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

Achim Zeileis

April 6, 2013

1 Introduction

The LaTeX 2_ε document class **jss** is an extension of the standard LaTeX 2_ε **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 pdfLaTeX, some useful information on this is provided in Section 3, which also contains some information on using BibTeX. BibTeX 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 BibTeX 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**, **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 pdfLaTeX 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 pdfLaTeX.
- `\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` BibTeX 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 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 LaTeX 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 respectively, the following declarations have to be made in the header of the LaTeX 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 explicitely 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 `CodeInput`s and `CodeOutput`s to (hopefully) keep LaTeX 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 LaTeX 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 pdfLaTeX and BibTeX

Using pdfLaTeX

A LaTeX document (`foo.tex`, say) using `jss.cls` needs to be compiled using pdfLaTeX, 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 'pdfLaTeX' button (as opposed to the 'LaTeX' button).

All graphics included into the document have to be in a format pdfLaTeX 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 pdfLaTeX, 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 pdfLaTeX. Neither this manual nor the JSS encourage or support compilation of JSS documents with standard LaTeX.

References with BibTeX

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 Insitute, Carey, 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.

```
⟨*install⟩
\begin{filecontents}{\filename.ins}
% Simply TeX or LaTeX this file to extract various files from the source
% file 'jss.dtx'.
\def\batchfile{jss.ins}
\input docstrip.tex
\generateFile{jss.drv}{t}{\from{jss.dtx}{driver}}
\generateFile{jss.cls}{t}{\from{jss.dtx}{class}}
\Msg{************************************************************}
\Msg{* For documentation, run LaTeX on jss.dtx or jss.drv. *}
\Msg{************************************************************}
\end{filecontents}
⟨/install⟩
```

4.2 The driver

Next comes the documentation driver file for LaTeX, 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 LaTeX 2$_\varepsilon$ to obtain the documentation.

```
⟨*driver⟩
\documentclass[a4paper]{ltxdoc}
\providecommand{\file}[1]{\texttt{#1}}
\providecommand{\pkg}[1]{{\fontseries{b}\selectfont #1}}
\usepackage{color,hyperref}
\oddsidemargin1.2cm
\textwidth14.2cm
\textheight23.3cm
\topmargin-.7cm
\setlength{\parskip}{0.7ex plus0.1ex minus0.1ex}
\setlength{\parindent}{0em}
\begin{document}
   \OnlyDescription
   \DocInput{jss.dtx}
\end{document}
⟨/driver⟩
```

4.3 The class

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

It requires LaTeX 2$_\varepsilon$

```
⟨*class⟩
\NeedsTeXFormat{LaTeX2e}
\ProvidesClass{jss}[\filedate\space\fileversion\space jss class by Achim Zeileis]
⟨/class⟩
```

and is based on the `article` class. But before we load the class we declare and process some options. These reflects wether 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.

```
⟨*class⟩
%% options
\newif\if@article
\newif\if@codesnippet
\newif\if@bookreview
\newif\if@softwarereview
\newif\if@review
\newif\if@shortnames
\newif\if@nojss
\newif\if@notitle
\newif\if@noheadings
\newif\if@nofooter

\@articletrue
\@codesnippetfalse
\@bookreviewfalse
\@softwarereviewfalse
\@reviewfalse
\@shortnamesfalse
\@nojssfalse
\@notitlefalse
\@noheadingsfalse
\@nofooterfalse

\DeclareOption{article}{\@articletrue%
  \@codesnippetfalse \@bookreviewfalse \@softwarereviewfalse}
\DeclareOption{codesnippet}{\@articlefalse%
  \@codesnippettrue \@bookreviewfalse \@softwarereviewfalse}
\DeclareOption{bookreview}{\@articlefalse%
  \@codesnippetfalse \@bookreviewtrue \@softwarereviewfalse}
\DeclareOption{softwarereview}{\@articlefalse%
  \@codesnippetfalse \@bookreviewfalse \@softwarereviewtrue}
\DeclareOption{shortnames}{\@shortnamestrue}
\DeclareOption{nojss}{\@nojsstrue}
\DeclareOption{notitle}{\@notitletrue}
\DeclareOption{noheadings}{\@noheadingstrue}
\DeclareOption{nofooter}{\@nofootertrue}

\ProcessOptions
\LoadClass[11pt,a4paper,twoside]{article}
⟨/class⟩
```

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

```
⟨*class⟩
%% required packages
\RequirePackage{graphicx,color,ae,fancyvrb}
\RequirePackage[T1]{fontenc}
\IfFileExists{upquote.sty}{\RequirePackage{upquote}}{}
⟨/class⟩
```

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

```
⟨*class⟩
%% bibliography
\if@shortnames
  \usepackage[authoryear,round]{natbib}
```

```
\else
  \usepackage[authoryear,round,longnamesfirst]{natbib}
\fi
\bibpunct{(}{)}{;}{a}{}{,}
\bibliographystyle{jss}
```
⟨/class⟩

The page layout is set to a wide style with smaller margins.

```
⟨*class⟩
%% page layout
\topmargin 0pt
\textheight 46\baselineskip
\advance\textheight by \topskip
\oddsidemargin 0.1in
\evensidemargin 0.15in
\marginparwidth 1in
\oddsidemargin 0.125in
\evensidemargin 0.125in
\marginparwidth 0.75in
\textwidth 6.125in
⟨/class⟩
```

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

```
⟨*class⟩
%% paragraphs
\setlength{\parskip}{0.7ex plus0.1ex minus0.1ex}
\setlength{\parindent}{0em}
⟨/class⟩
```

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

```
⟨*class⟩
%% for all publications
\newcommand{\Address}[1]{\def\@Address{#1}}
\newcommand{\Plaintitle}[1]{\def\@Plaintitle{#1}}
\newcommand{\Shorttitle}[1]{\def\@Shorttitle{#1}}
\newcommand{\Plainauthor}[1]{\def\@Plainauthor{#1}}
\newcommand{\Volume}[1]{\def\@Volume{#1}}
\newcommand{\Year}[1]{\def\@Year{#1}}
\newcommand{\Month}[1]{\def\@Month{#1}}
\newcommand{\Issue}[1]{\def\@Issue{#1}}
\newcommand{\Submitdate}[1]{\def\@Submitdate{#1}}
⟨/class⟩
```

for articles and code snippets,

```
⟨*class⟩
%% for articles and code snippets
\newcommand{\Acceptdate}[1]{\def\@Acceptdate{#1}}
\newcommand{\Abstract}[1]{\def\@Abstract{#1}}
\newcommand{\Keywords}[1]{\def\@Keywords{#1}}
\newcommand{\Plainkeywords}[1]{\def\@Plainkeywords{#1}}
⟨/class⟩
```

for book and software reviews,

```
⟨*class⟩
%% for book and software reviews
\newcommand{\Reviewer}[1]{\def\@Reviewer{#1}}
\newcommand{\Booktitle}[1]{\def\@Booktitle{#1}}
\newcommand{\Bookauthor}[1]{\def\@Bookauthor{#1}}
\newcommand{\Publisher}[1]{\def\@Publisher{#1}}
```

```
\newcommand{\Pubaddress}[1]{\def\@Pubaddress{#1}}
\newcommand{\Pubyear}[1]{\def\@Pubyear{#1}}
\newcommand{\ISBN}[1]{\def\@ISBN{#1}}
\newcommand{\Pages}[1]{\def\@Pages{#1}}
\newcommand{\Price}[1]{\def\@Price{#1}}
\newcommand{\Plainreviewer}[1]{\def\@Plainreviewer{#1}}
\newcommand{\Softwaretitle}[1]{\def\@Softwaretitle{#1}}
\newcommand{\URL}[1]{\def\@URL{#1}}
⟨/class⟩
```

and for internal use only.

```
⟨*class⟩
%% for internal use
\newcommand{\Seriesname}[1]{\def\@Seriesname{#1}}
\newcommand{\Hypersubject}[1]{\def\@Hypersubject{#1}}
\newcommand{\Hyperauthor}[1]{\def\@Hyperauthor{#1}}
\newcommand{\Footername}[1]{\def\@Footername{#1}}
\newcommand{\Firstdate}[1]{\def\@Firstdate{#1}}
\newcommand{\Seconddate}[1]{\def\@Seconddate{#1}}
\newcommand{\Reviewauthor}[1]{\def\@Reviewauthor{#1}}
⟨/class⟩
```

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

```
⟨*class⟩
%% defaults
\author{Firstname Lastname\\Affiliation}
\title{Title}
\Abstract{---!!!---an abstract is required---!!!---}
\Plainauthor{\@author}
\Volume{VV}
\Year{YYYY}
\Month{MMMMMM}
\Issue{II}
\Submitdate{yyyy-mm-dd}
\Acceptdate{yyyy-mm-dd}
\Address{
  Firstname Lastname\\
  Affiliation\\
  Address, Country\\
  E-mail: \email{name@address}\\
  URL: \url{http://link/to/webpage/}
}

\Reviewer{Firstname Lastname\\Affiliation}
\Plainreviewer{Firstname Lastname}
\Booktitle{Book Title}
\Bookauthor{Book Author}
\Publisher{Publisher}
\Pubaddress{Publisher's Address}
\Pubyear{YYY}
\ISBN{x-xxxxx-xxx-x}
\Pages{xv + 123}
\Price{USD 69.95 (P)}
\URL{http://link/to/webpage/}
⟨/class⟩
```

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

```
⟨*class⟩
```

```
\if@article
  \Seriesname{Issue}
  \Hypersubject{Journal of Statistical Software}
  \Plaintitle{\@title}
  \Shorttitle{\@title}
  \Plainkeywords{\@Keywords}
\fi

\if@codesnippet
  \Seriesname{Code Snippet}
  \Hypersubject{Journal of Statistical Software -- Code Snippets}
  \Plaintitle{\@title}
  \Shorttitle{\@title}
  \Plainkeywords{\@Keywords}
\fi

\if@bookreview
  \Seriesname{Book Review}
  \Hypersubject{Journal of Statistical Software -- Book Reviews}
  \Plaintitle{\@Booktitle}
  \Shorttitle{\@Booktitle}
  \Reviewauthor{\@Bookauthor\\
                \@Publisher, \@Pubaddress, \@Pubyear.\\
                ISBN~\@ISBN. \@Pages~pp. \@Price.\\
                \url{\@URL}}
  \Plainkeywords{}
  \@reviewtrue
\fi

\if@softwarereview
  \Seriesname{Software Review}
  \Hypersubject{Journal of Statistical Software -- Software Reviews}
  \Plaintitle{\@Softwaretitle}
  \Shorttitle{\@Softwaretitle}
  \Booktitle{\@Softwaretitle}
  \Reviewauthor{\@Publisher, \@Pubaddress. \@Price.\\
                \url{\@URL}}
  \Plainkeywords{}
  \@reviewtrue
\fi

\if@review
  \Hyperauthor{\@Plainreviewer}
  \Keywords{}
  \Footername{Reviewer}
  \Firstdate{\textit{Published:} \@Submitdate}
  \Seconddate{}
\else
  \Hyperauthor{\@Plainauthor}
  \Keywords{---!!!---at least one keyword is required---!!!---}
  \Footername{Affiliation}
  \Firstdate{\textit{Submitted:} \@Submitdate}
  \Seconddate{\textit{Accepted:} \@Acceptdate}
\fi
```
⟨/class⟩

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

```
⟨*class⟩
%% Sweave(-like)
```

```
\DefineVerbatimEnvironment{Sinput}{Verbatim}{fontshape=sl}
\DefineVerbatimEnvironment{Soutput}{Verbatim}{}
\DefineVerbatimEnvironment{Scode}{Verbatim}{fontshape=sl}
\newenvironment{Schunk}{}{}
```
⟨/class⟩

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

⟨*class⟩
```
\DefineVerbatimEnvironment{Code}{Verbatim}{}
\DefineVerbatimEnvironment{CodeInput}{Verbatim}{fontshape=sl}
\DefineVerbatimEnvironment{CodeOutput}{Verbatim}{}
\newenvironment{CodeChunk}{}{}
\setkeys{Gin}{width=0.8\textwidth}
```
⟨/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), preceeded by the address of the author/reviewer.

⟨*class⟩
```
%% footer
\newlength{\footerskip}
\setlength{\footerskip}{2.5\baselineskip plus 2ex minus 0.5ex}

\newcommand{\makefooter}{%
  \vspace{\footerskip}

  \if@nojss
    \begin{samepage}
    \textbf{\large \@Footername: \nopagebreak}\\[.3\baselineskip] \nopagebreak
    \@Address \nopagebreak
    \end{samepage}
  \else
    \begin{samepage}
    \textbf{\large \@Footername: \nopagebreak}\\[.3\baselineskip] \nopagebreak
    \@Address \nopagebreak
    \vfill
    \hrule \nopagebreak
    \vspace{.1\baselineskip}
    {\fontfamily{pzc} \fontsize{13}{15} \selectfont Journal of Statistical Software}
    \hfill
    \url{http://www.jstatsoft.org/}\\ \nopagebreak
    published by the American Statistical Association
    \hfill
    \url{http://www.amstat.org/}\\[.3\baselineskip] \nopagebreak
    {Volume~\@Volume, \@Seriesname~\@Issue}
    \hfill
    \@Firstdate\\ \nopagebreak
    {\@Month{} \@Year}
    \hfill
    \@Seconddate  \nopagebreak
    \vspace{.3\baselineskip}
    \hrule
    \end{samepage}
  \fi
}
```
⟨/class⟩

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

```
⟨*class⟩
\if@nofooter
  %% \AtEndDocument{\makefooter}
\else
  \AtEndDocument{\makefooter}
\fi
⟨/class⟩
```

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

```
⟨*class⟩
%% required packages
\RequirePackage{hyperref}
⟨/class⟩
```

and proceed to define the header.

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

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

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

```
⟨*class⟩
\if@review
  \renewcommand{\maketitle}{
  \if@nojss
    %% \@oddhead{\@myoddhead}\\[3\baselineskip]
  \else
    \@oddhead{\@myoddhead}\\[3\baselineskip]
  \fi
    {\large
    \noindent
    Reviewer: \@Reviewer
    \vspace{\baselineskip}
    \hrule
    \vspace{\baselineskip}
    \textbf{\@Booktitle}
    \begin{quotation} \noindent
    \@Reviewauthor
    \end{quotation}
    \vspace{0.7\baselineskip}
    \hrule
    \vspace{1.3\baselineskip}
    }

    \thispagestyle{empty}
    \if@nojss
      \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hyperauthor}}
    \else
```

```
      \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hypersubject}}
    \fi
    \pagestyle{myheadings}
  }
\else
  \def\maketitle{
  \if@nojss
    %% \@oddhead{\@myoddhead} \par
  \else
    \@oddhead{\@myoddhead} \par
  \fi
   \begingroup
     \def\thefootnote{\fnsymbol{footnote}}
     \def\@makefnmark{\hbox to 0pt{$^{\@thefnmark}$\hss}}
     \long\def\@makefntext##1{\parindent 1em\noindent
                              \hbox to1.8em{\hss $\m@th ^{\@thefnmark}$}##1}
     \@maketitle \@thanks
   \endgroup
   \setcounter{footnote}{0}

   \if@noheadings
    %% \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hypersubject}}
    \else
     \thispagestyle{empty}
      \if@nojss
        \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hyperauthor}}
      \else
        \markboth{\centerline{\@Shorttitle}}{\centerline{\@Hypersubject}}
      \fi
     \pagestyle{myheadings}
   \fi

   \let\maketitle\relax \let\@maketitle\relax
   \gdef\@thanks{}\gdef\@author{}\gdef\@title{}\let\thanks\relax
  }

  \def\@maketitle{\vbox{\hsize\textwidth \linewidth\hsize
  \if@nojss
    %% \vskip 1in
  \else
    \vskip 1in
  \fi
   {\centering
   {\LARGE\bf \@title\par}
   \vskip 0.2in plus 1fil minus 0.1in
   {
       \def\and{\unskip\enspace{\rm and}\enspace}%
       \def\And{\end{tabular}\hss \egroup \hskip 1in plus 2fil
          \hbox to 0pt\bgroup\hss \begin{tabular}[t]{c}\large\bf\rule{\z@}{24pt}\ignorespaces}%
       \def\AND{\end{tabular}\hss\egroup \hfil\hfil\egroup
          \vskip 0.1in plus 1fil minus 0.05in
          \hbox to \linewidth\bgroup\rule{\z@}{10pt} \hfil\hfil
          \hbox to 0pt\bgroup\hss \begin{tabular}[t]{c}\large\bf\rule{\z@}{24pt}\ignorespaces}
       \hbox to \linewidth\bgroup\rule{\z@}{10pt} \hfil\hfil
       \hbox to 0pt\bgroup\hss \begin{tabular}[t]{c}\large\bf\rule{\z@}{24pt}\@author
       \end{tabular}\hss\egroup
   \hfil\hfil\egroup}
   \vskip 0.3in minus 0.1in
   \hrule
   \begin{abstract}
```

```
  \@Abstract
  \end{abstract}}
  \textit{Keywords}:~\@Keywords.
  \vskip 0.1in minus 0.05in
  \hrule
  \vskip 0.2in minus 0.1in
 }}
\fi
```
⟨/class⟩

The appearance of sections, subsections and subsubsections is controlled by

```
⟨*class⟩
%% sections, subsections, and subsubsections
\newlength{\preXLskip}
\newlength{\preLskip}
\newlength{\preMskip}
\newlength{\preSskip}
\newlength{\postMskip}
\newlength{\postSskip}
\setlength{\preXLskip}{1.8\baselineskip plus 0.5ex minus 0ex}
\setlength{\preLskip}{1.5\baselineskip plus 0.3ex minus 0ex}
\setlength{\preMskip}{1\baselineskip plus 0.2ex minus 0ex}
\setlength{\preSskip}{.8\baselineskip plus 0.2ex minus 0ex}
\setlength{\postMskip}{.5\baselineskip plus 0ex minus 0.1ex}
\setlength{\postSskip}{.3\baselineskip plus 0ex minus 0.1ex}


\newcommand{\jsssec}[2][default]{\vskip \preXLskip%
  \pdfbookmark[1]{#1}{Section.\thesection.#1}%
  \refstepcounter{section}%
  \centerline{\textbf{\Large \thesection. #2}} \nopagebreak
  \vskip \postMskip \nopagebreak}
\newcommand{\jsssecnn}[1]{\vskip \preXLskip%
  \centerline{\textbf{\Large #1}} \nopagebreak
  \vskip \postMskip \nopagebreak}

\newcommand{\jsssubsec}[2][default]{\vskip \preMskip%
  \pdfbookmark[2]{#1}{Subsection.\thesubsection.#1}%
  \refstepcounter{subsection}%
  \textbf{\large \thesubsection. #2} \nopagebreak
  \vskip \postSskip \nopagebreak}
\newcommand{\jsssubsecnn}[1]{\vskip \preMskip%
  \textbf{\large #1} \nopagebreak
  \vskip \postSskip \nopagebreak}

\newcommand{\jsssubsubsec}[2][default]{\vskip \preSskip%
  \pdfbookmark[3]{#1}{Subsubsection.\thesubsubsection.#1}%
  \refstepcounter{subsubsection}%
  {\large \textit{#2}} \nopagebreak
  \vskip \postSskip \nopagebreak}
\newcommand{\jsssubsubsecnn}[1]{\vskip \preSskip%
  {\textit{\large #1}} \nopagebreak
  \vskip \postSskip \nopagebreak}

\newcommand{\jsssimplesec}[2][default]{\vskip \preLskip%
%%  \pdfbookmark[1]{#1}{Section.\thesection.#1}%
  \refstepcounter{section}%
  \textbf{\large #1} \nopagebreak
  \vskip \postSskip \nopagebreak}
\newcommand{\jsssimplesecnn}[1]{\vskip \preLskip%
```

```
  \textbf{\large #1} \nopagebreak
  \vskip \postSskip \nopagebreak}

\if@review
  \renewcommand{\section}{\secdef \jsssimplesec \jsssimplesecnn}
  \renewcommand{\subsection}{\secdef \jsssimplesec \jsssimplesecnn}
  \renewcommand{\subsubsection}{\secdef \jsssimplesec \jsssimplesecnn}
\else
  \renewcommand{\section}{\secdef \jsssec \jsssecnn}
  \renewcommand{\subsection}{\secdef \jsssubsec \jsssubsecnn}
  \renewcommand{\subsubsection}{\secdef \jsssubsubsec \jsssubsubsecnn}
\fi
⟨/class⟩
```

The hypersetup uses some modified colors

```
⟨*class⟩
%% colors
\definecolor{Red}{rgb}{0.5,0,0}
\definecolor{Blue}{rgb}{0,0,0.5}
⟨/class⟩
```

and is then defined by

```
⟨*class⟩
\if@review
  \hypersetup{%
    hyperindex = {true},
    colorlinks = {true},
    linktocpage = {true},
    plainpages = {false},
    linkcolor = {Blue},
    citecolor = {Blue},
    urlcolor = {Red},
    pdfstartview = {Fit},
    pdfpagemode = {None},
    pdfview = {XYZ null null null}
  }
\else
  \hypersetup{%
    hyperindex = {true},
    colorlinks = {true},
    linktocpage = {true},
    plainpages = {false},
    linkcolor = {Blue},
    citecolor = {Blue},
    urlcolor = {Red},
    pdfstartview = {Fit},
    pdfpagemode = {UseOutlines},
    pdfview = {XYZ null null null}
  }
\fi
⟨/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`.

```
⟨*class⟩
\if@nojss
  \AtBeginDocument{
    \hypersetup{%
      pdfauthor = {\@Hyperauthor},
      pdftitle = {\@Plaintitle},
```

```
      pdfkeywords = {\@Plainkeywords}
    }
  }
\else
  \AtBeginDocument{
    \hypersetup{%
      pdfauthor = {\@Hyperauthor},
      pdftitle = {\@Plaintitle},
      pdfsubject = {\@Hypersubject},
      pdfkeywords = {\@Plainkeywords}
    }
  }
\fi
⟨/class⟩
```

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

```
⟨*class⟩
\if@notitle
  %% \AtBeginDocument{\maketitle}
\else
  \AtBeginDocument{\maketitle}
\fi
⟨/class⟩
```

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

```
⟨*class⟩
%% commands
\newcommand\code{\bgroup\@makeother\_\@makeother\~\@makeother\$\@codex}
\def\@codex#1{{\normalfont\ttfamily\hyphenchar\font=-1 #1}\egroup}
%%\let\code=\texttt
\let\proglang=\textsf
\newcommand{\pkg}[1]{{\fontseries{b}\selectfont #1}}
⟨/class⟩
```

for specifying e-mail addresses,

```
⟨*class⟩
\newcommand{\email}[1]{\href{mailto:#1}{\normalfont\texttt{#1}}}
⟨/class⟩
```

digital object identifiers (DOIs),

```
⟨*class⟩
\ifx\csname urlstyle\endcsname\relax
  \newcommand\@doi[1]{doi:\discretionary{}{}{}#1}\else
  \newcommand\@doi{doi:\discretionary{}{}{}\begingroup
\urlstyle{tt}\Url}\fi
\newcommand{\doi}[1]{\href{http://dx.doi.org/#1}{\normalfont\texttt{\@doi{#1}}}}
⟨/class⟩
```

and for mathematical notation.

```
⟨*class⟩
\newcommand{\E}{\mathsf{E}}
\newcommand{\VAR}{\mathsf{VAR}}
\newcommand{\COV}{\mathsf{COV}}
\newcommand{\Prob}{\mathsf{P}}
⟨/class⟩
```