The nccsect package∗†

Alexander I. Rozhenko
rozhenko@oapmg.sscc.ru

2006/01/19

Contents
1 The Scope and Objectives .............................................. 2
2 User Interface .............................................................. 3
3 Create New Section Styles .............................................. 7
4 Declare Sections and Captions ....................................... 8
5 Declare TOC-Entries ..................................................... 10
6 Declare New Float Types ............................................... 12
7 Epigraphs and Related Staff ........................................... 12
8 Declare Part ............................................................... 13
9 The Implementation ...................................................... 15
  9.1 The Kernel ............................................................ 15
  9.2 Section Making Commands .......................................... 18
  9.3 Create Section Styles ............................................... 21
  9.4 Make Sections with Dynamic Control ............................ 23
  9.5 Make the Main Section .............................................. 24
  9.6 Make Part in Book-like Classes ................................. 28
  9.7 Make Captions ........................................................ 30
  9.8 Declare Sections and Captions ................................... 35
  9.9 Caption Patches ....................................................... 37
  9.10 Declare TOC-Entries .............................................. 38
  9.11 Service and Defaults .............................................. 42

∗This file has version number v1.5, last revised 2006/01/19.
†Great thanks to Denis G. Samsonenko <d.g.samsonenko@gmail.com> who proposed many significant improvements to the package.
1 The Scope and Objectives

The package provides a new implementation of sections, captions, and toc-entries independent on the \LaTeX kernel. The reasons for this are concerned with the following disadvantages of the standard \LaTeX implementation:

1 Standard \LaTeX sectioning commands can prepare display sections in the single style: justified paragraph with hang indented number. To change this style to another one (centered, par-indented, or else), you need to re-implement the internal \texttt{@sect} command. It is no control for this style on user’s level.

2 If you want to customize the presentation a number in a section (for example, put a paragraph mark § before a number or put a point after a number), you at least need to re-implement the \texttt{@sect} command.

3 The sectioning commands provide no straightforward control for running headings. The marking commands like the \texttt{\sectionmark} solve this problem partially. Using them within parameter of sectioning command, you can change the mark properly, but this solution does not work in complicated documents which use first and last marks appearing on a page. The safe solution consists in direct replacement a mark prepared within the \texttt{@sect} command to a custom mark.

4 Special efforts are required to pass a section without number to the header and to the toc-list. There is no simple solution providing this action.

5 Captions for tables and figures are prepared in just the same way, although, they are usually used in different places of floating environments: table captions start before a table, but figure captions go after a figure. So, the vertical skip inserted before a caption is unnecessary for table captions. The right solution is to design captions for different float types in different ways.

6 The star-form of captions is absent. It is useful when a document contains an alone figure or table. Moreover, in fiction books, unnumbered captions useful.

7 The design of toc-entries is hard for modifications. It is much better to calculate the skips in toc-entries on the base of prototyping technique instead of hard-coding them with absolute values. Moreover, the skips for nested sections must depend on higher level skips. For example, if we change skips for a section entry, the skips for subsection entries should be adjusted automatically.

The package eliminates above-mention disadvantages of the standard \LaTeX implementation. The commands implemented in it are divided into two levels: user level and design level. The user-level commands are intended for use within a document and the design-level commands are directed to class and package writers.
2 User Interface

The table below shows sectioning commands provided with standard \LaTeX classes. Every section has a level (an integer number). Sections can be printed in one of two modes: display or running mode. Display section is prepared as a separate justified paragraph having a hang indent if a section has a number. Running section starts a paragraph.

<table>
<thead>
<tr>
<th>Command</th>
<th>Level</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>\part</td>
<td>(-1) or 0(^{1})</td>
<td>display</td>
</tr>
<tr>
<td>\chapter</td>
<td>0(^{2})</td>
<td>display</td>
</tr>
<tr>
<td>\section</td>
<td>1</td>
<td>display</td>
</tr>
<tr>
<td>\subsection</td>
<td>2</td>
<td>display</td>
</tr>
<tr>
<td>\subsubsection</td>
<td>3</td>
<td>display</td>
</tr>
<tr>
<td>\paragraph</td>
<td>4</td>
<td>running</td>
</tr>
<tr>
<td>\subparagraph</td>
<td>5</td>
<td>running</td>
</tr>
</tbody>
</table>

\(\texttt{\textbackslash startsection}\{⟨level⟩\}\{⟨toc-entry⟩\}\{⟨title⟩\}\) or \(\texttt{\textbackslash startsection}\{⟨level⟩\}*\{⟨title⟩\}\)

The \(⟨\textit{level}⟩\) is a level of section. A negative level produces a part. The first command produces a numbered section (if the numbering depth allows this) and the last one produces a section without number. As for the standard \LaTeX sectioning, the first variant of the \texttt{\textbackslash startsection} command additionally passes their arguments to the section mark command (if the mark command exists) and to the aux-file. The last variant does no additional actions.

NOTE: The package allows declaring additional section levels. They, of course, have no predefined alias names as standard section levels.

\(\texttt{\textbackslash sectionstyle}\{⟨\textit{type}⟩\}\{⟨\textit{style}⟩\}\)

The \texttt{\textbackslash sectionstyle}\{⟨\textit{type}⟩\}\{⟨\textit{style}⟩\} command allows change a style of subsequent display sections of the given \(⟨\textit{type}⟩\):

- main the section of zero level (\texttt{\textbackslash part} or \texttt{\textbackslash chapter});
- section the \texttt{\textbackslash section};
- subsection the \texttt{\textbackslash subsection};
- subsubsection the \texttt{\textbackslash subsubsection};
- paragraph the \texttt{\textbackslash paragraph};
- subparagraph the \texttt{\textbackslash subparagraph};
- section@vi the section of 6th level, and so on.

\(^{1}\)The \texttt{\textbackslash part} command has zero level in article-like classes and has the negative level in book-like classes. In book-like classes a part is prepared on a separate page.

\(^{2}\)The \texttt{\textbackslash chapter} command is defined in book-like classes only.
If the \textit{\textlangle type\textrangle} parameter is omitted, the command acts on all subsequent display sections except those having a specialized style. The following styles are predefined:

- \textit{\texttt{hangindent}} standard LaTeX style (default);
- \textit{\texttt{hangindent*}} the same as \texttt{hangindent}, but ragged right;
- \textit{\texttt{parindent}} title indented on \texttt{\parindent};
- \textit{\texttt{parindent*}} the same as \texttt{parindent}, but ragged right;
- \textit{\texttt{hangparindent}} \texttt{\parindent} indented with hang number;
- \textit{\texttt{hangparindent*}} the same as \texttt{hangparindent}, but ragged right;
- \textit{\texttt{center}} centered title;
- \textit{\texttt{centerlast}} justified title without indent whose last line is centered.

You can apply the \texttt{\sectionstyle} so many times in the document as you want. This command complies with standard \LaTeX{} scoping rules.

\textbf{NOTE:} The section style acts on display sections that were prepared with the dynamic alignment (see Section 4). By default, the sections of levels from 0 to 3 have the dynamic alignment. The section of zero level has no hang indentation.

\texttt{\sectiontagsuffix}\[\textlangle type\textrangle\}\{\langle style\rangle\} command allows change a suffix inserted after number tag for sections of the given \texttt{\langle type\rangle}. If the \texttt{\langle type\rangle} parameter is omitted, the command acts on all subsequent sections except those having a specialized tag suffix.

The paragraph indentation after a display section is controlled with the \texttt{\indentaftersection} and \texttt{\noindentaftersection} commands. The first one allows and the last one suppresses indentation after section. The commands act on the subsequent display sections in the scope of their use.

\texttt{\aftersectionvspace}\{\langle distance\rangle\} command replaces the space inserted by a previous sectioning command with the \texttt{\vspace}\{\langle distance\rangle\}. It works in the only case when goes right after a command producing a display section. Otherwise, the specified \texttt{\langle distance\rangle} is ignored. The following example shows how to customize the \texttt{\subsection} command in such a way that the distance between it and a previous \texttt{\section} will be 3ex plus .5ex minus .2ex:

\begin{verbatim}
\renewcommand{\subsection}{
  \aftersectionvspace{3ex plus .5ex minus .2ex}
  \startsection{2}}
\end{verbatim}
Margins of a display section can be adjusted using the command

\adjustsectionmargins\{⟨left skip⟩\}\{⟨right skip⟩\}

The ⟨left skip⟩ and ⟨right skip⟩ are added to the left and right margins of the subsequent section if it is a display section. Otherwise, this command is ignored.

Modifiers. The customization of a number tag and running head of a concrete section is provided with so-called modifiers. A modifier is a command acting on the nearest sectioning command going after it. Usually, the modifiers are placed just before a sectioning command. All modifiers act with non-starred versions of sections. If the next sectioning command is starred, modifiers are ignored.

\norunninghead

The \norunninghead modifier suppresses generation of running head for the next non-starred section, i.e. it skips the call of section mark command in the next section.

\runninghead{⟨running-title⟩}

The \runninghead modifier overrides a text going to the running head when a new non-starred section starts and an appropriate \pagestyle is in use. This command has higher priority than the \norunninghead.

\noheadingtag

The \noheadingtag modifier suppresses a number tag in the next section, but all other attendant actions are executed (writing to the aux-file and updating the running head).

\headingtag{⟨tag⟩}

The \headingtag modifier overrides a number tag in the next section. It has the higher priority than \noheadingtag. Overridden section tag can be referred with the \label command. All fragile commands in the overridden tag should be protected.

\headingtag*

The \headingtag modifier prepares a number tag as is, ignoring the \headingtag* tag style, prefix, and suffix. The aux-file and running head are not updated in this case.

\skipwritingtoaux

The \skipwritingtoaux suppresses writing to aux-file for the next section command.

NOTE: All modifiers use global settings.

\caption
\caption*

The captions are implemented in this package using the same technique as the sectioning commands. There are two versions of caption command allowed within floating environments:

\caption\{⟨toc-entry⟩\}\{⟨title⟩\} and
\caption*\{⟨title⟩\}

The first one works in the same manner as the standard \LaTeX \caption command. Its starred version prepares a caption without number and preceding words ‘Figure’ or ‘Table’.

You can use line breaking commands in captions. But in this case, you need to set the optional ⟨toc-entry⟩ parameter to avoid translation errors.

Caption appearance can be customized. You can customize either all caption types or only selected caption type. The following commands do this:
\captionstyle\{\{style\}\}  \captiontagstyle\{\{style\}\}  \captiontagsuffix\{\{suffix\}\}  \captionwidth\{\{length\}\}

If \{type\} is omitted and these commands appear out of float environments, they are applied to all types. A command without \{type\} applied within a float environment is considered as a command having the type of this environment. Typed version of a command has a precedence before a non-typed one.

\captionstyle specifies a style the caption text will be formatted:

default standard \LaTeX's style,
para simple paragraph without paragraph indent,
left all lines are flushed left,
center all lines are centered,
right all lines are flushed right, or
centerlast as para, but the last line is centered.

\captiontagstyle specifies a position of caption tag:

para tag is formatted together with text,
left tag is adjusted to the left in a separate line,
center tag is centered in a separate line, or
right tag is adjusted to the right in a separate line.

\captiontagsuffix specifies a suffix after caption tag.
\captionwidth specifies a width of caption.

Defaults:

\captionstyle{default}
\captiontagstyle{para}
\captiontagsuffix{::hspace{0.7em plus 0.2em minus 0.1em}}
\captionwidth{\linewidth}

NOTE: The above-described section modifiers can be used with non-starred captions. Although, the \runninghead and \norunninghead commands have no sense with captions, but you can do them working if define a \figuremark{} or \tablemark{} command.

\SetTOCStyle\{\{declarations\}\} command allows customize the table of contents and other content lists. For example, the declaration

\SetTOCStyle{\small}
specifies that content lists will be prepared with the \textit{small} font. This command is allowed in the preamble only.

The appearance of Chapter/Appendix prefix in a table of contents and in a running head can be customized using the command

\begin{verbatim}
\chapterprefixstyle{\textit{appearance list}}
\end{verbatim}

The \textit{appearance list} can contain up to two words, namely \textit{header} and/or \textit{toc}, delimited with a comma. Using them, you can set a prefix-style for the header and/or the table of contents, respectively. By default, the prefix-style is specified for the header only. This command is allowed for book-like classes in which the \texttt{chapter} command is defined. It can be used in the preamble only.

\section{Create New Section Styles}

Along with 8 predefined section styles, you can easy create more styles.

The command

\begin{verbatim}
\newplainsectionstyle{\textit{name}}{\textit{indent}}{\textit{pos}}{\textit{left skip}}{\textit{right skip}}
\end{verbatim}

creates a new paragraph-like section style with the given \textit{name}. It has the \textit{indent} paragraph indent and margins specified with \textit{left skip} and \textit{right skip} lengths. To prepare a centered style, the optional \textit{pos} parameter should be equal to \texttt{c}. In this case, left and right margins must have an additional \texttt{1fil} glue. If optional parameter is \texttt{r}, the left margin must have an additional \texttt{1fil} glue.

Four of predefined section styles are created using this command as follows:

\begin{verbatim}
\newplainsectionstyle{parindent}{0pt}{c}{0pt}{0pt pluss 1fil}
\newplainsectionstyle{parindent*}{0pt}{c}{0pt plus 1fil}{0pt plus 1fil}
\newplainsectionstyle{center}{0pt}{c}{0pt plus 1fil}{0pt plus -1fil}
\end{verbatim}

The command

\begin{verbatim}
\newhangsectionstyle{\textit{name}}{\textit{min tag width}}{\textit{pos}}{\textit{left skip}}{\textit{right skip}}
\end{verbatim}

creates a new hang-indented section style with the given \textit{name}. The \textit{min tag width} length specifies a minimum width of the section tag. If a width of section tag is less than this parameter value, a white space will be inserted surround the tag to have the required width. The method of inserting a white space is the same as in the \texttt{makebox} command. It is controlled with the optional \textit{pos} parameter (\texttt{l}, \texttt{c}, or \texttt{r}; \texttt{l} default). Other parameters have the same meaning as in the previous command.

Four of predefined section styles are created using this command as follows:
3.1 This subsection was prepared in the margin style

The definition of the margin style is the following:

\newhangsectionstyle{margin}{2in}[r]{-2in}{0pt plus 1fil}

3.2 This subsection was prepared in the list style

The definition of the list style is the following:

\newhangsectionstyle{list}{1in}{0pt}{1in plus 1fil}

3.3 This subsection was prepared in the flushright style

The definition of the flushright style is the following:

\newplainsectionstyle{flushright}{0pt}[r]{1in plus 1fil}{0pt}

4 Declare Sections and Captions

To define or redefine a section or caption command, you can use in the preamble of your document the following command:

\DeclareSection{(level)}{(type)}{(indent)}{(prefix)}{(beforeskip)}{(afterskip)}{(style)}

(level) a section level number. Zero and negative values are interpreted as follows: 0 means declaring the \chapter or \part command depending on a class used; a negative value means declaring a caption.

(type) a section type. For zero level, this parameter is ignored. For negative level, it defines a float type (i.e., figure or table). For positive level, it defines a counter name. The name of marking command is composed from the type as \langle type\rangle mark.

(indent) indentation of heading from the left margin (zero is default). Ignored for negative levels.
a prefix inserted before a section-number tag (usually empty). In chapter, part, or caption declaration commands, it is inserted right before the tag name, e.g., before the \@chapapp, \partname, \figurename, or \tablename command.

the skip to leave above the heading.

if positive, then the skip to leave below the heading, else negative of skip to leave to right of running heading. The negative value is allowed for positive section levels only.

commands to set a style. The last command in this argument may be a command such as \MakeUppercase that takes an argument. The section heading will be supplied as the argument to this command. So setting it to, say, \bfseries\MakeUppercase would produce bold, uppercase headings.

Sections having nonnegative \langle level \rangle and positive \langle afterskip \rangle are display sections. They are declared with the hangindent style and do not obey the \sectionstyle command.

To declare a display section having dynamic alignment controlled with the \sectionstyle command, use the star-version of the previous command:

\ DeclareSection*\{\langle level \rangle\}{\langle type \rangle\}{\langle prefix \rangle\}{\langle beforeskip \rangle\}{\langle afterskip \rangle\}{\langle style \rangle\}

A negative \langle afterskip \rangle has no meaning in this case.

To prepare bold section headings, you can use the \bf command in the \langle style \rangle parameter. It tries to set everything bold. Its definition is the following:

\newcommand{\bf}{\normalfont\bfseries\mathversion{bold}}

Examples of section and caption declarations:

\ DeclareSection{-2}\{table\}\{0pt\}\{10pt\}\{}
\ DeclareSection{-1}\{figure\}\{10pt\}\{0pt\}\{}
\ DeclareSection*\{1\}\{section\}\{3.5ex plus 1ex minus .2ex\}\%
\ 2.3ex plus .2ex\}\{\Large\bf\}

Here we declare the table caption command with zero skip before it and 10pt skip after it. On contrary, the figure caption command produces 10pt skip before it and zero skip after it. The \section command is declared with dynamic horizontal alignment. It is prepared in the \Large font with everything bold.

The \SectionTagSuffix{\langle suffix \rangle} command specifies a default suffix inserted after a section number tag. For example, the command

\SectionTagSuffix{.\quad}
sets the decimal point after every section number tag. Sections of 0th level ignore this suffix. The default tag is \text{quad}. The command can be used in the preamble only.

\RunningSectionSuffix\quad\text{RunningSectionSuffix}\{\text{suffix}\} command specifies a suffix inserted after a running section title right before the skip after section. It can be used in the preamble only. The default value is an empty suffix.

\norunningsuffix To remove the suffix after a running section, put the \norunningsuffix modifier in the parameter of running section.

\CaptionTagSuffix\quad\text{CaptionTagSuffix}\{\text{suffix}\} command specifies a default suffix inserted after a caption number tag. It can be used in the preamble only. The default caption tag is:

\CaptionTagSuffix{\textbackslash hspace{0.7em plus 0.2em minus 0.1em}}

5 Declare TOC-Entries

\DeclareTOCEntry To declare an entry of table of contents or other lists (list of figures or list of tables), use the following command (in the preamble only):

\DeclareTOCEntry{\{level\}}{\{action\}}{\{prefix\}}{\{prototype\}}{\{style\}}{\{next\}]

\{level\} a section level number. For zero and negative level the following commands are created: 0 means \texttt{\textbackslash chapter} or \texttt{\textbackslash part} depending on class used; −1 means \texttt{\textbackslash figure}; −2 means \texttt{\textbackslash table}. If level is greater than 5, the name of toc-entry command is generated as \texttt{\textbackslash section\{level-in-roman\}}, i.e., the toc-entry of 6th level is \texttt{\textbackslash section\{vi\}}.

\{action\} commands applied before entry is produced (usually empty).

\{prefix\} text inserted before the section number (usually empty).

\{prototype\} prototype of number for alignment the toc-entry body. The hang indent of this toc-entry will be equal to the width of

\{style\}\{\{prefix\}\{prototype\}\{numberline-suffix\}\}

\{style\} commands to set a style. The last command in this argument may be a command such as \texttt{\textbackslash MakeUppercase} that takes an argument. The produced entry will be supplied as the argument to this command. So setting it to, say, \texttt{\textbackslash bfseries\textbackslash MakeUppercase} would produce bold, uppercase entry. This style is applied to the number also and to the page number. To apply different styles to the text of entry and to its page number, use in this parameter the command

\applystyle{\{text-style\}}{\{number-style\}}
prototype for left margin adjustment for an entry of the next level. Default is the hang indent of the current toc-entry.

A toc-entry is produced within a group. The \NumberlineSuffix{⟨calc-suffix⟩}{⟨actual-suffix⟩} command allows customize a skip inserted after numbers in TOC-like entries. The ⟨calc-suffix⟩ parameter is used in calculations of hang indent of toc-entries and the ⟨actual-suffix⟩ is really inserted at the end of number. The ⟨calc-suffix⟩ is usually wider than the ⟨actual-suffix⟩. The default is \NumberlineSuffix{\quad}{\enskip}. This command is available in the preamble only.

The \PnumPrototype{⟨prototype⟩} command is used for adjustment the right margin of the text of toc-entries in toc-lists. Default is \PnumPrototype{99}. If your document has more than 99 pages, use \PnumPrototype{999}. This command is available in the preamble only.

The \TOCMarginDrift{⟨increment⟩} command specifies a value of right-margin drift in TOCs. The increment is applied after the \@plus token in definition of right margin. Empty argument means no drift. Examples:

\TOCMarginDrift{2em}
\TOCMarginDrift{1fil}

The command can be use anywhere in the document.

This command is useful in the ⟨action⟩ parameter of the toc-entry declaration to produce the skip before a toc-entry equal to the skip before run-in sections.

The following example shows how toc-entries are declared in books:

\DeclareTOCEntry{-2}{}{}{9.9}{}% table
\DeclareTOCEntry{-1}{}{}{9.9}{}% figure
\DeclareTOCEntry{0}{\runinsectionskip\def\@dotsep{1000}\aftergroup\penalty\aftergroup\@highpenalty}{}{9}{\bff}% chapter
\DeclareTOCEntry{1}{}{}{9.9}{}{9.9}% section
\DeclareTOCEntry{2}{}{}{9.9.9}{}{9.9.9}% subsection
\DeclareTOCEntry{3}{}{}{}{}\qquad% subsubsection

The number prototype for figures and tables is ‘9.9’ here. The \l@chapter entry applies the run-in section skip before it and redefines the \@dotsep command to remove dot leaders. Using the \aftergroup command, it inserts the \@highpenalty after this toc-entry to avoid a page break at this point. The left margin adjustment after section and nested toc-entries is calculated here using the prototype of widest section number. This produces the following nesting:

1 Chapter
  1.1 Section
    1.1.1 Subsection
      Subsubsection
6 Declare New Float Types

The standard \LaTeX classes provide two types of floating environments: figures and tables. If you have prepared a new floating environment in some way (i.e., using the float package by Anselm Lingnau), you can declare a caption for the new float with the commands described in previous sections.

In books, when a new chapter starts, the \chapter command puts a special vertical skip to the contents of list of figures and of list of tables. This behaviour can be easy extended to new float types if you register them within this package. The registration is provided with the following command:

\RegisterFloatType{⟨float-type⟩}

After the float type is registered, you can declare a toc-entry for it using the negation of its registration number in the ⟨level⟩ parameter. The first new float type is registered third (after the figure and table). So, you must use ⟨level⟩ = −3 for it, −4 for the next registered float type and so on.

In the following example, we define a new float type, program, and prepare the caption and toc-entry commands for it. The caption of programs is supposed to be used at the beginning of program. So, we make it in the same manner as the table caption.

\documentclass{book}
\usepackage{float,nccsect}
\newfloat{program}{tp}{lop}[chapter]
\floatname{program}{Program}
\RegisterFloatType{program}
\DeclareSection{-3}{program}{}{0pt}{10pt}{}
\DeclareTOCEntry{-3}{}{}{9.9}{}

To produce a list of programs, you can then use the \listof command from the float package as follows:

\listof{program}{List of Programs}

7 Epigraphs and Related Staff

To put epigraph before any chapter, you can use two methods: low-level \beforechapter\epigraph \beforechapter{(anything)} hook or user-level command

\epigraph{⟨width⟩}{⟨text⟩}{⟨author⟩}

The last one applies a special formatting to epigraph and calls the first one. The \beforechapter hook inserts its contents at the beginning of page just before a chapter instead of spacing specified in the chapter declaration.

Formatting of user-level epigraph is provided with the following command

\epigraphparameters{⟨style⟩}{⟨width⟩}{⟨height⟩}{⟨author-style⟩}{⟨after-action⟩}
Here ⟨style⟩ is a style applied to the whole epigraph (font selection, spacing and positioning, etc.), the ⟨width⟩ is the default epigraph width (can be changed in an epigraph), the ⟨author-style⟩ is the style applied to the author’s signature, and the ⟨after-action⟩ is an action applied after the epigraph (usually a vertical spacing). All styles and actions are applied in the vertical mode. An ⟨author-style⟩ can finish with one-argument macro getting the author of epigraph and formatting it.

In \epigraphparameters, you can use the \epigraphwidth macro which contains a selected epigraph width.

The default style is:

\epigraphparameters{\StartFromHeaderArea\small\raggedleft}
{.45\linewidth}{5\baselineskip}
{\raggedleft\itshape}{\vspace{2ex}}

The \vspace* command applied at the beginning of page has one serious disadvantage: it skips more space that specified in its parameter. To remove this disadvantage, we introduce the \StartFromTextArea command that inserts a zero-height strut and allows use the \vspace command after it without troubles.

You can also extend the text area on the header if apply the \StartFromHeaderArea command at the beginning of page. Such action is useful in epigraphs: the first chapter’s page usually has an empty header and positioning an epigraph from the header is the good practice.

8 Declare Part

The \part command in book-like classes is the only sectioning command that cannot be prepared with the \DeclareSection command. So, we add special declarations to provide parts in books with features of other sectioning commands.

To redefine the \part in books, use the following declaration:

\DeclarePart{⟨before⟩}{⟨after⟩}{⟨prefix⟩}{⟨style⟩}

⟨before⟩ an action applied before a part at the beginning of page. It usually specifies a vertical skip \vfil and a paragraph style to be applied to the part number tag and title.

⟨after⟩ an action applied after the part. It usually contains \vfil and page finishing commands.

⟨prefix⟩ a prefix inserted before a part tag. It contains style commands to be applied to the tag and the \vspace command specifying a distance between the part tag and title. The \partname command goes right after the prefix.

⟨style⟩ a style to be applied to the part title. It can end with \MakeUppercase.

The default declaration of the \part is the following:

\DeclarePart{⟨before⟩}{⟨after⟩}{⟨prefix⟩}{⟨style⟩}
The \texttt{\StartFromTextArea} command prevents ignoring a vertical space at the beginning of page. All paragraphs of part title are centered horizontally using the \texttt{\centering} declaration, and the title is centered vertically using \texttt{\vfil} commands before and after it. A page after the part is made empty in two-side mode if it is even. The space after the part tag is set to \texttt{4ex}.

In Russian typesetting tradition, the part can be prepared in the same manner as a chapter, i.e. a text going after a part is prepared on the same page with the part title. It is easy to re-declare the part in such style. Let us start a part from the header and delimit it from the text with a decorative line. The following declaration does this:

\begin{verbatim}
\texttt{\StartFromHeaderArea\centering}
\texttt{\vspace{2mm}\noindent\hrulefill\par
\addvspace{5mm}}
\texttt{\vspace{.5em}\LARGE\bff}{\Huge\bff}
\end{verbatim}

But when a chapter goes right after a part, we need to place the part and chapter titles together on the same page. This can be applied using the \texttt{\beforechapter} hook:

\begin{verbatim}
\texttt{\beforechapter\part{\langle part title\rangle}}
\texttt{\chapter{\langle chapter title\rangle}}
\end{verbatim}

Modifiers stored in the parameter of \texttt{\beforechapter} hook will act on the \texttt{\part} command. Modifiers outside of \texttt{\beforechapter} will act on the \texttt{\chapter} command.

To produce a toc-entry command for a part, the following declaration is specified for book-like classes:

\begin{verbatim}
\texttt{\DeclareTOCPart\{\langle action\rangle\}\{\langle afterskip\rangle\}\{\langle prefix\rangle\}\{\langle prototype\rangle\}\{\langle style\rangle\}}
\end{verbatim}

\begin{description}
\item[\langle action\rangle] an action applied before the part toc-entry. It usually a skip before part. It is recommended to prepare it with \texttt{\NCC@secskip} command.
\item[\langle afterskip\rangle] a skip after this entry. If it is omitted, the default \texttt{\NCC@runskip} value is applied after this entry.
\item[\langle prefix\rangle] a prefix inserted before a part tag (usually empty).
\item[\langle prototype\rangle] a prototype of part tag used for calculation the hang indent in this entry.
\item[\langle style\rangle] a style applied to the whole text of entry and to the page number. The \texttt{\MakeUppercase} is allowed to finish this parameter. The \texttt{\applystyle} command can be used inside it to apply different styles to the toc-entry and the page number.
\end{description}
The default declaration of the part toc-entry is the following:

\DeclareTOCPart{\NCC@secskip{4ex \@plus .2ex}}%  
\def\@dotsep{1000}{}{\partname II}{\large\bf}  

9 The Implementation

The \texttt{afterpackage} package is used to add compatibility commands.

\begin{verbatim}
\RequirePackage{afterpackage}
\end{verbatim}

The package shares the following commands with the \texttt{nccthmm} package:

\verbatim
\NCC@secskip{⟨skip⟩} adds the ⟨skip⟩ before a section,
\NCC@runskip is a skip inserted before run-in sections.
\end{verbatim}

We protect the definitions of these commands with testing the \texttt{nccthmm} package to be already loaded.

\begin{verbatim}
\@ifpackageloaded{nccthmm}{%  
\def\NCC@secskip#1{%  
\if@noskipsec \leavevmode \fi \par  
\if@nobreak \everypar{}\else  
\addpenalty\@secpenalty  
\addvspace{#1}\fi  
\fi  
\def\NCC@runskip{2.75ex \@plus 1ex \@minus .2ex}  
\end{verbatim}

This command is useful in toc-entries:

\begin{verbatim}
\newcommand{\runinsectionskip}{\NCC@secskip{\NCC@runskip}}
\end{verbatim}

9.1 The Kernel

We start with declaring the section controls (modifiers):

\verbatim
\NCC@nosectag true if \noheadingtag is applied;
\NCC@secstartag true if \headingtag\{⟨tag⟩\} is applied;
\NCC@sectag saves a value of the \headingtag parameter;
\NCC@nosecmark true if \norunninghead is applied;
\NCC@secmark{⟨mark-command⟩} executes the ⟨mark-command⟩ with the parameter of \runninghead command;
\NCC@noaux true if \skipwritingtoaux is applied.
\end{verbatim}
We reset all controls globally, but in the `beforcchapter` hook we need to reset them locally. So, we reset all controls using the `\NCC@global` modifier which value is `global` by default.

This command resets all controls to default values. It must be applied at the end of every section command.

```
\let\NCC@global\global
\NCC@sec@reset@controls
```

User interface to section controls:

```
\newcommand{\norunninghead}{\NCC@global\NCC@nosecmarktrue}
\newcommand{\runninghead}[1]{\NCC@global\def\NCC@secmark{#1}}
\newcommand{\noheadingtag}{\NCC@global\NCC@nosectagtrue}
\newcommand{\headingtag}{\@ifstar{\NCC@global\NCC@secstartagtrue\NCC@setsectag}{\NCC@setsectag}}
\def\NCC@setsectag#1{\NCC@global\def\NCC@sectag{#1}}
\newcommand{\skipwritingtoaux}{\NCC@global\NCC@noauxtrue}
```

The `\NCC@makesection{⟨type⟩}{⟨level⟩}{⟨toc-entry⟩}{⟨toc-action⟩}` produces a section or caption. It analyzes the modifiers and customizes sections or captions. The `⟨toc-action⟩` parameter contains an attendant action that must be applied at the end of macro. It writes a toc-entry to aux-file.

The command uses the following hooks that must be prepared before its call:

```
\NCC@makesectag{⟨value⟩} produces a tag in `@svsec` using the given value;
\NCC@make{⟨action⟩} makes a section or caption heading and applies the `⟨action⟩` after heading. Before the call of this command, the `@svsec` macro is prepared (it contains a prepared tag).
```

We start from the case when the `\headingtag*{⟨tag⟩}` modifier was applied and the section tag was saved in the `\NCC@sectag` macro. We apply the `\NCC@make` procedure with the given section tag. Attendant actions are ignored for this case.
Prepare a tag creation command in the \textbf{\texttt{\textit{the} (type)}} macro. We can do some temporary changes here that will be restored at the end of macro. The restore hook is prepared in the \NCC@restsec command.

\ifx\NCC@sectag\relax
The \noheadingtag case: we temporary set the \texttt{secnumdepth} counter to very low negative value. This prevents numbering this section:

\edef\NCC@restsec{
oexpand\c@secnumdepth \the\c@secnumdepth\relax}
\c@secnumdepth -1000

The ordinary case: No restore actions is necessary here.

\else
\let\NCC@restsec\relax
\ifnum#2>\c@secnumdepth \else\refstepcounter{#1}\fi
\fi

The \headingtag{\langle tag\rangle} case: we temporary let the \texttt{\textit{the} (type)} macro to be equal to the \NCC@sectag command produced by the \headingtag, save the original value in the \NCC@thesec command, and prepare the \NCC@restsec macro.

\else
\expandafter\let\expandafter\NCC@thesec\csname the#1\endcsname
\def\NCC@restsec{\expandafter\let\csname the#1\endcsname\NCC@thesec}
\expandafter\let\csname the#1\endcsname\NCC@sectag
\protected@edef\@currentlabel{\NCC@sectsag}
\fi

Prepare section tag in the \texttt{\@svsec} command:

\ifnum #2>\c@secnumdepth
\let\@svsec\@empty
\else
\protected@edef\@svsec{\protect\NCC@makesectag{\csname the#1\endcsname}}
\fi

We cannot do the marking right now because the producing of section can be suspended to the beginning of the nearest paragraph (in run-in sections). So, we need to prepare a mark action in a command that will save its state as long as necessary. This command is \NCC@makemark.

\let\NCC@makemark\@empty
\@ifundefined{#1mark}{\%}{\ifx\NCC@secmark\relax
17
\def\NCC@restsec{\protect\NCC@makemark{\csname the#1\endcsname}}
\fi
\fi
Ordinary case: prepare the section mark with the \textit{\langle toc-entry \rangle} parameter.

\begin{verbatim}
69 \ifNCC@nosecmark \else
70 \def\NCC@makemark{\csname #1mark\endcsname{#3}}%
71 \fi
\end{verbatim}

The \texttt{\runninghead{\langle heading \rangle}} case: pass the mark command in the parameter of \NCC@secmark. We need to save the \NCC@secmark value in some command and pass this command within \NCC@makemark because the \NCC@secmark could be removed before the use.

\begin{verbatim}
72 \else
73 \let\NCC@savesecmark\NCC@secmark
74 \def\NCC@makemark{\NCC@savesecmark{\csname #1mark\endcsname}%%
75 \let\NCC@savesecmark\relax
76 }%
77 \fi
\end{verbatim}

Make the section. We must apply the restore action at the end action of \NCC@make command by the same reason that the section making may be suspended:

\begin{verbatim}
79 \ifNCC@noaux
80 \NCC@make{\NCC@makemark \NCC@restsec}%%
81 \else
82 \NCC@make{\NCC@makemark #4\NCC@restsec}%%
83 \fi
\end{verbatim}

Reset modifiers:

\begin{verbatim}
85 \fi
86 \NCC@sec@reset@controls
87 \}
\end{verbatim}

\subsection{Section Making Commands}

\texttt{\indentaftersection} \noindentaftersection

Introduce macros controlling indentation after display sections:

\begin{verbatim}
88 \newcommand{\indentaftersection}{\@afterindenttrue}
89 \newcommand{\noindentaftersection}{\@afterindentfalse}
\end{verbatim}

\texttt{\SectionTagSuffix} \sectiontagsuffix

The \texttt{\SectionTagSuffix{\langle suffix \rangle}} sets a default suffix after a section tag.

\begin{verbatim}
90 \newcommand*{\SectionTagSuffix}{\def\NCC@asecnum{#1}}
91 \@onlypreamble\SectionTagSuffix
\end{verbatim}

\texttt{\sectiontagsuffix} \sectiontagsuffix

\texttt{\sectiontagsuffix[\langle type \rangle]{\langle suffix \rangle}} changes a suffix after section tag that will be used for sections of the given \textit{\langle type \rangle}. If \textit{\langle type \rangle} is omitted, the specified suffix will be used in text flow for all sections having no special suffix.

\begin{verbatim}
92 \newcommand{\sectiontagsuffix[2]}{\%
93 \expandafter\def\csname NCC@asecnum#1\endcsname{\def\NCC@asecnum#2}%%
94 }%
95 \let\NCC@asecnum\@empty
\end{verbatim}
\def\NCC@setsectionsuffix#1{% 
  \edef\@tempa{NCC@asecnum@\NCC@secname{#1}}% 
  \@ifundefined{\@tempa}{% 
    \let\NCC@asecnumset\NCC@asecnum@ 
  }{% 
    \expandafter\let\expandafter\NCC@asecnumset\csname\@tempa\endcsname 
  }% 
}

\RunningSectionSuffix The \RunningSectionSuffix{⟨suffix⟩} sets a suffix after a title of a running section:
\newcommand*{\RunningSectionSuffix}[1]{\def\NCC@asectitle{\unskip#1}}
\@onlypreamble\RunningSectionSuffix

\NCC@preparesectag The \NCC@preparesectag{⟨style⟩}{⟨before⟩} hook prepares the \NCC@makesectag command:
\def\NCC@preparesectag#1#2{\def\NCC@makesectag##1{#1#2##1\NCC@asecnum}}

\NCC@secname The \NCC@secname{⟨level⟩} command generates section name (main, section, subsection, ..., or section@vi, section@vii, ... for new section levels). This name is used as the second parameter of the \addcontentsline command, in the declarations of toc-entries, and in the style selection command.
\def\NCC@secname#1{\ifcase#1main\or section\or subsection\or subsubsection\or paragraph\or subparagraph\else section@\romannumeral#1\fi}

\NCC@startsection The \NCC@startsection command has the same syntax as its non-NCC prototype:
\NCC@startsection{⟨type⟩}{⟨level⟩}{⟨indent⟩}{⟨beforeskip⟩}{⟨afterskip⟩}{⟨style⟩}

but works in a bit different way: it ignores the sign of ⟨beforeskip⟩. In the original version the testing was applied to set an appropriate afterindent mode. But we change this mode using \indentaftersection and \noindentaftersection macros.
\def\NCC@startsection#1#2#3#4#5#6{% 
  \@tempskipa #4\relax 
  \ifdim \@tempskipa <\z@ \@tempskipa -\@tempskipa \fi 
  \NCC@secskip \@tempskipa 
  \secdef{\NCC@sect{#1}{#2}{#3}{#4}{#5}{#6}}{\NCC@ssect{#3}{#4}{#5}{#6}}% 
}

\NCC@makesec The interface of \NCC@ssect and \NCC@sect commands is similar to their \LaTeX's prototypes. They are based on the following command:
\NCC@makesec{⟨indent⟩}{⟨style⟩}{⟨heading⟩}{⟨afterskip⟩}{⟨action⟩}

19
In fact, there are two versions of this command: the traditional version, \texttt{\NCC@makesect}, and the version with dynamic control of section style, \texttt{\NCC@makesecx}. One of them should be selected before applying the \texttt{\NCC@ssect} and \texttt{\NCC@sect} commands.

\NCC@ssect  The starred form of section:
\begin{verbatim}
\NCC@ssect{⟨indent⟩}{⟨beforeskip⟩}{⟨afterskip⟩}{⟨style⟩}{⟨heading⟩}
\end{verbatim}

\NCC@sect  The base form of section:
\begin{verbatim}
\NCC@sect{⟨type⟩}{⟨level⟩}{⟨indent⟩}{⟨beforeskip⟩}{⟨afterskip⟩}{⟨style⟩}
\end{verbatim}
\begin{verbatim}
[⟨toc-entry⟩]{⟨heading⟩}
\end{verbatim}

\NCC@makesect  The traditional section making command:
\begin{verbatim}
\NCC@makesect{⟨indent⟩}{⟨style⟩}{⟨heading⟩}{⟨afterskip⟩}{⟨action⟩}
\end{verbatim}

The \texttt{\NCC@secttitle{⟨style⟩}{⟨tag⟩}{⟨title⟩}} hook prepares traditional display section:
\begin{verbatim}
\NCC@secttitle{⟨style⟩}{⟨tag⟩}{⟨title⟩}
\end{verbatim}
\begin{verbatim}
{⟨interlinepenalty \@M\ignorespaces #3\@par}
\end{verbatim}

The \texttt{\NCC@secptitle{⟨style⟩}{⟨tag⟩}{⟨title⟩}} hook prepares running section. The \texttt{\norunningsuffix} modifier applied in the parameter of running section removes a suffix after section title.
9.3 Create Section Styles

\NCC@hangfrom\NCC@hangfrom\{section tag\} works as the LaTeX's \@hangfrom command, but its margins can be adjusted with the \adjustsectionmargins command.

\NCC@setsecmargins\NCC@setsecmargins\{left skip\}\{right skip\} sets section margins and applies the hook that can be defined by the \adjustsectionmargins command.

\NCC@adjsecmargins\NCC@adjsecmargins\{left skip\}\{right skip\} adjusts section margins. The \parfillskip value is also adjusted to a difference between stretchabilities of the \{left skip\} and the \{right skip\}. Using this trick, we can easily specify the centerlast style just setting the stretchability of the \{right skip\} as a negation of the \{left skip\} stretchability. To extract a stretchability from a skip, we simply add it multiplied by -1 (while multiplication the stretchability is removed!).

\NCC@hangsecstyle\NCC@hangsecstyle\{min tag width\}\{pos\}\{section tag\} starts a hang paragraph and prints its tag. The \{min tag width\} specifies a minimum width of hang indent and \{pos\} specifies an alignment of \{section tag\} (l, c, r) if its width is less than the minimum width.
\adjustsectionmargins \adjustsectionmargins{(left skip){(right skip)} defines the \NCC@secmarginshook macro to be applied after margins are set. To be sure this hook will be applied only once, we release it in the \NCC@sec@reset@controls hook.

\newcommand*{\adjustsectionmargins}[2]{% 
  \NCC@global{\def{\NCC@secmarginshook}{\NCC@adjsecmargins{#1}{#2}}} 
}

\g@addto@macro{\NCC@sec@reset@controls}{% 
  \NCC@global{\let{\NCC@secmarginshook}{\@empty}} 
}

\let{\NCC@secmarginshook}{\@empty}

A style of sections having dynamic control is defined by the \NCC@sec{(tag)} hook. This hook is applied inside a group preparing a heading. All section style commands redefine this hook.

\newplainsectionstyle \newplainsectionstyle{(name)}{(indent)}{(pos)}{(left skip){(right skip)}

\newcommand*{\newplainsectionstyle}[2]{% 
  \@ifnextchar[{{\NCC@newplainsec{#1}{#2}}}{{\NCC@newplainsec{#1}{#2}[l]}}} 
}

\def{\NCC@newplainsec}{#1}{#2}{#3#4#5}{% 
  \def{\@tempa}{#3}\def{\@tempb}{c}% 
  \ifx{\@tempa}{\@tempb} %
    \expandafter{\newcommand}{\csname{NCC@sec@#1}}}{{\NCC@setsecmargins{#4}{#5}%
      \let{\@centercr}{\@flushglue} 
      \setlength{\parindent}{#2}}}%
  \else 
    \def{\@tempb}{r}% 
    \ifx{\@tempa}{\@tempb} %
      \expandafter{\newcommand}{\csname{NCC@sec@#1}}}{{\NCC@setsecmargins{#4}{#5}%
        \let{\@centercr}{\@flushglue} 
        \setlength{\parindent}{#2}}}%
    \else 
      \expandafter{\newcommand}{\csname{NCC@sec@#1}}}{{\NCC@setsecmargins{#4}{#5}}}%
      \setlength{\parindent}{#2}}% 
    \fi 
  \else 
    \expandafter{\newcommand}{\csname{NCC@sec@#1}}}{{\NCC@setsecmargins{#4}{#5}}}% 
    \setlength{\parindent}{#2}}% 
  \fi 
}
Specify predefined section styles. The \flushglue is equal to 0pt plus 1fil.

\newhangsectionstyle{hangindent}{\z@}{\z@skip}{\z@skip}
\newhangsectionstyle{hangindent*}{\z@}{\z@skip}{\@flushglue}
\newhangsectionstyle{hangparindent}{\z@}{\parindent}{\z@skip}
\newhangsectionstyle{hangparindent*}{\z@}{\parindent}{\@flushglue}
\newplainsectionstyle{parindent}{\z@}{\parindent}{\z@skip}
\newplainsectionstyle{parindent*}{\z@}{\parindent}{\@flushglue}
\newplainsectionstyle{center}{\z@}{\@flushglue}{\@flushglue}
\newplainsectionstyle{centerlast}{\z@}{\@flushglue}{-\@flushglue}

9.4 Make Sections with Dynamic Control

The \sectionstyle[⟨type⟩]{⟨style⟩} changes a style for display sections of the given ⟨type⟩.

\newcommand*{\sectionstyle}[2][]{\ifdef{\NCC@secstyle@#2}{\PackageError{nccsect}{Unknown section style ‘#2’}{}}{\expandafter\csname NCC@secstyle@#1\endcsname}}

\NCC@setsectionstyle{⟨level⟩} set a style for the given section level. If a style for the given level is undefined, the default style is selected.

\def\NCC@setsectionstyle#1{\edef\@tempsa{NCC@secstyle@\NCC@secname{#1}}\ifdef{\@tempsa}{\csname\@tempsa\endcsname}{}}

\NCC@makesecx The dynamic section making command:
\NCC@makesecx{(indent)}{(style)}{(heading)}{(afterskip)}{(action)}

It prepares only display sections and ignores the \emph{(indent)} parameter.

\begin{Verbatim}
def \NCC@makesecx\#1\#2\#3\#4\#5{% 
\begingroup
\normalfont 
\NCC@asecnumset 
\NCC@secxtitle{(style)}{(tag)}{(title)} hook prepares display section with dynamic control. The \NCC@sec macro is protected to prevent its expansion by \MakeUppercase.
\end{Verbatim}

\NCC@secxtitle{#2}{\protect\NCC@sec{\@svsec}}
\begin{Verbatim}
\secdef{\NCC@part{#1}{#4}{#5}}{\NCC@spart{#1}{#4}{#5}}
\end{Verbatim}

\NCC@part Prepare the non-starred version of part:
\begin{Verbatim}
\NCC@part\#1\#2\#3\#4\#5{% 
\let\@svsec\@empty 
\NCC@makepart{#1}{#3}{#4}{#2}{#5}{% 
\NCC@sec@reset@controls
\end{Verbatim}

\NCC@part Prepare the non-starred version of part:

\NCC@startmainsec The main section is a section of zero level. It is prepared with the following command:
\begin{Verbatim}
\NCC@startmainsec{(alignment)}{(prefix)}{(beforeskip)}
{(afterskip)}{(style)}
\end{Verbatim}

It starts either a new chapter or a new part depending on the class loaded. To decide what version should be prepared, we test the \chapter command on existence.
\begin{Verbatim}
@ifundefined{chapter}{{ 
The case of an article-like class. Zero-level section is the \part.
\end{Verbatim}

\NCC@spart Prepare the starred version of part:
\begin{Verbatim}
\NCC@spart{(alignment)}{(afterskip)}{(style)}{(heading)}
\end{Verbatim}

\partmark Define the \partmark if it is undefined yet.
\begin{Verbatim}
\providecommand*{\partmark}[1]{\markboth{#1}{}}
\end{Verbatim}

\NCC@part The main section is a section of zero level. It is prepared with the following command:
\begin{Verbatim}
\NCC@part\#1\#2\#3\#4\#5{% 
\NCC@preparesectag{\leavevmode#2}{\partname
\NCC@secskip{#3}%
\secdef{\NCC@part{#1}{#4}{#5}}{\NCC@spart{#1}{#4}{#5}}%
\end{Verbatim}

\NCC@spart Prepare the starred version of part:
\begin{Verbatim}
\NCC@spart\#1\#2\#3\#4\#5{% 
\NCC@makepart{#1}{#3}{#4}{#2}{}%
\NCC@sec@reset@controls
\end{Verbatim}

\NCC@part Prepare the non-starred version of part:
\NCC@part{(alignment)}{(afterskip)}{(toc-entry)}{(heading)}

\def\NCC@part#1#2#3[#4]{%
  \def\NCC@make{
    \NCC@makepart{#1}{#3}{#5}{#2}}%
  \NCC@makepart{part}{#4}{#2}{%}
  \addcontentsline{toc}{part}{%}
  \ifnum \c@secnumdepth>\m@ne \numberline{#4} %
  \else %
  \fi %
#4%
}
\NCC@makepart
This command makes a part.

\NCC@makepart{(alignment)}{(style)}{(heading)}{(afterskip)}{(action)}%

The \@svsec is either \@empty or contains a part tag.
\def\NCC@makepart#1#2#3#4#5{%
  \begingroup \normalfont
  \NCC@asecnumset
  \NCC@makeparttitle{#1}{#2}{#3}%
  \endgroup
  #5%
  \par
  \nobreak \vskip #4 \relax \@afterheading \ignorespaces
}
\NCC@makeparttitle
This command makes a part title itself. The \NCC@secmain hook contains the
dynamic alignment style or nothing.
\def\NCC@makeparttitle#1#2#3{%
  \ifx\@svsec\@empty \else
    \NCC@secmain#1{\let\NCC@asecnum\@empty \@svsec \@@par}
  \fi
  \interlinepenalty \@M \NCC@secmain#1{#2{#3\@@par}}%
}
\NCC@partsection
Define the \NCC@partsection to be equal to the \NCC@mainsection command
which will be specified later when a main section will be declared.
\def\NCC@partsection{\NCC@mainsection}

The case of a book-like class. Zero-level section is the \chapter.
\def\NCC@partsection{\NCC@mainsection}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}{
\def\NCC@part#1#2#3#4#5{% 
  \NCC@partsection
  \NCC@preparesectag{\leavevmode#2}{\@chapapp\nobreakspace}%
  \secdef{\NCC@chapter{#1}{#3}{#4}{#5}}{\NCC@schapter{#1}{#3}{#4}{#5}}%
}

}
\NCC@startchap The start chapter hook:
\begin{verbatim}
def\NCC@startchap{\% if@openright\cleardoublepage\else\clearpage\fi\thispagestyle{plain}\global\@topnum\z@}
\end{verbatim}

\NCC@schapter Prepare the starred version of chapter:
\begin{verbatim}
def\NCC@schapter{⟨alignment⟩}{⟨beforeskip⟩}{⟨afterskip⟩}{⟨style⟩}{⟨heading⟩}{⟨toc-entry⟩}{⟨action⟩}
\end{verbatim}

\NCC@chapter Prepare the non-starred version of chapter:
\begin{verbatim}
def\NCC@chapter{⟨alignment⟩}{⟨beforeskip⟩}{⟨afterskip⟩}{⟨style⟩}{⟨heading⟩}{⟨toc-entry⟩}{⟨action⟩}
\end{verbatim}

It uses the \NCC@infloats{⟨action⟩} hook that applies the specified action for all registered float types.

\beforechapter The \beforechapter{⟨something⟩} hook is applied to the nearest chapter. An empty value of its parameter means no hook.
\begin{verbatim}
def\NCC@beforechapter{#1}{\gdef\NCC@beforechapter{#1}}
\end{verbatim}

\NCC@thetocchapter The following hook allows redefine the appearance of chapter name in the TOC:
\begin{verbatim}
def\NCC@thetocchapter{\thechapter}
\end{verbatim}

\NCC@makechapter This command makes a chapter:
\begin{verbatim}
def\NCC@makechapter{⟨alignment⟩}{⟨beforeskip⟩}{⟨afterskip⟩}{⟨style⟩}{⟨heading⟩}{⟨action⟩}
\end{verbatim}
The \@svsec is either \@empty or contains a chapter tag.

The \NCC@makechapfinal hook applies a final action which can contain the chaptermark command. Its default value is to put the parameter as is. If you let this command to be equal to the \NCC@makechapfinalgobble, the chapter mark will contain no chapter name.

This command makes a chapter head:

\NCC@makechaphead{(alignment)\{beforeskip\}{style}{heading}\{afterskip\}
This command makes a chapter title itself:

\NCC@makechaptitle{⟨alignment⟩}⟨⟨style⟩⟩{⟨heading⟩}

The \NCC@secmain hook contains the dynamic alignment style or nothing.

\def\NCC@makechaptitle#1#2#3{\ifx\@svsec\@empty \else
\NCC@secmain#1{\let\NCC@asecnum\@empty\@svsec\@@par}\fi
interlinepenalty \@M \NCC@secmain#1{#2{#3\@@par}}}

\newcommand*{\epigraph}[1]{\NCC@epigraphwidth\NCC@makeepigraph{#1}}
\newcommand*{\epigraphparameters}[5]{\def\NCC@epigraphwidth{#2}\long\def\NCC@makeepigraph\#3\#4\#5{\beforechapter\\def\epigraphwidth{\#3}\#4\par\#5}}

\NCC@makeepigraph\NCC@makeepigraph{⟨height⟩}⟨⟨text⟩⟩{⟨author⟩}
\long\def\NCC@makeepigraph\#1\#2\#3\#4\#5{\beforechapter\\def\epigraphwidth{\#1}\#2\par\#3\par\#4\par\#5}

\NCC@startpart The start-part hook:
\def\NCC@startpart{%
\if@openright\cleardoublepage\else\clearpage\fi

9.6 Make Part in Book-like Classes
\NCC@startpart The start-part hook:
\def\NCC@startpart{%
\if@openright\cleardoublepage\else\clearpage\fi
\thispagestyle{plain}

\NCC@part\par
Prepare the starred version of part:
\NCC@part\par
\def\NCC@part#1#2#3#4{\par
  \let\@svsec\@empty
  \NCC@makepart{#1}{#3}{#4}{#2}{}\par
  \NCC@sec@reset@controls\par
}\par

\NCC@part\par
Prepare the non-starred version of part:
\NCC@part\par
\def\NCC@part#1#2#3[#4]#5{\par
  \def\NCC@make{\NCC@makepart{#1}{#3}{#5}{#2}}\par
  \NCC@makesection{part}{\m@ne}{#4}{\par
    \addcontentsline{toc}{part}{\ifnum \c@secnumdepth>-2\par
      \numberline{\NCC@thetocpart}\fi #4\par
    }\par
  }\par
}\par

\NCC@thetocpart\par
The following hook allows redefine the appearance of part name in the TOC:
\NCC@thetocpart\par
\def\NCC@thetocpart\par
\NCC@makepart\par
This command makes a part:
\NCC@makepart\par
\def\NCC@makepart#1#2#3#4#5{\par
  \if@twocolumn\onecolumn\@tempswatrue\else\@tempswafalse\fi\par
  \begingroup\normalfont\par
  \NCC@asecnum@\par
  \NCC@makeparttitle{#1}{#2}{#3}\par
  \endgroup\par
  \NCC@makepartfinal{#5}#4\par
  \if@tempswa\twocolumn\fi\par
}\par

\NCC@makepartfinal\par
\NCC@makepartfinalgobble\par
The \NCC@makepartfinal hook applies a final action which can contain the \partmark command. Its default value is to put the parameter as is. If you let this command to be equal to the \NCC@makepartfinalgobble, the chapter mark will contain no chapter name.
\NCC@makepartfinal\par
\let\NCC@makepartfinal@firstofone\par

29
\def\NCC@makepartfinalgobble#1{\%}
\let\NCC@makepartmark\NCC@makemark
\def\NCC@makemark{\let\NCC@temp\partname
\let\partname\@gobble\NCC@makepartmark
\let\partname\NCC@temp}\%}
\@onlypreamble\NCC@makepartfinalgobble

\NCC@makeparttitle
This command makes a part title itself:
\NCC@makeparttitle{⟨before⟩}{⟨style⟩}{⟨heading⟩}
\def\NCC@makeparttitle#1#2#3{#1\%
\ifx\@svsec\@empty \else{\let\NCC@asecnum\@empty\@svsec\@@par}\nobreak \fi
\interlinepenalty \@M #2{#3\@@par}
}

9.7 Make Captions
\CaptionTagSuffix \CaptionTagSuffix{⟨suffix⟩} sets a default suffix after caption tag:
\newcommand*{\CaptionTagSuffix}{\def\NCC@acapnum{#1}}
\@onlypreamble\CaptionTagSuffix
\captiontagsuffix \captiontagsuffix{⟨type⟩}{⟨suffix⟩} changes a suffix after caption tag.
\newcommand*{\captiontagsuffix}{\def\NCC@acapnum{#2}}
\let\NCC@capsuffix@\@empty
\captionstyle \captionstyle{⟨type⟩}{⟨style⟩} selects a style to be applied to the caption text.
Three styles are available now: default, center, and centerlast.
\newcommand*{\captionstyle}{\NCC@set@capkey{style}{style}{#1}\
\captionwidth \captionwidth{⟨type⟩}{⟨length⟩} specifies a caption width in \@tempdima.
Default width is \linewidth.
\newcommand*{\captionwidth}{\def\NCC@prepare@capkey{width}{#1}{\setlength{\@tempdima}{#2}}}
\NCC@set@capkey \NCC@set@capkey\{\langle key\rangle\}\{\langle description\rangle\}\{\langle type\rangle\}\{\langle value\rangle\}\n
\NCC@prepare@capkey \NCC@prepare@capkey\{\langle key\rangle\}\{\langle type\rangle\}\{\langle definition\rangle\}\n
\NCC@apply@cap \NCC@apply@cap\{\langle key\rangle\}\n
\NCC@startcaption This command starts a caption:
\NCC@startcaption\{\langle beforeskip\rangle\}\{\langle afterskip\rangle\}\{\langle style\rangle\}\n
\NCC@scaption Starred version of caption:
\NCC@scaption\{\langle beforeskip\rangle\}\{\langle afterskip\rangle\}\{\langle style\rangle\}\{\langle text\rangle\}\n
\NCC@caption Non-starred version of caption:
\NCC@caption\{\langle beforeskip\rangle\}\{\langle afterskip\rangle\}\{\langle style\rangle\}\{\langle toc-entry\rangle\}\{\langle text\rangle\}\n
31
\NCC@makecaption This command makes a caption:
\NCC@makecaption{(style)}{(beforeskip)}{(text)}{(afterskip)}{(action)}

The \@svsec is either \empty or contains a caption tag.

\long\def\NCC@makecaption#1#2#3#4#5{%
\begingroup\par
\normalfont#1{}
\addvspace{#2}
\noindent#3{}
\Calculate in \@tempcnta caption variants: 0 – no caption, 1 – caption tag only,
2 – caption text only, 3 – both caption tag and text are nonempty.
\ifx\@svsec\@empty \@tempcnta\z@ \else \@tempcnta\@ne \fi
\def\@tempa{#3}{}
\ifx\@tempa\@empty \else \advance\@tempcnta\tw@ \fi
\Put caption in a parbox aligned at the top line.
\ifnum\@tempcnta=\z@ \else
\NCC@apply@cap{suffix}\
\NCC@apply@cap{width}\
\NCC@vtopcap{\@parboxrestore\NCC@apply@cap{tag}{#3}\@@par}
\par We avoid insert zero skip after parbox to allow captions of side-by-side figures to be
aligned at their top line.
\setlength\@tempskipa{#4}{}
\ifdim\@tempskipa=\z@ \else \vskip \@tempskipa\fi
\fi
\endgroup
#5%
}

\NCC@vtopcap \NCC@vtopcap{(text)} places a text in a vertical top-aligned box. Its width is
prepared in \@tempdima before this macro. If its width is greater than the \linewidth, we allow overlap the box out of line. The overlapping directions are calculated from stretches of paragraph marginal skips.
\def\NCC@vtopcap#1{%
\ifdim\@tempdima>\linewidth
\@tempskipa \leftskip \advance\@tempskipa -1\@tempskipa
\else
#1\fi
}

32
\NCC@ifzeroskip \NCC@ifzeroskip{(register)}{(true-clause)}{(false-clause)} executes the (true-clause)
if the value of skip register is exactly zero skip without stretchability. Otherwise,
the (false-clause) is executed.
\def\NCC@ifzeroskip#1{\edef\@tempa{\the#1}\edef\@tempb{\the\z@skip}\ifx\@tempa\@tempb
\expandafter\@firstoftwo\else\expandafter\@secondoftwo\fi}
\NCC@makecaptag@para \NCC@makecaptag@para{(text)} prepares run-in tag.
\long\def\NCC@makecaptag@para#1{\ifnum\@tempcnta<\thr@@ \let\NCC@acapnum\@empty\fi
\NCC@apply@cap{style}{\ignorespaces#1}{\@svsec}\@par}
\NCC@makecaptag@left \NCC@makecaptag@left{(text)} prepares flush-left tag.
\def\NCC@makecaptag@left\NCC@separate@captag\raggedright
\NCC@makecaptag@center \NCC@makecaptag@center{(text)} prepares centered tag.
\def\NCC@makecaptag@center\NCC@separate@captag\centering
\NCC@makecaptag@right \NCC@makecaptag@right{(text)} prepares flush-right tag.
\def\NCC@makecaptag@right\NCC@separate@captag\raggedleft
\NCC@separate@captag \NCC@separate@captag{(style)}{(text)} prepares a caption tag in a separate
line.
\long\def\NCC@separate@captag#1#2{%  
\ifodd\@tempcnta  
{\let\NCC@acapnum\@empty \@svsec}\@par}  
\fi  
\ifnum\@tempcnta>\@one  
\ifnum\@tempcnta=\thr@@ \vskip .5ex\fi  
\NCC@apply@cap{style}{(#2)}%  
\fi}
The \texttt{\NCC@makecapstyle@default}\{\textit{text}\} prepares caption text in default \LaTeX{}'s style.

\begin{verbatim}
\long\def\NCC@makecapstyle@default#1{\%\setbox\@tempboxa\vtop{\hsize\linewidth\@parboxrestore#1\@@par}\%\ifdim\dp\@tempboxa<\baselineskip \centering#1\%\else \box\@tempboxa \fi
\}
\end{verbatim}

The \texttt{\NCC@makecapstyle@para}\{\textit{text}\} prepares ordinary caption.

\begin{verbatim}
\long\def\NCC@makecapstyle@para#1{#1}
\end{verbatim}

The \texttt{\NCC@makecapstyle@left}\{\textit{text}\} prepares flush-left caption.

\begin{verbatim}
\long\def\NCC@makecapstyle@left#1{\raggedright#1}
\end{verbatim}

The \texttt{\NCC@makecapstyle@right}\{\textit{text}\} prepares flush-right caption.

\begin{verbatim}
\long\def\NCC@makecapstyle@right#1{\raggedleft#1}
\end{verbatim}

The \texttt{\NCC@makecapstyle@center}\{\textit{text}\} prepares centered caption.

\begin{verbatim}
\long\def\NCC@makecapstyle@center#1{\centering#1}
\end{verbatim}

The \texttt{\NCC@makecapstyle@centerlast}\{\textit{text}\} prepares caption with last line centered.

\begin{verbatim}
\long\def\NCC@makecapstyle@centerlast#1{\leftskip\@flushglue \rightskip -\@flushglue \parfillskip\z@\@plus 2\fil\relax#1}
\end{verbatim}

The \texttt{\RegisterFloatType}\{\textit{type}\} command registers a float type:

\begin{verbatim}
\newcommand*{\RegisterFloatType}[1]{\edef\NCC@floatlist{\NCC@floatlist{#1}}}
\let\NCC@floatlist\@empty
\@onlypreamble\RegisterFloatType
\end{verbatim}

The \texttt{\NCC@infloats}\{\textit{action}\} command applies the given \textit{action} to all registered float types. During the cycle, the \texttt{\@captype} contains a name of float and the \texttt{\@tempcnta} is equal to its registration number (1 for the figure float, 2 for the table float, and so on).

\begin{verbatim}
\def\NCC@infloats#1{\%\@tempcnta\z@\%\let\NCC@temp \@captype\%\expandafter \@for \expandafter \@captype\%\expandafter \@expandafter \WCC@floatlist \do\%\{\advance\@tempcnta\one \do\%\let\@captype\WCC@temp\%\}
\end{verbatim}

34
9.8 Declare Sections and Captions

\DeclareSection

Now we can implement the \DeclareSection command. It generates:

\NCC@mainsection command if \textit{(level)} = 0;
\NCC@section command if \textit{(level)} > 0;
\NCC@cap@/\textit{(float-type)} command if \textit{(level)} < 0.

\newcommand{\DeclareSection}{\@ifstar{\NCC@dsecx}{\NCC@dsec}}
\def{\NCC@dsec}{
\@ifnextchar[{{\NCC@dsect}}{\NCC@dsect[\z@skip]}}
\@onlypreamble{\DeclareSection}
\@onlypreamble{\NCC@dsec}

\NCC@dsect

The non-starred version of section declaration command prepares display sections with traditional formatting:

\NCC@dsect{\textit{(level)}}{\textit{(type)}}{\textit{(prefix)}}{\textit{(beforeskip)}}
{\textit{(afterskip)}}{\textit{(style)}}

It is also used for generation of run-in sections and captions.

\def{\NCC@dsect}{\@ifnum\z@}{\let\NCC@mainsection\@empty
\NCC@startmainsec{\hskip \textit{(indent)}}{\textit{(prefix)}}{\textit{(beforeskip)}}{\textit{(afterskip)}}}{\NCC@startsection{\textit{(type)}}{\textit{(prefix)}}{\textit{(beforeskip)}}{\textit{(afterskip)}}{\textit{(style)}}}

The empty \NCC@secmain means standard alignment of main section

\NCC@startmainsec%
\NCC@hangfrom{\hskip \textit{(indent)}}{\NCC@adjsecmargins}{}{\flushglue
\ignorespaces}\textit{(#4)}{\textit{(#5)}}{\textit{(#7)}}%
\else
\fi
\@onlypreamble{\NCC@dsect}

\NCC@dsecx

The starred version of section declaration command prepares display sections with dynamic formatting:
\NCC@dsecx\{\langle\text{level}\rangle\}\{\langle\text{type}\rangle\}\{\langle\text{prefix}\rangle\}\{\langle\text{beforeskip}\rangle\}\{\langle\text{afterskip}\rangle\}\{\langle\text{style}\rangle\}\}

It can also be used for generation of captions.

\def\NCC@dsecx#1#2#3#4#5#6{% 
\ifnum#1>\z@ 
\expandafter\def\csname NCC@section\romannumeral#1\endcsname{% 
\NCC@setsectionsuffix{#1} 
\NCC@setsectionstyle{#1} 
\NCC@preparesectag{#3}{} 
\let\NCC@makesec\NCC@makesecx 
\NCC@startsection{#2}{#1}{\z@}{#4}{#5}{#6} 
} 
\else 
\else 
\NCC@dsecf{#2}{#3}{#4}{#5}{#6} 
\fi 
\fi 
\@onlypreamble\NCC@dsecx

The non-empty \NCC@secmain hook means the dynamic alignment. We also redefine the dynamic section style \NCC@sec in such a way that the right skip stretchability will be 1fil if the section style has no flush glue.

\def\NCC@mainsection{% 
\NCC@setsectionsuffix\z@ 
\NCC@setsectionstyle\z@ 
\let\NCC@secsave\NCC@sec \let\NCC@sec\NCC@secflush 
\def\NCC@secmain{\protect\NCC@sec{}} 
\NCC@startmainsec{#3}{#4}{#5}{#6} 
} 
\else 
\fi 
\NCC@dsecf{#2}{#3}{#4}{#5}{#6} 
\NCC@secflush\{\langle\text{tag}\rangle\} applies a section style saved in the \NCC@secsave macro and adjusts \rightskip and \parfillskip if left and right margins have no stretchability in sum. To adjust the right skip, we do the same tricks as in \NCC@adjsecmargins.

\def\NCC@secflush#1{\NCC@secsave{#1} 
\@tempskipa\leftskip \advance\@tempskipa\rightskip 
\advance\@tempskipa -1\@tempskipa 
\NCC@ifzeroskip\@tempskipa{ 
\@tempskipa 1\rightskip \advance\@tempskipa -\rightskip 
\advance\@tempskipa \@flushglue 
\advance\rightskip \@tempskipa 
\advance\parfillskip -\@tempskipa 
}{} 
\ignorespaces

\NCC@dsecf This command declares captions of floats:

\NCC@dsecf\{\langle\text{type}\rangle\}\{\langle\text{prefix}\rangle\}\{\langle\text{beforeskip}\rangle\}\{\langle\text{afterskip}\rangle\}\{\langle\text{style}\rangle\}\}
\DeclarePart In book-like classes, a part is declared in a special way:
\DeclarePart{⟨before⟩}{⟨after⟩}{⟨prefix⟩}{⟨style⟩}

Long parameters are allowed in this declaration.
\def\NCC@dsectf#1#2#3#4#5{%
%\expandafter\def\csname NCC@cap@#1\endcsname{%
%\def\NCC@makesectag####1{#2{\csname #1name\endcsname}(%
%\nobreakspace####1\NCC@acapnum}(%
%\NCC@startcaption{#3}{#4}{#5}(%
%})%
%
%
}%}
%\@onlypreamble\NCC@dsectf
%\DeclarePart
\DeclarePart{(before){⟨after⟩}{⟨prefix⟩}{⟨style⟩}}

9.9 Caption Patches
\@makecaption We emulate here the \@makecaption{⟨fnum@⟨type⟩⟩}{⟨caption⟩} command to provide the compatibility with packages using it. It calls the \NCC@cap@⟨type⟩ command using the type specified in \@captype command. The counter is already stepped before this command and all necessary things are written to aux. Therefore, we turn off writing to aux and decrease a value of the float counter by -1 because it will be stepped within again.
\long\def\@makecaption#1#2{%
  \begingroup
  \skipwritingtoaux
  \addtocounter{\@captype}\m@ne
  \csname NCC@cap@\endcsname[]\{#2\}%
  \endgroup
}
%\@onlypreamble\DeclarePart
%\DeclarePart{(before){⟨after⟩}{⟨prefix⟩}{⟨style⟩}}

Add patch to the supertabular package:
\AfterPackage{supertabular}{%
%\long\def\ST@caption#1[#2]#3{\par
%  \addcontentsline{\csname ext@#1\endcsname}{#1}{\numberline{\csname the#1\endcsname}{\ignorespaces #2}}%
%  \begingroup\centering
%  \def\captype{#1}%
%  \@makecaption{⟨fnum@#1\endcsname}{\ignorespaces #3}\par
%}}
}%

37
Add patch to the \texttt{xtab} package:
\begin{Verbatim}
\AfterPackage{xtab}{\%\long\def\ST@caption#1[#2]#3{\par\@initisotab\addcontentsline{\csname ext@#1\endcsname}{#1}{\numberline{\csname the#1\endcsname}{\ignorespaces #2}}\begingroup\centering\def\@captype{#1}\@makecaption{\csname fnum@#1\endcsname}{\ignorespaces #3}\par\endgroup\global\advance\ST@pageleft -\PWSTcapht\ST@trace\tw@{Added caption. Space left for xtabular: \the\ST@pageleft}}
\end{Verbatim}

Add patch to the \texttt{longtable} package:
\begin{Verbatim}
\AfterPackage{longtable}{\%\def\LT@makecaption#1#2#3{\LT@mcol\LT@cols c{\hbox to\z@{\hss\parbox[t]{\LTcapwidth}{\centering\def\@captype{table}\ifx#1\@gobble \NCC@cap@table*{#3}\else \@makecaption{\fnum@table}{#3}\fi\def\@captype{#1}\@makecaption{\fnum@table}{#3}}\hss}}}
\end{Verbatim}

\subsection{Declare TOC-Entries}

The toc-entries declaration command:
\begin{verbatim}
\DeclareTOCEntry{⟨level⟩}{⟨action⟩}{⟨prefix⟩}{⟨prototype⟩}
{⟨style⟩}⟨⟨next⟩⟩
\end{verbatim}
\begin{Verbatim}
\newcommand\DeclareTOCEntry[5]{\%\ifnextchar[\NCC@dtoc{#1}{#2}{#3}{#4}{#5}}\NCC@dtoc{#1}{#2}{#3}{#4}{#5}\NCC@nexttocnum{#3}{#4}\%}
\end{Verbatim}

Declarations a toc-entry command for a registered float. We scan the registration list and find the necessary float type comparing its registration number with the negation of level. The generated command is \texttt{\l@⟨float-type⟩}:
\begin{Verbatim}
\ifnum#1<\z@\@tempswatrue\else \@tempswatrue\fi
\end{Verbatim}
Incorrect level number. Generate an error.

Prepare in a command name: \l@section or \l@subsection or ... or \l@subparagraph or \l@section@vi or ...:

Prepare in the \l@tocskip\langle next-level-in-roman \rangle command the left margin adjustment command. The \NCC@tocnumprototype\langle style \rangle\langle prototype \rangle hook applies a style to the prototype of toc-entry number.

The command increases \tempdim on the width of the argument:
Part toc-entry declaration in book-like classes. If optional \texttt{⟨afterskip⟩} is omitted, the default \texttt{\NCC@runskip} value is applied after this entry.

\begin{verbatim}
\DeclareTOCPart\{⟨action⟩\}{⟨prefix⟩}{⟨prototype⟩}{⟨style⟩}
\end{verbatim}

We temporary add \texttt{1fil} to the toc right margin to prepare a ragged right toc-entry.

\begin{verbatim}
\texttt{\textbackslash TOCMarginDrift\{1fil\}}%
\end{verbatim}

This command makes a toc-entry:

\begin{verbatim}
\NCC@tocentry\{⟨level⟩\}{⟨action⟩}{⟨prefix⟩}{⟨prototype⟩}
{⟨style⟩}{⟨entry⟩}{⟨page-number⟩}
\end{verbatim}

Calculate the left margin in the \texttt{\@tempdimb} register applying the \texttt{\l@tocskip@i}, \ldots, \texttt{\l@tocskip@⟨level-in-roman⟩} commands:

\begin{verbatim}
\texttt{\l@tempdimb\z@ \l@mcnta \#1relax}
\texttt{\@whilenum \l@mcnta >\z@do}
{\@nameuse{l@tocskip@roman\romannumeral \l@mcnta}}%
\texttt{\advance\l@mcnta\m@ne}%
\end{verbatim}

The \texttt{\NCC@preparetocnum{⟨style⟩}{⟨prefix⟩}} hook prepares the \texttt{\NCC@maketocnum{⟨tag⟩}} command creating a number-line tag:

\begin{verbatim}
\NCC@preparetocnum{#5}{#3}%
\end{verbatim}

Calculate the hang indent value in \texttt{\@tempdima}:

\begin{verbatim}
\texttt{\settowidth\l@tempdima{\let\NCC@atocdo\@firstoftwo\NCC@maketocnum{#4}}}%
\end{verbatim}
Produce the toc-entry. The \NCC@tocentrytitle{(style)}{(title)} hook applies the style to the toc-entry title.

Allow break after toc-entry:
\@nobreakfalse
@endgroup
\def\NCC@preparetocnum#1#2{%\def\NCC@maketocnum##1{\NCC@atocdo{#1}{}{#2##1\NCC@atocnum}}%}
\def\NCC@tocentrytitle#1#2{#1{\ignorespaces#2}}
\DeclareRobustCommand\numberline[1]{%\setbox\@tempboxa\hbox{\NCC@maketocnum{#1}}%\ifdim\wd\@tempboxa > \@tempdima\box\@tempboxa\else\hb@xt@\@tempdima{\unhbox\@tempboxa\hfil}\fi\ignorespaces}
\newcommand*{\NumberlineSuffix}[2]{\def\NCC@atocnum{\NCC@atocdo{#1}{#2}}}
\newcommand*{\TOCMarginDrift}[1]{%\def\@tempa{#1}%\ifx\@tempa\@empty\let\NCC@tocdrift\@empty\else\def\NCC@tocdrift{\@plus #1\relax}\fi}

\NCC@maketocnum The default implementation of the \NCC@maketocnum{(tag)} command. We must define it because the \numberline command must work out of scope of toc-entries.
\def\NCC@maketocnum#1{#1\NCC@atocnum}
\let\NCC@atocdo\@secondoftwo

\NumberlineSuffix The \NumberlineSuffix{calc-suffix}{actual-suffix} command saves suffixes inserted after number tag in the \numberline command. It saves it in the \NCC@atocnum hook as parameters of \NCC@atocdo command. Letting the last one to \@firstoftwo or \@secondoftwo, we select the (calc-suffix) or (actual-suffix) respectively.
\newcommand*{\NumberlineSuffix}[2]{\def\NCC@atocnum{\NCC@atocdo{#1}{#2}}}
\onlypreamble\NumberlineSuffix

\TOCMarginDrift The \TOCMarginDrift{(drift)} specifies allowed drift of right margin in TOC.
\newcommand*{\TOCMarginDrift}[1]{%\def\@tempa{#1}%\ifx\@tempa\@empty\let\NCC@tocdrift\@empty\else\def\NCC@tocdrift{\@plus #1\relax}\fi}
\texttt{\textbackslash PnumPrototype}  The \texttt{\PnumPrototype\{\textit{prototype}\}} command saves the page number prototype in the \texttt{\NCC@pnum} hook and applies the \texttt{\NCC@setpnum} command.

\begin{verbatim}
800 \newcommand*{\PnumPrototype}[1]{\def\NCC@pnum{#1}\NCC@setpnum}
801 \@onlypreamble\PnumPrototype
802 \def\NCC@setpnum{%
803 \settowidth\@tempdima{\NCC@pnum}%
804 \edef\@pnumwidth{\the\@tempdima}%
805 \advance\@tempdima 1em
806 \edef\@tocrmarg{\the\@tempdima \noexpand\NCC@tocdrift}%
807 }
\end{verbatim}

\texttt{\textbackslash SetTOCStyle}  The toc-style hook is embedded into the \texttt{\@starttoc} command. We also recalculate the page number prototype and update margins when a toc starts.

\begin{verbatim}
808 \newcommand*{\SetTOCStyle}[1]{\def\NCC@tocstyle{#1}}
809 \@onlypreamble\SetTOCStyle
810 \let\NCC@latexstarttoc\@starttoc
811 \def\@starttoc#1{%
812 \begingroup
813 \normalfont \NCC@tocstyle \NCC@setpnum
814 \NCC@latexstarttoc{#1}%
815 \endgroup
816 }
\end{verbatim}

9.11 Service and Defaults

\texttt{\textbackslash StartFromTextArea}  These commands are applied at the beginning of page to set current position exactly at the first line of text area or at the header line, respectively. Both these commands are defined in two packages: in this one and in the \texttt{textarea}. To be sure that the commands are specified in these packages only, we mutually test packages to be loaded.

\begin{verbatim}
817 \@ifpackageloaded{textarea}{}{%
818 \newcommand\StartFromTextArea{\par
819 \{\parskip\z@ \strut\par\vskip -\baselineskip
820 }
821 \newcommand\StartFromHeaderArea{\StartFromTextArea
822 \vskip -\headsep \vskip -\ht\strutbox
823 }
824 }
825 }
\end{verbatim}

\texttt{\textbackslash bff}  The \texttt{\bff} command tries to set everything bold.

\begin{verbatim}
826 \newcommand\bff{\normalfont\bfseries\mathversion{bold}}
\end{verbatim}

\texttt{\textbackslash aftersectionvspace}  This command eliminates a vertical space inserted after a previous section and inserts a vertical space specified.

\begin{verbatim}
827 \newcommand*{\aftersectionvspace}[1]{%
828 \ifvmode \ifnobreak
829 \vskip -\lastskip \vskip #1\relax
830 \fi
831 \fi
\end{verbatim}
\startsection  Define the \startsection command. In article-class, both zero and negative levels refer to the same part section.
\newcommand*{\startsection}[1]{% 
  \ifnum#1>\z@ 
    \def\@tempa{\csname NCC@section\romannumeral#1\endcsname}\
  \else 
    \ifnum#1=\z@ 
      \def\@tempa{\NCC@mainsection}\
    \else 
      \def\@tempa{\NCC@partsection}\
    \fi 
  \fi 
  \@tempa 
} 
\section  Set aliases for almost all section levels, except chapter. The part is called here as a section of a negative level.
\part  \def\part{\startsection\m@ne} 
\section  \def\section{\startsection\@ne} 
\subsection  \def\subsection{\startsection\tw@} 
\subsubsection  \def\subsubsection{\startsection\thr@@} 
\paragraph  \def\paragraph{\startsection4} 
\subparagraph  \def\subparagraph{\startsection5} 
\caption  Redefine the \caption command. We do this at the beginning of document to reject possible redefinitions of captions in other packages such as float. I think this is not the float's responsibility to decide where a caption must go on: before or after the float body. And what about complicated floats consisting of side floats and etc.? We also reset to zero the \abovecaptionskip and \belowcaptionskip registers if they are specified to provide partial compatibility with the float package. If the registers are not specified (as in ncc class), they are emulated with macros.
\AtBeginDocument{% 
  \def\caption{% 
    \ifx\@captype\@undefined 
      \@latex@error{\noexpand\caption outside float}\@ehd 
    \else 
      \expandafter\@firstofone 
    \fi 
    \csname NCC@cap@\@captype\endcsname 
  } 
  \@ifundefined{abovecaptionskip}{\def\abovecaptionskip{\z@}}{} 
  \@ifundefined{belowcaptionskip}{\def\belowcaptionskip{\z@}}{}
Registration of standard floats:
\RegisterFloatType{figure}
\RegisterFloatType{table}

Declare all sections and captions except the part and chapter:
\DeclareSection{-2}{table}{}{10pt}{}
\DeclareSection{-1}{figure}{}{10pt}{z@}
\DeclareSection*1{section}{}%
\DeclareSection*2{subsection}{}%
\DeclareSection*3{subsubsection}{}%
\DeclareSection4{paragraph}{}%
\DeclareSection5{subparagraph}{}%
@ifundefined{chapter}{
Declare the part and toc-entries for the article-like style:
\DeclareSection*0{part}{\Large\bf}
\DeclareTOCEntry{-2}{}{}{9}{}% table
\DeclareTOCEntry{-1}{}{}{9}{}% figure
\DeclareTOCEntry0{\runinsectionskip\def\@dotsep{1000}}{}{III}{\bf}[III]
\DeclareTOCEntry1{\runinsectionskip}{}{9}{}
\DeclareTOCEntry2{}{}{9.9}{}
\DeclareTOCEntry3{}{}{9.9.9}{}
}\
\ifdefined{chapter}{
Declares the part and toc-entries for the article-like style:
\DeclareSection*0{part}{\Large\bf}%
\DeclareTOCEntry{-2}{}{}{9}{}% table
\DeclareTOCEntry{-1}{}{}{9}{}% figure
\DeclareTOCEntry0{\runinsectionskip\def\@dotsep{1000}}{}{III}{\bf}[III]
\DeclareTOCEntry1{\runinsectionskip}{}{9}{}
\DeclareTOCEntry2{}{}{9.9}{}
\DeclareTOCEntry3{}{}{9.9.9}{}
}

\ChapterPrefixStyle

\newcommand*{\ChapterPrefixStyle}[1]{%
\let\NCC@thetocchapter=\thechapter%
\let\NCC@makechapfinal\NCC@makechapfinalgobble
\@for\@tempa:=#1\do{%
  \@ifundefined{NCC@chapin\@tempa}{%
    \PackageError{ncect}{Unknown style ‘\@tempa’}{\MessageBreak}{\@tempa}{’MessageBreak
    Only the ‘toc’ and ‘header’ styles are allowed}{%)\%
  %(csname NCC@chapin\@tempa}@tempa@endcsname)%
  %\@tempa
  }%
  >}
}\def\NCC@chapin@toc{\def\NCC@thetocchapter{\chapapp\thechapter}}
\def\NCC@chapin@header{\let\NCC@makechapfinal@firstofone}
\@onlypreamble\ChapterPrefixStyle
\chapter \def\chapter{\startsection\z@}
\DeclarePart{\StartFromTextArea\vfil\centering}%
{\vfil\newpage \if@twoside\if@openright
\mbox{}\thispagestyle{empty}\newpage\fi\fi}%
{\vspace{4ex}\huge{\bff}{\Huge{\bff}}}
\DeclareSection*0{chapter}{\vspace{3ex}\huge{\bff}}{10ex}%
{8ex \@plus .2ex}{\Huge{\bff}}
\DeclareTOCEntry{-2}{}{}{9.9}{}% table
\DeclareTOCEntry{-1}{}{}{9.9}{}% figure
\DeclareTOCPart{\NCC@secskip{4ex \@plus .2ex}\def\@dotsep{1000}}{}
\DeclareTOCEntry0{\runinsectionskip\def\@dotsep{1000}%
\aftergroup\penalty\aftergroup\@highpenalty}{}{9}{\bff}
\DeclareTOCEntry1{}{}{9.9}{}[9.9]
\DeclareTOCEntry2{}{}{9.9.9}{}[9.9.9]
\DeclareTOCEntry3{}{}{}{[\qquad]}
\epigraphparameters{\StartFromHeaderArea\small\raggedleft}%
{.45\linewidth}{5\baselineskip}%
{\raggedleft\itshape}{\vspace{2ex}}}
Declare other toc-entries:
\DeclareTOCEntry4{}{}{}{[\qquad]}
\DeclareTOCEntry5{}{}{}{[\qquad]}
Set defaults:
\noindentaftersection
\sectionstyle{hangindent}
\SectionTagSuffix{\quad}
\RunningSectionSuffix{}
captionwidth{\linewidth}
captionstyle{default}
captiontagstyle{para}
\CaptionTagSuffix{:\hskip .7em \@plus .2em \@minus .1em}
\NumberlineSuffix{\quad}{\enskip}
\PnumPrototype{99}
\TOCMarginDrift{}
\SetTOCStyle{⟨/package⟩}