The **section** package[*]

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Leslie Lamport in writing LaTeX assumed that authors would write complete `.sty` (`.clo`) files to implement the design decisions for their publications. However, the overwhelming majority of LaTeX publications use the standard styles supplied by Lamport. These implement a particular set of typographic conventions, which while consistent are not of universal validity, for instance many publishers and authors would like a full stop: '4. Introduction' rather than '4 Introduction'.

   This file modifies the standard classes so that other conventions can be more easily implemented. Careful use of the file will allow a greater variation in the appearance of LaTeX documents.

0. Changes to section implementation.

The file redefines the way LaTeX deals with negative indents for section headings, placing the number in the margin and the heading itself flush with the margin. With negative indents it sets starred section headings flush (as it does when `\thesection` is empty. Standard LaTeX indenting can be produced by typing

```
>> \let\ifind\iffalse
```

This file's version can be reestablished by typing

```
>> \let\ifind\ifdim
```

   The file also changes the way LaTeX reacts to empty numbers when sections have non-negative indents, placing the heading where the number would go, rather than further indented (as in standard LaTeX). This effect can be removed by redefining an internal macro `\@makesvsec` (see below).

   The indents, pre- and postskips for section headings are placed in registers so that they are constant throughout a document and (just as the heading sizes) do not react

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[*]This manual corresponds to section.sty v1.4, dated 10 Mar 99.

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to surrounding size changes. You can change this back to ordinary LATEX behaviour by
\def ing them as macros rather than setting the register values (in that case you should
probably use \smaller\larger from SMALLER.STY for the \...size commands).

WARNING LATEX typesets headings that run on by manipulating \everypar. If you
make local changes to the heading style of such a section inside braces or a group you
must ensure that a non-empty paragraph occurs before the closing brace. Otherwise
some strange effects may occur, because the \everypar tokens will be evaluated outside
the group (this is a feature of LATEX, not of SECTION.STY). If your group ends with an
empty section of this type just follow it with \leavevmode or an explicit space: \␣.

A detailed description of the format of LATEX sectioning commands is given below (in
paragraph 9). This is partially taken from the file LATEX.TEX. We first list the macros
for local control which you can use without knowing this structure.

The file sets vertical distances that LATEX expressed in terms of 'em's and 'ex's in
equivalent '\baselineskip's, as 'em' is a measure of the horizontal size of a font and
'ex' is not a true measure of the full height of a line. Earlier vesions used 'ex's.

The original values are placed as comments.

1. Sizing commands for Parts, Chapters and Titles etc

These are set to \large or whatever

```
>> \chsize:    Chapter, Part Heading      (\LARGE\large)
>> \hdsize:    Chapter, Part Title Text   (\Huge\huge\LARGE)
>> \ttsize:    Title of Document          (\Huge\huge\LARGE)
>> \ausize:    Author                     (\LARGE\Large)
>> \dasize:    Date.                      (\Large\large)
>> \secsize:   Section                    (\Large\large)
>> \subsize:   Subsection                 (\large\normalsize)
```

subsubsection and below use \normalsize

2. Layout commands for headings.

- \hdpos: Positioning of heading (\raggedright) (\centering \raggedleft) (see
  section 9);

- counter hddpth (default 0)
  Maximum section level for \hdpos (chapters and parts *ALWAYS* use hdpos). To
  centre section headings and above:

  \let\hdpos\centering\setcounter{hddepth}{1}

- \fpind: Indenting of first paragraph after \Part \Chapter and also to over-
  ride setting via ⟨preskip⟩ for sections. \let to \@afterindenttrue to indent,
  \@afterindentfalse for flush, \relax: flush after \Part \Chapter, negative
  ⟨preskip⟩s; indented otherwise (LATEX default behaviour).

3. Fonts

- `\ttfnt`: font for title entries.

- `\hdfnt`: font for all other headings (Part, Chapter . . . subparagraph).

- `\fefnt`: font for theorem headings and description labels (`fe` = feature).

- `\thfnt`: font for theorem statements.

- `\pgfnt`: font for page numbers.

- `\mkfnt`: font for page headings (`mk` = mark).

- `\mkcse`: case for page headings. These can also be used to add other initial commands such as spaces or symbols.

4. Optional punctuation (standard|my preference)

These marks are transferred via auxiliary files for tables of contents etc. They should be `\def`'d if their current value is to be transferred, and `\let` if the value in force when the file auxiliary is read should be used.

```
>> \hddot   ({}|.)   (after inline headings, theorems etc)
>> \cpdot   (:|.)    (in figure/table captions - also apears in list of figures.
>> \nmdot   ({}|.)   (after section numbers etc)
```

If these are `\let` to a single letter they are not expanded in the `.toc...` files. So to remove `\cpdot` from list of figures:

`\let\cpdot\relax\listoffigures\let\cpdot:`

5. Spacing parameters.

The macros for chapters and parts have been altered so that all the vertical spacing commands are in a single macro in each case.

- `\part` inserts initial vertical space directly (preceded by `\hbox{}` if it is to be immovable) and passes the space between Part n and title in `\@tempskipa` and the space below the heading in `\@tempskipb`.

- Both `\chapter` and `\chapter*` call `\@makechapterhead{⟨chaptertitle⟩}`. This passes `{⟨chaptertitle⟩}` on to `\@makeschapterhead` together with the vertical spacing. Default setting is

  ```
  \def\@makechapterhead#1{%
    \hbox{}\@makeschapterhead{#1}{50\p@}{20\p@}{40\p@}}
  ```

`\hbox{}` makes first skip immovable, the first length is space above the heading, The second is the space between Chapter nn and the chapter title The third is the space below the heading. For both Part and Chapter the middle space is removed if either the section name or title are missing. If both are missing, the first space is also removed

- For sections and below the spaces are kept in registers: `\secpreskp` and `\secpsrskp` `\secindent` used for `\section` `\subpreskp` and `\subpstskp` `\subindent` used for `\subsection`/`\subsubsection` `\paragraph` uses `\subindent` `\subpreskp` `\parpstskp` `\subparagraph` uses `\parindent` `\subpreskp` `\parpstskp`

- `\secindent` `\subindent`   Heading indentation

- `\secpreskp` `\subpreskp`   Space before

- `\secpstskp` `\subpstskp` `\parpstskp`   Space after.

6. Internal modifications

Sections with negative indents have heading flush with margin.
   If `\thesection` is `\empty`

`\let\thesection\empty` or `\def\thesection{}`

then `section` does not step the section counter. If the section produces empty output for a value then the section will start flush at the margin or `\secindent` if it is positive and there will be no `\nmdot`. It will produce (flush) page headings and a table of contents entry. Similarly if `\thechapter` or `\thepart` are defined to be empty they will suppress the heading line 'Chapter...' and not step the counter. To restore standard LaTeX behaviour temporarily define `\thesection` to be `\empty`

`\def\thesection{\empty}`

In that case you can adjust post number spacing in the heading.

`\section[Heading]{\hskip-1em Heading}`

You can also redefine `\@makesecdot` see paragraph 7.
   WARNING `\let`ting `\thesection` etc to an unexpandable token (like `\relax`) will cause strange effects under LaTeX because its value will not be expanded.
   `\maketitle` suppresses page headings (`\thispagestyle{empty}`) and only resets `\@title` etc locally. So place in a group if you want to preserve these for later reference (eg. in headers).

7. New internal macros

Place any modifications in the section `REDEFINITIONS` of the main code

- `\@secdot` contains section number and `\nmdot` if the number is non-empty.

- `\@makesecdot{`⟨*NAME*⟩`}` defines `\@secdot`. To make LaTeX step the section counter independently of the definition of `\thesection` and always print `\nmdot`:

  ```
  \def\@makesecdot#1{\refstepcounter{#1}%
      \edef\@secdot{\csname the#1\endcsname}}
  ```

  If you want `\nmdot` suppressed when `\thesection` produces no output:

  ```
  \def\@makesecdot#1{\refstepcounter{#1}%
    \edef\@secdot{%
      \expandafter\@gobifnul\csname the#1\endcsname\nmdot}}
  ```

- `\@makesvsec{`⟨*INDENT*⟩`}` defines the `\@svsec` macro used by LaTeX to typeset the section number...Its parameter is the indent so that it can react differently to negative indents. (it does *NOT* make the indent). To obtain standard LaTeX behaviour:

  ```
  \def\@makesvsec#1{\def\@svsec{\@secdot\quad}}
  ```

  To make positioning commands apply to the heading ignoring the number:

  ```
  \def\@makesvsec#1{\def\@svsec{\llap{@secdot\quad}}}
  ```

  Do *NOT* forget the `#1`.

- `\@contmark{`⟨*NAME*⟩`}{`⟨*LEVEL*⟩`}{`⟨*HEADING*⟩`}` makes contents line and section-mark.

Contents headlines are defined by

- `\@tocheadline`   This allows these lines to be adjusted similarly to the `\@dotted-tocline` commands for other contents lines. The format of these is defined below (in paragraph 11).

- `@tocpagenum#1` sets `#1` flush right in `\@tocheadline`.
  Redefine (`\let\@tocpagenum\@gobble`) to remove page numbers.

  ```
  \def\l@part{\@tocheadline{0}{2.25em}{3em}{\let\@tocpagenum\@gobble
          \centering\large\bf}}
  ```

  Centres parts lines of contents but leaves chapters unchanged

```
\def\l@part{\@tocheadline{0}{2.25em}{3em}{\let\@tocpagenum\@gobble
        \centering\def\numberline##1{\hskip-\secindent
        \hbox to\secindent{##1\hfil}}\large\bf}}#
```

Same but centring ignores part number.

```
\def\l@part{\@tocheadline{0}{2.25em}{3em}{\let\@tocpagenum\@gobble
        \centering\def\numberline##1{\hfilneg
        \hbox to\z@{##1\hss}\hfil}\large\bf}}
```

Centres heading with number flush left
Contents lines use `\secindent` as a temporary register

- `\makeheading` (set to `\section*`, `\chapter*`) Makes headings for contents, index etc. To put Contents itself in the contents list, redefine (locally):

  `\let\thesection\empty\let\makeheading\section`

8. Additional macros

- `\@ifempty{⟨test⟩}{⟨yes⟩}{⟨no⟩}` like `\@ifundefined` but tests for empty (fails iff test starts with ~ of catcode 12 (other)).

- `\@gobifnul{⟨a⟩}{⟨b⟩}` = `\@ifempty{⟨a⟩}{}{⟨a⟩⟨b⟩}`.

9. Description of sectioning values

`\@startsection{⟨NAME⟩}{⟨LEVEL⟩}{⟨INDENT⟩}{⟨PRESKIP⟩}{⟨POSTSKIP⟩}`
               `{⟨STYLE⟩}⟨optional *⟩[⟨ALTHEADING⟩]{⟨HEADING⟩}`
Generic command to start a section.

⟨*NAME*⟩	: e. g., 'subsection' must be the name of a section counter
⟨*LEVEL*⟩	: a number, denoting depth of section – section = 1; number increases down the hierarchy.
⟨*INDENT*⟩	: Indentation of heading from left margin
⟨*PRESKIP*⟩	: Absolute value = skip to leave above the heading. If negative, then paragraph indent of text following heading is suppressed.
⟨*POSTSKIP*⟩	: if positive, then skip to leave below heading, else negative of skip to leave to right of run-on heading.
⟨*ALTHEADING*⟩	: for page headings and contents.
⟨*STYLE*⟩	: commands to set style

If '*' missing, then increments the counter. If it is present, then there should be no ⟨*ALTHEADING*⟩ argument. Uses the counter 'secnumdepth' whose value is the highest section level that is to be numbered and entered into `\@dottedtocline`.

10. Treatment of Section Entries

⟨*NAME*⟩ (fixed) Determines the counter to use.

⟨*LEVEL*⟩ (fixed) If level is greater than `\counter{secnumdepth}` (default 2) no index-entry or number

⟨*INDENTS*⟩: `\secindent` (sections), `\subindent` (subsections, ... ,paragraphs). Sub-paragraphs have `\parindent` fixed. These are dimensions.

Recommended: $\pm$`\parindent` or $0\,\text{pt}$

If indent is negative then SECTION.STY causes the section number to be set flush right that distance from margin. Heading or text follows at the margin itself.

Unnumbered headings are set at the margin if indent is negative. If the indent is non-negative they are set flush left with the number position.

⟨*PRESKIPS*⟩ `\secpreskp` (sections), `\subpreskp` (subsections ... subparagraphs)

⟨*POSTSKIPS*⟩ `\secpstskp` (sections), `\subpstskp` (subsections, subsubsections) `\parpstskp` (paragraphs, subparagraphs)

Recommended: leave ⟨*PRESKIPS*⟩' abs values unchanged, They are set $-$ve to have flush first paragraphs. Use `\secpreskp`–`\secpreskp` to indent them. Recommended: set ⟨*POSTSKIPS*⟩ to $-1\,\text{em}$ or $-$`\parindent` to make sections run on.

By assigning these values to registers SECTION.STY makes them independent of the surrounding font and size. Set the registers if you want this, redefine them as macros if you want them to be font and size dependent.

⟨*STYLE*⟩ `\secsize` `\subsize` `\hdfnt` size and fonts. `\secsize` for sections, `\subsize` for subsections. Subsubsections and below have `\normalsize` (fixed). `\hdfnt` is universal for all headings.

11. Contents entries.

```
\@tocheadline{⟨LEVEL⟩}{⟨PRESKIP⟩}{⟨INDENT⟩}{⟨STYLE⟩}
            {⟨ENTRY⟩}{⟨PAGENUM⟩}
\@dottedtocline{⟨LEVEL⟩}{⟨MARGIN⟩}{⟨INDENT⟩}{⟨ENTRY⟩}{⟨PAGENUM⟩}
```

⟨*LEVEL*⟩	: determines if entry made.
⟨*PRESKIP*⟩	: vertical gap above.
⟨*INDENT*⟩	: This must leave enough room for the chapter or section number It is added to the margin for the next level.
⟨*MARGIN*⟩	: Left margin inherited from level above (zero for headlines).
⟨*STYLE*⟩	: Font sizing and setting.

LaTeX assumes that the ⟨*ENTRY*⟩ for sections be defined by a macro `\l@section`. These are defined in the standard document styles but can be changed. All entries of the `\l@section` commands are fixed. SECTION.STY does not change the commands using `\@dottedtocline` in the style file. Those that do not do so (`\l@part`, `\l@chapter`) are modified to use `\@tocheadline`.

⟨*INDENT*⟩ for sections in article and chapters in report is rather tight at 1.5 em. If you increase it should also increase the ⟨*MARGIN*⟩S for lower sections.

12. The following internal LaTeX macros are redefined:

`\part \@part \@spart`	(also `\fi` moved)
`\@endpart \@chapter`	
`\@schapter`	
`\@makechapterhead`	functions of these have been significantly changed.
`\@makeschapterhead`	
`\ps@headings`	
`\ps@myheadings`	
`\section \subsection`	
`\subsubsection`	
`\paragraph`	
`\subparagraph`	
`\thebibliography`	
`\theindex`	
`\@begintheorem`	
`\@oparbegintheorem`	
`\@makecaption`	optional style features added
`\@startsection`	`\fpind` and does not pass `#4` to `\@sect`, `\@ssect`
`\@sect, \@ssect`	ignored parameter removed
	`\llap \@secdot` used to adjust spacing if `\p@section` defined used for number style. calls `\@makesecdot`
	`\@sect` only: `\@makesvsec` and `\@contmark`, which is moved in `\@svsechd` so that `\unskip` in `\@xsect` works).
`\maketitle \@maketitle`	suppress page number, reset `\@title`. . . locally
`\numberline`	adds space after number, so overfull box if too close to heading.

Changes

Ver 1.3 (3. Apr 98) If `\secindent` < 0, then `\section*` produces a flush heading, not outdented. `\hdpos` takes level as parameter and is used for all sections, not just `\part` and `\chapter`. 'ex' measurements replaced by `\baselineskip` equivalents.

Ver 1.31 Bugfix: `\relax` added to `\@alph`, `\@Alph` to enable use with `\@ifempty` test.

Ver 1.32 Bugfixes: `\hdpos` added to `\@ssect`, unused macro `\secpos` removed, `\nobreak` added after `\thechapter` in `\makechapterhead`

Ver 1.4 `\hdpos` made simple macro again. Counter `\hddepth` determines when it should be used. Functions of `\@makechapterhead`, `\@smakechapterhead` changed to make editing vertical spacing of chapters easier. `\part\@part\@spart` rewritten so that all spacing info in `\part`. `\part` calls `\@spart` which finishes off the heading.

Memory use < 200 words.