Author's Guide to the ACM SIGPLAN Class (`sigplanconf.cls`)

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Chapter 1

Introduction

The ACM SIGPLAN style is a LaTeX class file that you use to prepare papers for SIGPLAN conference proceedings. It is the latest in a rather long line of such class files that includes `acmconf.cls`, `acm_proc_article-sp.cls`, and `sigplan-proc.cls`. The new class is called `sigplanconf.cls` and replaces all of the previous class files and their variants.

The ACM SIGPLAN class file is a variant of the standard LaTeX article style. It is based on `article.cls` and both replaces and adds to its features. This author's guide assumes you are familiar with LaTeX and describes the features of the ACM SIGPLAN class file that are new or different.

The ACM SIGPLAN style was commissioned by the SIGPLAN Executive Committee and implemented by Paul C. Anagnostopoulos, with the assistance of an advisory board consisting of Andrew Appel, Olivier Danvy, Benjamin Pierce, Simon Peyton Jones, Michael Sperber, and Philip Wadler. Please address questions and problems to Paul C. Anagnostopoulos, Windfall Software, sigplan-style [atsign] acm.org

1.1   What You Need

You only need three files to use the ACM SIGPLAN class file:

- The LaTeX class file, `sigplanconf.cls`

- This document, `sigplanconf-guide.pdf`

- A template file, `sigplanconf-template.tex`, to help you get started preparing your paper.

The latest versions of these files are available at www.acm.org/sigs/sigplan/authorInformation.htm

1.2 Status of the Class File and Author's Guide

Version 1.0 of the class file and the matching author's guide were released in Spring 2005. The class file contains a complete revision history at the end, beginning with its creation in September 2004.

The date on the title page of this guide can be used with the revision history to determine which version of the class file this guide corresponds to.

Chapter 2

Document Prolog

This chapter describes the commands used in the prolog of your paper. The prolog is the portion of the LaTeX source file that precedes the text of the paper.

2.1 Example

```
\documentclass[preprint]{sigplanconf}

\usepackage{amsmath}
\usepackage{amssymb}
\usepackage{graphicx}

\newcommand{\cL}{{\cal L}}

\begin{document}
... text of the paper ...
\end{document}
```

2.2 The Document Class

The `\documentclass` command names the ACM SIGPLAN class file and lists any desired options.

▷ `\documentclass[`*option-list*`]{sigplanconf}`

The *option-list* argument is optional, and so is enclosed in square brackets if specified. Table 2.1 lists the available options and notes which ones are present by default.

Table 2.1: Document class options.

Option	Default?	Description
`9pt`	yes	Set paper in 9-point type.
`10pt`		Set paper in 10-point type.
`11pt`		Set paper in 11-point type.
`authoryear`		If using the `natbib` package, produce author/year citations.
`blockstyle`		Set paragraphs block style with extra space between.
`cm, computermodern`		Use Computer Modern fonts.
`indentedstyle`	yes	Set paragraph indented style with no extra space.
`mathtime`		Use the MathTime math fonts. This is recommended when using the Times Roman fonts.
`natbib`	yes	Load and configure the `natbib` package for producing citations.
`nonatbib`		Do not use the `natbib` package.
`nocopyrightspace`		Do not include the standard copyright space (see Section 3.8).
`numberedpars`		Heads produced with the `\paragraph` command are numbered (see Section 4.2).
`numbers`	yes	If using the `natbib` package, produce numeric citations.
`preprint`		This is a preprint. Include a running footer.
`reprint`		This is a reprint. Include a running footer and a citation in the copyright space (see Section 3.9).
`times`	yes	Use Times Roman fonts.

2.3   Packages

If you need to use any LaTeX packages, these are specified immediately following the `\documentclass` command. Table 2.2 lists the packages that are used by the ACM SIGPLAN class.

2.4   Definitions

If you need any macro definitions for your paper, these should appear immediately before the `\begin{document}` command that indicates the start of the text of the paper. It is best to use `\newcommand` to defined macros, rather than `\def`, to ensure that existing macros are not accidently redefined.

Table 2.2: Packages used by the ACM SIGPLAN class.

Package	Used
mathtime	when the 'mathtime' option is specified
natbib	when the 'natbib' option is specified

2.5   Text

The text of your paper is enclosed in the `\begin{document}`...`\end{document}` environment that follows the prolog. Chapter 3 describes the commands that produce the title, subtitle, and author lists on the first page of the paper. These commands appear first in the text.

Chapter 3

Title Page and Associated Information

This chapter describes the commands used to produce the title page of your paper.

3.1 Example

The following example presents many of the commands necessary to produce the title page of your paper. Subsequent sections will discuss the commands in detail.

```
\begin{document}
\conferenceinfo{PLDI '05}{June 12--15, 2005, Chicago, Illinois, USA.}
\copyrightyear{2005}
\copyrightdata{1-59593-056-6/05/0006}

\preprintfooter{My paper for PPDP'05}
\titlebanner{DRAFT---Do not distribute}

\title{The Ontological Foundation of Object-Oriented
  Programming\thanks{This material is based upon work supported
  by the National Science Foundation.}}
\subtitle{Philosophy Invades Software Engineering}

\authorinfo{Suzi Smith\and Paul C. Anagnostopoulos}
  {Princeton University}
  {\{smith,anagnostopoulos\}@cs.princeton.edu}
\authorinfo{Fred Flymuffin}
  {Washington University in St. Louis}
  {flymuffin@cs.wustl.edu}
```

```
\maketitle

\begin{abstract}
It turns out that object-oriented programming reflects the fundamental
ontological existents of the universe.
\end{abstract}

\category{D.3.3}{Programming Languages}
                {Language Constructs and Features}
                [Control structures]

\terms
Object-Oriented Programming, Philosophy

\keywords
OOP, Ontology, Programming Philosophy
```

3.2   Conference Information

The following commands allow you to include optional conference information in the standard copyright text that appears at the bottom of the first column of your paper. You can exercise additional control over the copyright information; see Section 3.8.

▷ \conferenceinfo{*name*}{*date/location*}

This command specifies the abbreviated name of the conference (e.g., PLDI '05) and its date and location information (e.g., 12--15 June 2005, Chicago, Illinois, USA).

▷ \copyrightyear{*year*}

This command specifies the 4-digit copyright year of your paper.

▷ \copyrightdata{*data*}

This command specifies the so-called copyright data for your paper. It consists of the ISBN of the proceedings along with a stylized date.

   The printer of the proceedings will supply you with the information required for all three of the commands described in this section, so you can specify it before you submit camera-ready copy; it should be omitted otherwise.

3.3   Preprint Identification

The following commands allow you to include identifying information in the preprint editions of your paper. These commands are ignored unless the 'preprint'

class option is specified (Table 2.1).

▷ \titlebanner{*text*}

This command specifies a short banner to appear above the title of preprint papers.

▷ \preprintfooter{*text*}

This command specifies some information to appear in the left side of the running footer that is present in preprint papers.

3.4 Title and Subtitle

The following commands are used to provide the title and optional subtitle for your paper.

▷ \title{*title*}

This command specifies the title of your paper. You can use the linebreak (\\) command to break lines in the title.

▷ \subtitle{*subtitle*}

This command specifies the subtitle of your paper, which is optional. You can use the linebreak (\\) command to break lines in the title.

3.5 Authors

The following command is used to specify one or more authors of your paper.

▷ \authorinfo{*name*}{*affiliation*}{*email/URL*}

This command specifies the name, affiliation, and email or URL of one of the authors of your paper. You must include an \authorinfo command for each author, in the order they should appear. All authors appear on the title page.

You can specify two or more authors sharing the same affiliation by using either of these commands in the *name* argument: \and separates two names that are to appear on the same line; \\ separates two names that are to appear on separate lines. There is no provision for sharing affiliations between authors that are not adjacent in the author order. In this case, simply repeat the affiliation for each author.

▷ \maketitle

This command must appear following the authors in order to typeset the top of the title page.

3.6   Footnotes

The following commands can be used to footnote the title, subtitle, or authors in a paper.

▷   `\titlenote{`*note-text*`}`

This command sets a footnote with its reference at the current position. The footnote is referenced with a character such as an asterisk or dagger.

▷   `\thanks`

This command is a synonym for `\titlenote`, usually used to set a footnote giving credit.

3.7   Abstract and Cataloging Information

The following commands are used to set the abstract and cataloging information that appears at the beginning of the body of your paper.

▷   `\begin{abstract}` ... `\end{abstract}`

This environment includes the abstract for your paper.

▷   `\category{`*CR-number*`}{`*subcategory*`}{`*third-level*`}[`*fourth-level*`]`

This command produces a category descriptor. You may include multiple occurrences of this command. The first occurrence of this command sets the unnumbered paragraph heading "Categories and Subject Descriptors."
    Please refer to Appendix A for details on this command.

▷   `\terms`

This command produces the unnumbered paragraph heading "General Terms," which is followed by a list of general terms used in your paper.

▷   `\keywords`

This command produces the unnumbered paragraph heading "Keywords," which is followed by a list of keywords pertinent to your paper.

3.8   Copyright Space

SIGPLAN papers include a "copyright space" at the bottom of the first column of text. This space has a fixed height (approximately 7 picas). The standard copyright statement that appears in the copyright space includes the permission, conference name, conference date and location, and copyright line. The copyright line includes the copyright year and copyright data.

Table 3.1: Alternate permission statements.

Command	Description
\ACMCanadapermission	ACM copyright; equal interest by the Crown in Right of Canada.
\ACMUSpermission	ACM copyright; U.S. government has the right to publish.
\authorpermission	Copyright held by author.
\Sunpermission	Copyright held by Sun Microsystems, Inc.
\USpublicpermission	Authored by U.S. government employee; in public domain.

You can eliminate the copyright space altogether using the 'nocopyrightspace' class option (Table 2.1).

The following commands allow you to exercise additional control over the information that appears in the copyright text.

▷ \permission{*text*}

This command specifies text to replace the standard permission statement that is included in the copyright text. The rest of the copyright text remains unchanged.

▷ \toappear{*text*}

This command specifies text to *completely replace* the standard copyright statement that is included in the copyright space.

Table 3.1 presents a group of commands that replace the standard permission statement with other commonly-used permission statements. Some of these commands also replace the standard copyright line. If you use one of these commands, it must appear immediately following the \copyrightdata command. Do not use \permission or \toappear with these commands.

3.9   Reprint Information

If you include the 'reprint' option (see Table 2.1), your document will have running feet with the page number. You can specify the number of the first page in the publication using this command:

▷ \setpagenumber{*page*}

The document will then be numbered the same as it appears in the publication.

A citation is also included in the copyright space. This requires that you specify the name of the proceedings as follows:

▷   `\proceedings{`*title*`}`

As an example, if you specify the following conference and procedings information:

```
\setpagenumber{11}
\conferenceinfo{ICFP'03}{August 25--29, 2003, Uppsala, Sweden}
\copyrightyear{2003}
\copyrightdata{1-58113-756-7/03/0008}
\proceedings{Proceedings of the ACM SIGPLAN International
  Conference on Functional Programming}
```

then the copyright space might contain something like this:

> *ICFP'03* August 25–29, 2004, Uppsala, Sweden
> Copyright © 2003 ACM 1-58113-756-7/03/0008...$5.00
> Reprinted from ICFP'03, Proceedings of the ACM SIGPLAN International Conference on Functional Programming, August 25–29, 2004, Uppsala, Sweden, pp. 11–22

The last three lines are present due to the 'reprint' option.

Chapter 4

Hierarchy

This chapter describes the commands that are used to produce hierarchical headings in your paper.

4.1   Sections

▷   `\section{`*title*`}`

This command produces a numbered section heading. The heading is set off from the next paragraph, which is not indented.

▷   `\section*{`*title*`}`

This variant produces an unnumbered section heading.

▷   `\subsection{`*title*`}`

This command produces a numbered subsection heading that is numbered within the preceding section. The heading is set off from the next paragraph, which is not indented.

▷   `\subsubsection{`*title*`}`

This command produces a numbered sub-subsection heading that is numbered within the preceding subsection. The heading is set off from the next paragraph, which is not indented.

4.2   Paragraphs

▷   `\paragraph{`*title*`}`

This command produces a so-called "paragraph heading." The heading is run into the text of the following paragraph. Whether or not the heading is numbered is controlled by the '`numberedpars`' class option (Table 2.1).

▷ \subparagraph{*title*}

This command produces a subparagraph heading. The heading is run into the text of the following paragraph. Whether or not the heading is numbered is controlled by the 'numberedpars' class option (Table 2.1).

4.3   Standard Headings

The following commands should be used to produce standard headings in your paper.

▷ \keywords

This command produces the unnumbered paragraph heading "Keywords" for use at the beginning of your paper.

▷ \terms

This command produces the unnumbered paragraph heading "General Terms" for use at the beginning of your paper.

▷ \acks

This command produces the unnumbered section heading "Acknowledgments" for use at the end of your paper.

Chapter 5

Basic Elements: Lists, Quotes, Etc.

This chapter lists the basic LaTeX elements that are available in the class file.

5.1   Lists

The class file provides four levels of lists for each of the standard list types: bulleted, numbered, and labeled. The bullet items at each level are preceded by a large round bullet, small square, dash, and small bullet. The numbered items at each level are preceded by an arabic number, lowercase letter, roman numeral, and uppercase letter.

5.2   Quotations

The class file provides the `quote` environment for short quotations and the `quotation` environment for multiparagraph quotations.

Chapter 6

Figures and Tables

This chapter describes a few features that the ACM SIGPLAN class provides for coding figures and tables.

6.1   Figures

A numbered floating figure is coded in this fashion:

```
\begin{figure}
\begin{center}
... content ...
\end{center}
\caption{Foundational framework of the snork mechanism.}
\label{fig-ffsm}
\end{figure}
```

This produces a figure with its content at the top and its caption at the bottom. A horizontal rule separates the content and the caption, in order to make the figure stand out a bit from the text. Occasionally, this rule interferes with horizontal rules in art or tabular material that is part of the content. It can be suppressed as follows:

▷   `\nocaptionrule \caption{ ... }`

The `\nocaptionrule` prefix on the `\caption` command suppresses the rule above the caption.

6.2   Tables

A numbered floating table is coded as follows:

```
\begin{table}
\begin{center}
```

```
\begin{tabular}{...}
... tabular content ...
\end{tabular}
\end{center}
\caption{Critical parameters of the snork mechanism.}
\label{tab-cpsm}
\end{table}
```

This produces a table with its tabular material at the top and its caption at the bottom. The rule above the caption should always appear. In addition, the table looks more pleasant if you use `\hline` to produce a horizontal rule at the top and below the column heads.

Chapter 7

Bibliography

This chapter describes how to prepare a bibliography for your paper. The 'natbib' class option is present by default, so the `natbib` package is loaded and configured for use in producing citations. Also present by default, the 'numbers' class option causes natbib to produce numeric citations. Specify the 'authoryear' class option if you would rather have author/year citations.

The natbib package is recommended, but if you want to use a different package, specify the 'nonatbib' class option: No citation package will be loaded or configured.

7.1   Coding the Bibliography

The printer for SIGPLAN proceedings wants the bibliography to be included in your main LaTeX file. If you generate the bibliography with BibTeX, you should then merge the resulting `.bbl` file into the main file. Here is an example:

```
\begin{thebibliography}{10}
\softraggedright

\bibitem[Bracha(2004)Bracha]{bracha:pluggable}
G. Bracha. \newblock Pluggable type systems.
\newblock In \emph{OOPSLA'04 Workshop on Revival of Dynamic Languages},
October 2004.

\bibitem[Cardelli et~al.(1986)Cardelli, Notherperson]{cardelli86amber}
L. Cardelli, and A. Notherperson. \newblock Amber.
\newblock In Guy Cousineau, Pierre-Louis Curien, and Bernard Robinet,
editors, \emph{Combinators and functional programming languages},
volume 242. Springer-Verlag, 1986.
\newblock URL \url{citeseer.ist.psu.edu/article/cardelli86amber.html}.

\end{thebibliography}
```

The bibliography would normally appear at the end of your paper, just before the `\end{document}` command. Consult a LaTeX manual for a description of the `thebibliography` environment.

The `\softraggedright` command causes the entries to be set with a small amount of right raggedness, which reduces the number of cases where lines have to be broken by hand.

7.2   Using the `natbib` Package

An excellent package for formatting bibliographies is the natbib package. The `sigplanconf` class loads and configures this package by default. The bibliography is set in `\small` size.

Two class options are provided to control the style of the citations produced by natbib (they are irrelevant if you use the '`nonatbib`' class option to cancel the use of natbib). The '`numbers`' option, which is the default, produces numeric citations and numbers the bibliography entries. The '`authoryear`' option produces author/year citations and leaves the bibliography entries plain, with no number or label.

Table 7.1 shows the format of the citations produced by the various available citation commands.

The natbib package is most often used with the `abbrvnat` bibliography style. You must specify this bibliography style in your document, immediately preceding the bibliography entries:

```
\bibliographystyle{abbrvnat}

\begin{thebibliography}{10}
... entries ...
```

In order for the natbib package to distinguish between numeric and author/year citation style, and for it to properly format author/year citations, the `\bibitem` commands in the bibliography must have the optional argument (enclosed in brackets) with the author and year information specified as shown in Section 7.1. If BibTeXgenerates the information in a different format, natbib may fail to format citations correctly.

For more information on the natbib package, consult its CTAN page at tug.ctan.org/tex-archive/macros/latex/contrib/natbib/

Table 7.1: Citation formats.

Citation option	`\cite{smith09}`	`\citet{smith09}`	`\citep{smith09}`
'`numbers`'	[13]	Smith [13]	[13]
'`authoryear`'	Smith [2009]	Smith [2009]	[Smith, 2009]

7.3   Larger Bibliography

If you want the bibliography set in the normal text size, instead of in `\small` size, simply add this command after the `\bibliographystyle` command:

```
\bibliographystyle{abbrvnat}
\renewcommand{\bibfont}{\normalsize}
```

Appendix A

The \category Command

The \category command specifies one classification for your paper according to the ACM Computing Classification System. An introduction to the system is provided at www.acm.org/class/1998/ccs98-intro.html. The classification categories and subject descriptors are listed and described at www.acm.org/class/1998/.

▷ \category{*CR-number*}{*subcategory*}{*third-level*}[*fourth-level*]

The *CR-number* specifies the top-level category (letter), subcategory (number), and possibly a third-level category (number). The number is chosen from the list given at the second URL above. Examples include A.1, B.3.0, and B.3.1.

The *subcategory* is the name of the subcategory specified by the CR-number. (The name of the top-level category is not included in the command.)

The *third-level* is the name of the third-level category specified by the CR-number. If there is no third-level category, the braces must be specified anyway.

The optional *fourth-level,* enclosed in brackets, is a subject descriptor chosen from the third-level category.