 1.8em{\hss $\m@th ~{\@thefnmark}$}##1}
347      \@maketitle \@thanks
348  \endgroup
349  \setcounter{footnote}{0}
350
351  \if@noheadings
352      %% \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hypersubject}}
353  \else
354      \thispagestyle{empty}
355      \if@nojss
356          \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hyperauthor}}
357      \else
358          \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hypersubject}}
359      \fi
360      \pagestyle{myheadings}
361  \fi
362
363  \let\maketitle\relax \let\@maketitle\relax
364  \gdef\@thanks{}\gdef\@author{}\gdef\@title{}\let\thanks\relax
365  }
366
367  \def\@maketitle{\vbox{\hsize\textwidth \linewidth\hsize
368  \if@nojss
369      %% \vskip 1in
370  \else
371      \vskip 1in
372  \fi
373  {\centering
374  {\LARGE\bf \@title\par}
375  \vskip 0.2in plus 1fil minus 0.1in
376  {
377      \def\and{\unskip\enspace{\rm and}\enspace}%
378      \def\And{\end{tabular}\hss \egroup \hskip 1in plus 2fil
379      \hbox to 0pt\bgroup\hss \begin{tabular}[t]{c}\large\bf\rule{\z@}{24pt}\ignorespaces}%
380      \def\AND{\end{tabular}\hss\egroup \hfil\hfil\egroup
381      \vskip 0.1in plus 1fil minus 0.05in
382      \hbox to \linewidth\bgroup\rule{\z@}{10pt} \hfil\hfil
383      \hbox to 0pt\bgroup\hss \begin{tabular}[t]{c}\large\bf\rule{\z@}{24pt}\ignorespaces}
384      \hbox to \linewidth\bgroup\rule{\z@}{10pt} \hfil\hfil
385      \hbox to 0pt\bgroup\hss \begin{tabular}[t]{c}\large\bf\rule{\z@}{24pt}\@author
386      \end{tabular}\hss\egroup
387      \hfil\hfil\egroup}
388      \vskip 0.3in minus 0.1in
389      \hrule
390      \begin{abstract}
391      \@Abstract
392      \end{abstract}}
393      \textit{Keywords}:~\@Keywords.
394      \vskip 0.1in minus 0.05in
395      \hrule
396      \vskip 0.2in minus 0.1in
397  }}
398  \fi
399  \end{class}

```

The appearance of sections, subsections and subsubsections is controlled by

```

400 \class
401 %% sections, subsections, and subsubsections
402 \newlength{\preXlskip}
403 \newlength{\preLskip}

```

```

404 \newlength{\preMskip}
405 \newlength{\preSskip}
406 \newlength{\postMskip}
407 \newlength{\postSskip}
408 \setlength{\preXLskip}{1.8\baselineskip plus 0.5ex minus 0ex}
409 \setlength{\preLskip}{1.5\baselineskip plus 0.3ex minus 0ex}
410 \setlength{\preMskip}{1\baselineskip plus 0.2ex minus 0ex}
411 \setlength{\preSskip}{.8\baselineskip plus 0.2ex minus 0ex}
412 \setlength{\postMskip}{.5\baselineskip plus 0ex minus 0.1ex}
413 \setlength{\postSskip}{.3\baselineskip plus 0ex minus 0.1ex}
414
415
416 \newcommand{\jsssec}[2][default]{\vskip \preXLskip%
417 \pdfbookmark[1]{#1}{Section.\thesection.#1}%
418 \refstepcounter{section}%
419 \centerline{\textbf{\Large \thesection. #2}} \nopagebreak
420 \vskip \postMskip \nopagebreak}
421 \newcommand{\jsssecnn}[1]{\vskip \preXLskip%
422 \centerline{\textbf{\Large #1}} \nopagebreak
423 \vskip \postMskip \nopagebreak}
424
425 \newcommand{\jsssubsec}[2][default]{\vskip \preMskip%
426 \pdfbookmark[2]{#1}{Subsection.\thesubsection.#1}%
427 \refstepcounter{subsection}%
428 \textbf{\large \thesubsection. #2} \nopagebreak
429 \vskip \postSskip \nopagebreak}
430 \newcommand{\jsssubsecnn}[1]{\vskip \preMskip%
431 \textbf{\large #1} \nopagebreak
432 \vskip \postSskip \nopagebreak}
433
434 \newcommand{\jsssubsubsec}[2][default]{\vskip \preSskip%
435 \pdfbookmark[3]{#1}{Subsubsection.\thesubsubsection.#1}%
436 \refstepcounter{subsubsection}%
437 {\large \textit{#2}} \nopagebreak
438 \vskip \postSskip \nopagebreak}
439 \newcommand{\jsssubsubsecnn}[1]{\vskip \preSskip%
440 {\textit{\large #1}} \nopagebreak
441 \vskip \postSskip \nopagebreak}
442
443 \newcommand{\jsssimplesec}[2][default]{\vskip \preLskip%
444 %% \pdfbookmark[1]{#1}{Section.\thesection.#1}%
445 \refstepcounter{section}%
446 \textbf{\large #1} \nopagebreak
447 \vskip \postSskip \nopagebreak}
448 \newcommand{\jsssimplesecnn}[1]{\vskip \preLskip%
449 \textbf{\large #1} \nopagebreak
450 \vskip \postSskip \nopagebreak}
451
452 \if@review
453 \renewcommand{\section}{\secdef \jsssimplesec \jsssimplesecnn}
454 \renewcommand{\subsection}{\secdef \jsssimplesec \jsssimplesecnn}
455 \renewcommand{\subsubsection}{\secdef \jsssimplesec \jsssimplesecnn}
456 \else
457 \renewcommand{\section}{\secdef \jsssec \jsssecnn}
458 \renewcommand{\subsection}{\secdef \jsssubsec \jsssubsecnn}
459 \renewcommand{\subsubsection}{\secdef \jsssubsubsec \jsssubsubsecnn}
460 \fi
461 \end{class}

```

The hypersetup uses some modified colors

```

462 <*class>
463 %% colors
464 \definecolor{Red}{rgb}{0.5,0,0}
465 \definecolor{Blue}{rgb}{0,0,0.5}
466 </class>

```

and is then defined by

```

467 <*class>
468 \if@review
469   \hypersetup{%
470     hyperindex = {true},
471     colorlinks = {true},
472     linktocpage = {true},
473     plainpages = {false},
474     linkcolor = {Blue},
475     citecolor = {Blue},
476     urlcolor = {Red},
477     pdfstartview = {Fit},
478     pdfpagemode = {None},
479     pdfview = {XYZ null null null}
480   }
481 \else
482   \hypersetup{%
483     hyperindex = {true},
484     colorlinks = {true},
485     linktocpage = {true},
486     plainpages = {false},
487     linkcolor = {Blue},
488     citecolor = {Blue},
489     urlcolor = {Red},
490     pdfstartview = {Fit},
491     pdfpagemode = {UseOutlines},
492     pdfview = {XYZ null null null}
493   }
494 \fi
495 </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`.

```

496 <*class>
497 \if@nojss
498   \AtBeginDocument{
499     \hypersetup{%
500       pdfauthor = {\@Hyperauthor},
501       pdftitle = {\@Plaintitle},
502       pdfkeywords = {\@Plainkeywords}
503     }
504   }
505 \else
506   \AtBeginDocument{
507     \hypersetup{%
508       pdfauthor = {\@Hyperauthor},
509       pdftitle = {\@Plaintitle},
510       pdfsubject = {\@Hypersubject},
511       pdfkeywords = {\@Plainkeywords}
512     }
513   }
514 \fi
515 </class>

```

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

```
516 <*class>
517 \if@notitle
518   %% \AtBeginDocument{\maketitle}
519 \else
520   \AtBeginDocument{\maketitle}
521 \fi
522 </class>
```

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

```
523 <*class>
524 %% commands
525 \newcommand\code{\bgroup\@makeother\_ \@makeother\~ \@makeother\$\@codex}
526 \def\@codex#1{{\normalfont\ttfamily\hyphenchar\font=-1 #1}\egroup}
527 %%\let\code=\texttt
528 \let\proglang=\textsf
529 \newcommand{\pkg}[1]{\fontseries{b}\selectfont #1}}
530 </class>
```

for specifying e-mail addresses,

```
531 <*class>
532 \newcommand{\email}[1]{\href{mailto:#1}{\normalfont\texttt{#1}}}
533 </class>
```

digital object identifiers (DOIs),

```
534 <*class>
535 \ifx\csname urlstyle\endcsname\relax
536   \newcommand\@doi[1]{doi:\discretionary{}{}{}#1}\else
537   \newcommand\@doi{doi:\discretionary{}{}{}\bgroup
538 \urlstyle{tt}\Url}\fi
539 \newcommand{\doi}[1]{\href{http://dx.doi.org/#1}{\normalfont\texttt{\@doi{#1}}}}
540 </class>
```

and for mathematical notation.

```
541 <*class>
542 \newcommand{\E}{\mathsf{E}}
543 \newcommand{\VAR}{\mathsf{VAR}}
544 \newcommand{\COV}{\mathsf{COV}}
545 \newcommand{\Prob}{\mathsf{P}}
546 </class>
```