

# 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 ?? 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 ??; 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  $\text{pdf}\text{\LaTeX}$ , some useful information on this is provided in Section ??, which also contains some information on using  $\text{Bib}\text{\TeX}$ .  $\text{Bib}\text{\TeX}$  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 ?. 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  $\text{Bib}\text{\TeX}$  style `jss.bst` in your search path. This can either be your local working directory or in your `texmf` or `localtexmf` tree.

The  $\text{\LaTeX}$  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 pdfL<sup>A</sup>T<sub>E</sub>X 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 pdfL<sup>A</sup>T<sub>E</sub>X.
- `\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<sub>T</sub>E<sub>X</sub> 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<sub>T</sub>E<sub>X</sub> 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 L<sup>A</sup>T<sub>E</sub>X 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, <code>\AND</code> (instead of <code>\And</code> ) should be used in front of authors that should go into the next line.
<code>\Plainauthor</code>	The list of authors without affiliations. It needs to be comma-separated and must not contain any markup (bold fonts etc.), e.g.,  <code>\Plainauthor{Achim Zeileis, Second Author}</code>
<code>\title</code>	The title of the paper. It should be capitalized and may contain further markup (in particular markup such as <code>\pkg</code> and <code>\proglang</code> ), e.g.,  <code>\title{A Capitalized Title for a Package \pkg{foo}}</code>
<code>\Plaintitle</code>	The full title without any markup. The default is to use <code>\title</code> , therefore it needs to be specified only if it is different from <code>\title</code> , e.g.,  <code>\Plaintitle{A Capitalized Title for a Package foo}</code>
<code>\Shorttitle</code>	A shorter version of the title to be used for page headings. The default is to use <code>\title</code> , therefore it needs to be specified only if it is different from <code>\title</code> , e.g.,  <code>\Shorttitle{foo: A Capitalized Title}</code>
<code>\Abstract</code>	Enter the abstract for your article here, e.g.,  <code>\Abstract{   The abstract of the article. }</code>
<code>\Keywords</code>	A comma-separated list of (at least one) keyword(s) which should not be capitalized, e.g., <code>\Keywords{keywords, comma-separated, not capitalized}</code> .
<code>\Plainkeywords</code>	The list of keywords without any markup. The default is to use <code>\Keywords</code> , therefore it needs to be specified only if it is different from <code>\Keywords</code> .
<code>\Volume</code>	The JSS volume number in which the article is published, e.g., <code>\Volume{11}</code> . Note: This information will be provided upon acceptance or added by the technical editor. Prior to acceptance, do not use this command.
<code>\Issue</code>	The JSS issue number in which the article is published, e.g., <code>\Issue{9}</code> . Note: This information will be provided upon acceptance or added by the technical editor. Prior to acceptance, do not use this command.
<code>\Month</code>	The month in which the article is published, e.g., <code>\Month{September}</code> . Note: This information will be provided upon acceptance or added by the technical editor. Prior to acceptance, do not use this command.
<code>\Year</code>	The year in which the article is published, e.g., <code>\Year{2004}</code> . Note: This information will be provided upon acceptance or added by the technical editor. Prior to acceptance, do not use this command.
<code>\Submitdate</code>	The date of submission for the article, e.g., <code>\Submitdate{2004-09-29}</code> . Note: This information will be provided upon acceptance or added by the technical editor. Prior to acceptance, do not use this command.
<code>\Acceptdate</code>	The date of acceptance for the article, e.g., <code>\Acceptdate{2004-09-29}</code> . 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  $\text{\LaTeX}$  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 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 <code>and</code> , 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 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{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<sup>A</sup>T<sub>E</sub>X 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<sup>A</sup>T<sub>E</sub>X 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 pdfL<sup>A</sup>T<sub>E</sub>X and BIBT<sub>E</sub>X

#### Using pdfL<sup>A</sup>T<sub>E</sub>X

A L<sup>A</sup>T<sub>E</sub>X document (`foo.tex`, say) using `jss.cls` needs to be compiled using pdfL<sup>A</sup>T<sub>E</sub>X, 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 L<sup>A</sup>T<sub>E</sub>X documents you will have to press the ‘pdfL<sup>A</sup>T<sub>E</sub>X’ button (as opposed to the ‘L<sup>A</sup>T<sub>E</sub>X’ button).

All graphics included into the document have to be in a format pdfL<sup>A</sup>T<sub>E</sub>X 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 L<sup>A</sup>T<sub>E</sub>X 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 L<sup>A</sup>T<sub>E</sub>X documents that can be processed with both L<sup>A</sup>T<sub>E</sub>X and pdfL<sup>A</sup>T<sub>E</sub>X, 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 pdfL<sup>A</sup>T<sub>E</sub>X. Neither this manual nor the JSS encourage or support compilation of JSS documents with standard L<sup>A</sup>T<sub>E</sub>X.

#### References with BIBT<sub>E</sub>X

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, 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.

```
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 L<sup>A</sup>T<sub>E</sub>X, 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<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> 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}
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<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>

```
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 `noheadings` 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@noheadings
45 \newif\if@nofooter
46
47 \@articletrue
48 \@codesnippetfalse
49 \@bookreviewfalse
50 \@softwarereviewfalse
51 \@reviewfalse
52 \@shortnamesfalse
53 \@nojssfalse
54 \@notitlefalse
55 \@noheadingsfalse
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{noheadings}{\@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,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}

```

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

```

91 \begin{class}
92 %% page layout
93 \topmargin 0pt
94 \textheight 46\baselineskip
95 \advance\textheight by \topskip
96 \oddsidemargin 0.1in
97 \evensidemargin 0.15in
98 \marginparwidth 1in
99 \oddsidemargin 0.125in
100 \evensidemargin 0.125in
101 \marginparwidth 0.75in
102 \textwidth 6.125in
103 \end{class}

```

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

```

104 \begin{class}
105 %% paragraphs
106 \setlength{\parskip}{0.7ex plus0.1ex minus0.1ex}
107 \setlength{\parindent}{0em}
108 \end{class}

```

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

```

109 \begin{class}
110 %% for all publications
111 \newcommand{\Address}[1]{\def\@Address{#1}}
112 \newcommand{\Plaintitle}[1]{\def\@Plaintitle{#1}}
113 \newcommand{\Shorttitle}[1]{\def\@Shorttitle{#1}}
114 \newcommand{\Plainauthor}[1]{\def\@Plainauthor{#1}}
115 \newcommand{\Volume}[1]{\def\@Volume{#1}}
116 \newcommand{\Year}[1]{\def\@Year{#1}}
117 \newcommand{\Month}[1]{\def\@Month{#1}}
118 \newcommand{\Issue}[1]{\def\@Issue{#1}}
119 \newcommand{\Submitdate}[1]{\def\@Submitdate{#1}}
120 \end{class}

```

for articles and code snippets,

```

121 \begin{class}
122 %% for articles and code snippets
123 \newcommand{\Acceptdate}[1]{\def\@Acceptdate{#1}}
124 \newcommand{\Abstract}[1]{\def\@Abstract{#1}}
125 \newcommand{\Keywords}[1]{\def\@Keywords{#1}}
126 \newcommand{\Plainkeywords}[1]{\def\@Plainkeywords{#1}}
127 \end{class}

```

for book and software reviews,

```

128 \begin{class}
129 %% for book and software reviews
130 \newcommand{\Reviewer}[1]{\def\@Reviewer{#1}}
131 \newcommand{\Booktitle}[1]{\def\@Booktitle{#1}}
132 \newcommand{\Bookauthor}[1]{\def\@Bookauthor{#1}}
133 \newcommand{\Publisher}[1]{\def\@Publisher{#1}}

```

```

134 \newcommand{\Pubaddress}[1]{\def\@Pubaddress{#1}}
135 \newcommand{\Pubyear}[1]{\def\@Pubyear{#1}}
136 \newcommand{\ISBN}[1]{\def\@ISBN{#1}}
137 \newcommand{\Pages}[1]{\def\@Pages{#1}}
138 \newcommand{\Price}[1]{\def\@Price{#1}}
139 \newcommand{\Plainreviewer}[1]{\def\@Plainreviewer{#1}}
140 \newcommand{\Softwaretitle}[1]{\def\@Softwaretitle{#1}}
141 \newcommand{\URL}[1]{\def\@URL{#1}}
142 \newcommand{\DOI}[1]{\def\@DOI{#1}}
143 \end{class}

```

and for internal use only.

```

144 \begin{class}
145 %% for internal use
146 \newcommand{\Seriesname}[1]{\def\@Seriesname{#1}}
147 \newcommand{\Hypersubject}[1]{\def\@Hypersubject{#1}}
148 \newcommand{\Hyperauthor}[1]{\def\@Hyperauthor{#1}}
149 \newcommand{\Footername}[1]{\def\@Footername{#1}}
150 \newcommand{\Firstdate}[1]{\def\@Firstdate{#1}}
151 \newcommand{\Seconddate}[1]{\def\@Seconddate{#1}}
152 \newcommand{\Reviewauthor}[1]{\def\@Reviewauthor{#1}}
153 \end{class}

```

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

```

154 \begin{class}
155 %% defaults
156 \author{Firstname Lastname\Affiliation}
157 \title{Title}
158 \Abstract{---!!!---an abstract is required---!!!---}
159 \Plainauthor{\@author}
160 \Volume{VV}
161 \Year{YYYY}
162 \Month{MMMMMM}
163 \Issue{II}
164 \Submitdate{yyyy-mm-dd}
165 \Acceptdate{yyyy-mm-dd}
166 \Address{
167   Firstname Lastname\
168   Affiliation\
169   Address, Country\
170   E-mail: \email{name@address}\
171   URL: \url{http://link/to/webpage/}
172 }
173
174 \Reviewer{Firstname Lastname\Affiliation}
175 \Plainreviewer{Firstname Lastname}
176 \Booktitle{Book Title}
177 \Bookauthor{Book Author}
178 \Publisher{Publisher}
179 \Pubaddress{Publisher's Address}
180 \Pubyear{YYY}
181 \ISBN{x-xxxxx-xxx-x}
182 \Pages{xv + 123}
183 \Price{USD 69.95 (P)}
184 \URL{http://link/to/webpage/}
185 \DOI{10.18637/jss.v000.i00}
186 \end{class}

```

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

stored.

```
187 <*class>
188 \if@article
189   \Seriesname{Issue}
190   \Hypersubject{Journal of Statistical Software}
191   \Plaintitle{\@title}
192   \Shorttttitle{\@title}
193   \Plainkeywords{\@Keywords}
194 \fi
195
196 \if@codesnippet
197   \Seriesname{Code Snippet}
198   \Hypersubject{Journal of Statistical Software -- Code Snippets}
199   \Plaintitle{\@title}
200   \Shorttttitle{\@title}
201   \Plainkeywords{\@Keywords}
202 \fi
203
204 \if@bookreview
205   \Seriesname{Book Review}
206   \Hypersubject{Journal of Statistical Software -- Book Reviews}
207   \Plaintitle{\@Booktitle}
208   \Shorttttitle{\@Booktitle}
209   \Reviewauthor{\@Bookauthor\@
210                 \@Publisher, \@Pubaddress, \@Pubyear.\@
211                 ISBN~\@ISBN. \@Pages~pp. \@Price.\@
212                 \url{\@URL}}
213   \Plainkeywords{}
214   \@reviewtrue
215 \fi
216
217 \if@softwarereview
218   \Seriesname{Software Review}
219   \Hypersubject{Journal of Statistical Software -- Software Reviews}
220   \Plaintitle{\@Softwaretitle}
221   \Shorttttitle{\@Softwaretitle}
222   \Booktitle{\@Softwaretitle}
223   \Reviewauthor{\@Publisher, \@Pubaddress. \@Price.\@
224                 \url{\@URL}}
225   \Plainkeywords{}
226   \@reviewtrue
227 \fi
228
229 \if@review
230   \Hyperauthor{\@Plainreviewer}
231   \Keywords{}
232   \Footername{Reviewer}
233   \Firstdate{\textit{Published:} \@Submitdate}
234   \Seconddate{}
235 \else
236   \Hyperauthor{\@Plainauthor}
237   \Keywords{---!!!---at least one keyword is required---!!!---}
238   \Footername{Affiliation}
239   \Firstdate{\textit{Submitted:} \@Submitdate}
240   \Seconddate{\textit{Accepted:} \@Acceptdate}
241 \fi
242 </class>
```

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

the Sweave commands are provided explicitly,

```
243 \class
244 %% Sweave(-like)
245 \DefineVerbatimEnvironment{Sinput}{Verbatim}{fontshape=s1}
246 \DefineVerbatimEnvironment{Soutput}{Verbatim}{}
247 \DefineVerbatimEnvironment{Scode}{Verbatim}{fontshape=s1}
248 \newenvironment{Schunk}{}{}
249 \endclass
```

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

```
250 \class
251 \DefineVerbatimEnvironment{Code}{Verbatim}{}
252 \DefineVerbatimEnvironment{CodeInput}{Verbatim}{fontshape=s1}
253 \DefineVerbatimEnvironment{CodeOutput}{Verbatim}{}
254 \newenvironment{CodeChunk}{}{}
255 \setkeys{Gin}{width=0.8\textwidth}
256 \endclass
```

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  $\text{\TeX}$ live). It contains the somewhat extended publication information (from the header), preceded by the address of the author/reviewer.

```
257 \class
258 %% footer
259 \newlength{\footerskip}
260 \setlength{\footerskip}{2.5\baselineskip plus 2ex minus 0.5ex}
261
262 \newcommand{\makefooter}{%
263   \vspace{\footerskip}
264
265   \if@nojss
266     \begin{samepage}
267       \textbf{\large \@Footname: \nopagebreak}\[\.3\baselineskip] \nopagebreak
268       \@Address \nopagebreak
269     \end{samepage}
270   \else
271     \begin{samepage}
272       \textbf{\large \@Footname: \nopagebreak}\[\.3\baselineskip] \nopagebreak
273       \@Address \nopagebreak
274       \vfill
275       \hrule \nopagebreak
276       \vspace{.1\baselineskip}
277       {\fontfamily{pzc} \fontsize{13}{15} \selectfont Journal of Statistical Software}
278       \hfill
279       \url{http://www.jstatsoft.org/}\ \nopagebreak
280       published by the Foundation for Open Access Statistics
281       \hfill
282       \url{http://www.foastat.org/}\[\.3\baselineskip] \nopagebreak
283       {\@Month{} \@Year, Volume~\@Volume, \@Seriesname~\@Issue}
284       \hfill
285       \@Firstdate\ \nopagebreak
286       {\href{http://dx.doi.org/\@DOI}{\tt doi:\@DOI}}
287       \hfill
288       \@Seconddate \nopagebreak
289       \vspace{.3\baselineskip}
290       \hrule
291     \end{samepage}
292   \fi
293 }
```

```
294 </class>
```

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

```
295 <*class>
296 \if@nofooter
297   %% \AtEndDocument{\makefooter}
298 \else
299   \AtEndDocument{\makefooter}
300 \fi
301 </class>
```

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

```
302 <*class>
303 %% required packages
304 \RequirePackage{hyperref}
305 </class>
```

and proceed to define the header.

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

```
306 <*class>
307 %% new \maketitle
308 \def\@myoddhead{
309   {\color{white} JSS}\[-1.42cm]
310   \hspace{-2em} \includegraphics[height=23mm,keepaspectratio]{jsslogo} \hfill
311   \parbox[b][23mm]{118mm}{\hrule height 3pt
312     \center{
313       {\fontfamily{pzc} \fontsize{28}{32} \selectfont Journal of Statistical Software}
314       \vfill
315       {\it \small \@Month{ } \@Year, Volume~\@Volume, \@Seriesname~\@Issue.%
316         \hfill \href{http://dx.doi.org/\@DOI}{doi:\,\@DOI}}}\[0.1cm]
317       \hrule height 3pt}}
318 </class>
```

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

```
319 <*class>
320 \if@review
321   \renewcommand{\maketitle}{
322     \if@nojss
323       %% \@oddhead{\@myoddhead}\[3\baselineskip]
324     \else
325       \@oddhead{\@myoddhead}\[3\baselineskip]
326     \fi
327     {\large
328     \noindent
329     Reviewer: \@Reviewer
330     \vspace{\baselineskip}
331     \hrule
332     \vspace{\baselineskip}
333     \textbf{\@Booktitle}
334     \begin{quotation} \noindent
335       \@Reviewauthor
336     \end{quotation}
337     \vspace{0.7\baselineskip}
338     \hrule
339     \vspace{1.3\baselineskip}
340   }
341
342   \thispagestyle{empty}
```



```

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

```

```

403 \vskip 0.3in minus 0.1in
404 \hrule
405 \begin{abstract}
406 \@Abstract
407 \end{abstract}}
408 \textit{Keywords}:~\@Keywords.
409 \vskip 0.1in minus 0.05in
410 \hrule
411 \vskip 0.2in minus 0.1in
412 }}
413 \fi
414 \</class>

```

The appearance of sections, subsections and subsubsections is controlled by

```

415 \<class>
416 %% sections, subsections, and subsubsections
417 \newlength{\preXLskip}
418 \newlength{\preLskip}
419 \newlength{\preMskip}
420 \newlength{\preSskip}
421 \newlength{\postMskip}
422 \newlength{\postSskip}
423 \setlength{\preXLskip}{1.8\baselineskip plus 0.5ex minus 0ex}
424 \setlength{\preLskip}{1.5\baselineskip plus 0.3ex minus 0ex}
425 \setlength{\preMskip}{1\baselineskip plus 0.2ex minus 0ex}
426 \setlength{\preSskip}{.8\baselineskip plus 0.2ex minus 0ex}
427 \setlength{\postMskip}{.5\baselineskip plus 0ex minus 0.1ex}
428 \setlength{\postSskip}{.3\baselineskip plus 0ex minus 0.1ex}
429
430
431 \newcommand{\jsssec}[2][default]{\vskip \preXLskip%
432 \pdfbookmark[1]{#1}{Section.\thesection.#1}%
433 \refstepcounter{section}%
434 \centerline{\textbf{\Large \thesection. #2}} \nopagebreak
435 \vskip \postMskip \nopagebreak}
436 \newcommand{\jsssecnn}[1]{\vskip \preXLskip%
437 \centerline{\textbf{\Large #1}} \nopagebreak
438 \vskip \postMskip \nopagebreak}
439
440 \newcommand{\jsssubsec}[2][default]{\vskip \preMskip%
441 \pdfbookmark[2]{#1}{Subsection.\thesubsection.#1}%
442 \refstepcounter{subsection}%
443 \textbf{\large \thesubsection. #2} \nopagebreak
444 \vskip \postSskip \nopagebreak}
445 \newcommand{\jsssubsecnn}[1]{\vskip \preMskip%
446 \textbf{\large #1} \nopagebreak
447 \vskip \postSskip \nopagebreak}
448
449 \newcommand{\jsssubsubsec}[2][default]{\vskip \preSskip%
450 \pdfbookmark[3]{#1}{Subsubsection.\thesubsubsection.#1}%
451 \refstepcounter{subsubsection}%
452 {\large \textit{#2}} \nopagebreak
453 \vskip \postSskip \nopagebreak}
454 \newcommand{\jsssubsubsecnn}[1]{\vskip \preSskip%
455 {\textit{\large #1}} \nopagebreak
456 \vskip \postSskip \nopagebreak}
457
458 \newcommand{\jsssimplesec}[2][default]{\vskip \preLskip%
459 %% \pdfbookmark[1]{#1}{Section.\thesection.#1}%
460 \refstepcounter{section}%

```

```

461 \textbf{\large #1} \nopagebreak
462 \vskip \postSskip \nopagebreak}
463 \newcommand{\jssimplesecnn}[1]{\vskip \preLskip%
464 \textbf{\large #1} \nopagebreak
465 \vskip \postSskip \nopagebreak}
466
467 \if@review
468 \renewcommand{\section}{\secdef \jssimplesec \jssimplesecnn}
469 \renewcommand{\subsection}{\secdef \jssimplesec \jssimplesecnn}
470 \renewcommand{\subsubsection}{\secdef \jssimplesec \jssimplesecnn}
471 \else
472 \renewcommand{\section}{\secdef \jsssec \jsssecnn}
473 \renewcommand{\subsection}{\secdef \jsssubsec \jsssubsecnn}
474 \renewcommand{\subsubsection}{\secdef \jsssubsubsec \jsssubsubsecnn}
475 \fi
476 \end{class}

```

The hypersetup uses some modified colors

```

477 \begin{class}
478 %% colors
479 \definecolor{Red}{rgb}{0.5,0,0}
480 \definecolor{Blue}{rgb}{0,0,0.5}
481 \end{class}

```

and is then defined by

```

482 \begin{class}
483 \if@review
484 \hypersetup{%
485   hyperindex = {true},
486   colorlinks = {true},
487   linktocpage = {true},
488   plainpages = {false},
489   linkcolor = {Blue},
490   citecolor = {Blue},
491   urlcolor = {Red},
492   pdfstartview = {Fit},
493   pdfpagemode = {None},
494   pdfview = {XYZ null null null}
495 }
496 \else
497 \hypersetup{%
498   hyperindex = {true},
499   colorlinks = {true},
500   linktocpage = {true},
501   plainpages = {false},
502   linkcolor = {Blue},
503   citecolor = {Blue},
504   urlcolor = {Red},
505   pdfstartview = {Fit},
506   pdfpagemode = {UseOutlines},
507   pdfview = {XYZ null null null}
508 }
509 \fi
510 \end{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`.

```

511 \begin{class}
512 \if@nojss
513 \AtBeginDocument{

```

```

514 \hypersetup{%
515 pdfauthor = {\@Hyperauthor},
516 pdftitle = {\@Plaintitle},
517 pdfkeywords = {\@Plainkeywords}
518 }
519 }
520 \else
521 \AtBeginDocument{
522 \hypersetup{%
523 pdfauthor = {\@Hyperauthor},
524 pdftitle = {\@Plaintitle},
525 pdfsubject = {\@Hypersubject},
526 pdfkeywords = {\@Plainkeywords}
527 }
528 }
529 \fi
530 \end{class}

```

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

```

531 \begin{class}
532 \if@notitle
533 %% \AtBeginDocument{\maketitle}
534 \else
535 \AtBeginDocument{\maketitle}
536 \fi
537 \end{class}

```

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

```

538 \begin{class}
539 %% commands
540 \newcommand\code{\bgroup\@makeother\_ \@makeother\~ \@makeother\$ \@codex}
541 \def\@codex#1{\fontfamily\hyphenchar\font=-1 #1\egroup}
542 %%\let\code=\texttt
543 \let\proglang=\textsf
544 \newcommand{\pkg}[1]{\fontseries{b}\selectfont #1}
545 \end{class}

```

for specifying e-mail addresses,

```

546 \begin{class}
547 \newcommand{\email}[1]{\href{mailto:#1}{\fontfamily\hyphenchar\font=-1 #1}}
548 \end{class}

```

digital object identifiers (DOIs),

```

549 \begin{class}
550 \ifx\csname urlstyle\endcsname\relax
551 \newcommand\@doi[1]{doi:\discretionary{}{}{}#1}\else
552 \newcommand\@doi{doi:\discretionary{}{}{} \begin{group}
553 \urlstyle{tt}\Url\end{group}}\fi
554 \newcommand{\doi}[1]{\href{http://dx.doi.org/#1}{\fontfamily\hyphenchar\font=-1 #1}}
555 \end{class}

```

and for mathematical notation.

```

556 \begin{class}
557 \newcommand{\E}{\mathsf{E}}
558 \newcommand{\VAR}{\mathsf{VAR}}
559 \newcommand{\COV}{\mathsf{COV}}
560 \newcommand{\Prob}{\mathsf{P}}
561 \end{class}

```