Author's Guide to the ACM SIGPLAN Class (`sigplanconf.cls`) v3.6

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SIGPLAN

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Contents

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 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 (Windfall Software), with the assistance of an advisory board consisting of Andrew Appel, Olivier Danvy, Benjamin Pierce, Simon Peyton Jones, Michael Sperber, and Philip Wadler. The current advisory board consists of Matthew Fluet, Andrew Myers, Norman Ramsey, and Chung-chien Shan. Please address questions and problems to the SIGPLAN Information Director, `infodir_sigplan@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 `http://www.sigplan.org/Resources/Author/`

1.2 Status of the Class File and Author's Guide

This guide describes Version 3.6 of the class file, which ends with a complete revision history that starts with the file's creation in September 2004.

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}

\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.

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.

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.

Table 2.1: Document class options.

Option	Default?	Description
`9pt`		Set paper in 9-point type.
`10pt`	yes	Set paper in 10-point type.
`11pt`		Set paper in 11-point type.
`authoryear`	yes	If using the `natbib` package, produce author/year citations.
`authorversion`		Prepare an author version, with appropriate copyright-space text (see Section 3.8).
`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`		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.

Table 2.2: Packages used by the ACM SIGPLAN class.

Package	Used
`mathtime`	when the '`times`' and '`mathtime`' class options are specified
`natbib`	when the '`natbib`' class option is specified

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}
\copyrightdoi{nnnnnnn.nnnnnnn}

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

\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}

\begin{CCSXML}
<ccs2012>
<concept>
<concept_id>10010147.10010178.10010187.10010195</concept_id>
<concept_desc>Computing methodologies~Ontology engineering</concept_desc>
<concept_significance>500</concept_significance>
</concept>
<concept>
<concept_id>10011007.10011006.10011008.10011009.10011011</concept_id>
<concept_desc>Software and its engineering~Object oriented languages</concept_desc>
<concept_significance>500</concept_significance>
</concept>
<concept>
<concept_id>10011007.10011006.10011008.10011024.10011027</concept_id>
<concept_desc>Software and its engineering~Control structures</concept_desc>
<concept_significance>100</concept_significance>
</concept>
<concept>
<concept_id>10003752.10010124.10010125.10010126</concept_id>
<concept_desc>Theory of computation~Control primitives</concept_desc>
<concept_significance>300</concept_significance>
</concept>
</ccs2012>
\end{CCSXML}

\ccsdesc[500]{Computing methodologies~Ontology engineering}
\ccsdesc[500]{Software and its engineering~Object oriented languages}
\ccsdesc[100]{Software and its engineering~Control structures}
\ccsdesc[300]{Theory of computation~Control primitives}

\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., `June 12--15, 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.

▷ `\copyrightdoi{`*nnnnnnn.nnnnnnn*`}`

This command specifies the Digital Object Identifier (DOI) for your paper.

The printer of the proceedings will supply you with the information required for all four of the commands described in this section, so you can specify it before you submit camera-ready copy; it may be omitted otherwise. These commands are ignored if the '`preprint`' or '`nocopyrightspace`' class option is specified (Table 2.1) or if the `\toappear` command is used (Section 3.8).

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.

▷ `\begin{CCSXML}` ... `\end{CCSXML}`

▷ `\ccsdesc[`*significance*`]{`*general-concept~specific-concept*`}`

This environment and command produce metadata for the 2012 ACM Computing Classification System. An introduction to the system is provided at `http://www.acm.org/about/class/class/2012` and an interactive view for generating TEX code is provided at `http://dl.acm.org/ccs/ccs.cfm`.

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

This command produce metadata for the (deprecated) 1998 ACM Computing Classification System. 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, Permissions, and Rights

SIGPLAN papers include a "copyright space" at the bottom of the first column of text. This space has a fixed height (approximately 1 inch). The standard copyright text that appears in the copyright space includes the permission statement, conference name, conference date and location, copyright line, and DOI link. The copyright line includes the copyright year and copyright data.

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.

▷ `\toappear{`*text*`}`

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

▷ `\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.

▷ `\setcopyright{`*rights*`}`

This command specifies a standard permission statement corresponding to the chosen publication rights. Table 3.1 on page 14 presents the three options, reflecting current ACM publishing policies and author rights. More information about these options is available at `http://authors.acm.org/main.html`.

If you use this command, it must appear immediately following the `\copyrightdata` command or the `\copyrightdoi` command. Do not use `\permission` or `\toappear` with this command.

If none of the commands of this section are used, then the behavior is as if the `\setcopyright{acmlicensed}` command was used.

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

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.

Table 3.1: Publication rights and permission statements.

Publication rights	Permission statement and copyright line
`acmcopyright`	Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org. © YYYY ACM.
`acmlicensed`	Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than the author(s) must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org. © YYYY Copyright held by the owner/author(s). Publication rights licensed to ACM.
`rightsretained`	Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s). © YYYY Copyright held by the owner/author(s).

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 '`authoryear`' class option causes the `natbib` package to produce author/year citations. Specify the '`numbers`' class option if you would rather have numeric 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. You should also specify the '`nonatbib`' class option if you want to use the `natbib` package with a configuration other than those provided by `sigplanconf`.

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 bibliography is set in `\small` size.

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 Larger Bibliography

If you want the bibliography set in the normal text size, instead of in `\small` size, simply add this command before the `thebibliography` environment (or before then `\bibliography` command, if using BibTeX):

```
\renewcommand{\bibfont}{\normalsize}
\begin{thebibliography}{10}
```

7.3 Using the `natbib` Package

An excellent package for formatting bibliographies is the `natbib` package. The `sigplanconf` class loads and configures this package by default.

Two class options are provided to control the style of the citations produced by the `natbib` package: '`authoryear`' and '`numbers`'. (These class options are irrelevant if you use the '`nonatbib`' class option to cancel the use of the `natbib` package). Table 7.1 shows the format of the citations produced by the various available citation commands.

The '`authoryear`' class option, which is the default, produces author/year citations and leaves the bibliography entries plain, with no number or label. In more detail, it loads the `natbib` package with the `authoryear` package option and executes (the equivalent of) the command `\setcitestyle{aysep={}}`. The command affects the format of author/year citations so that there is no punctuation between the author and the year.

The '`numbers`' option produces numeric citations and numbers the bibliography entries. In more detail, it loads the `natbib` package with the `numbers`,

Table 7.1: Citation formats.

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

sort&compress, and square package options. The sort&compress package option affects the format of multiple citations given with a single \cite command so that they are ordered into the sequence in which they appear in the bibliography and consecutive citation numbers are expressed as ranges.

Authors wanting to configure the natbib package in ways other than those described above should use the 'nonatbib' class option and load the natbib package with appropriate package options in the prolog.

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, the natbib package 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/.

Appendix A

The \category Command

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