The **drexel-thesis** class[*]

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1   Introduction

This package defines a LaTeX thesis class for Drexel University conforming to the Drexel University Thesis Manual version 2009/06/01.

2   Usage

To write a thesis, you load the Drexel thesis definitions by loading the **drexel-thesis** class at the beginning of your LaTeX document with the `\documentclass` command. For example,

```
\documentclass{drexel-thesis}
```

For LyX users, we include a LyX template (`drexel-thesis.layout`, originally by John K. Parejko) so that the previews generated in LyX are similar to those generated by the actual **drexel-thesis** class.

2.1   Options

options
`final`
`draft`
The default option (selected if not options are passed) is **final** mode, which has all the proper formatting and spacing for your final product. The other main option is **draft** mode, which reduces all the spacing in the document, so might be helpful when printing out drafts (saves paper).

final mode corresponds to (with Thesis Manual chapter and verse)

oneside	1.5 Library Submission Information, Print Version: "All copies must be: . . . Typed/printed on only one side of the page (not double-sided)."
finalspace	Assorted single, double, and triple spacing directives.
dottedtoc	From the example on p17.

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[*]This document corresponds to **drexel-thesis** 0.14, dated 2010/09/21.

draft mode corresponds to

twoside	Save space.
draftspace	Save space.
dottedtoc	Might as well be consistent with final.
mydraftwatermark	It's good to have a timestamp.

option
`subfig`

subfig makes it easy to include and caption multi-part figures. However, getting subfig to cooperate with floatrow and tocloft can be tricky. If you want to use subfig, just pass the subfig option to drexel-thesis, and all the pesky details will be taken care of. See §4.1 for an example.

option
`finalspace`
Loosen spacing.

option
`draftspace`
Tighten spacing.

options
`dottedtoc`
`boldtoc`
`dottedpart`
`boldpart`
`dottedchapter`
`boldchapter`
These options change how the relevant table of contents lines are printed. LaTeX defaults to bold but not dots. The *toc options set all of the types. For example, boldtoc is equivalent to boldchapter,boldpart.

The example table of contents in the Manual p17 does not indent section entries, etc., so neither does drexel-thesis. If you *do* want pretty, indented TOCs, like the LaTeX defaults pass indenttoc to drexel-thesis.

option
`indenttoc`

option
`blackref`
blackref colors all hyperref links black, so they won't stand out in your printed document.

option
`draftwatermark`
draftwatermark adds "DRAFT ⟨*date*⟩" watermarks to each page. A useful way to remember that the version you're looking at is not final. Also helps reviewers tell you what version they're correcting. Requires the draftmark package.

option
`mydraftwatermark`
mydraftwatermark is similar to draftwatermark but depends on the possibly more common xcolor, eso-pic, and graphicx.

option
`indentfirst`
indentfirst indents the first paragraph after sections etc.

option
`approvalform`
approvalform includes a copy of the T-1 approval form as the first page of your thesis/dissertation. This form is bound to the front of every thesis/dissertation by the library. The version that is generated by this option is typeset in LaTeX with the same margins, fonts, etc. as the rest of your document. The title of your dissertation and your name are automatically entered.

2.1.1 Interesting **book** options

option
`oneside`
Setup output for one-sided printing.

option
`twoside`
Setup output for two-sided printing.

option
`leqno`
leqno places the numbering of formulae on the left hand side instead of the right.

option
`fleqn`
fleqn typesets displayed formulae left-aligned instead of centered.

option
`daring`
daring breaks the official thesis rules in pursuit of a nicer layout.

2.2 Macros

To help deal with name collisions, all drexel-thesis macros have "secret" aliases. For example, \author can also be used as \DUTauthor. This is useful if one of your packages clobbers a drexel-thesis macro, but you still want to use the original.

```
\documentclass{drexel-thesis}
\renewcommand{\author}[1]{I'm forgetting about your author! Muahahaha!}
\DUTauthor{Your Name Here}
...
```

$\texttt{\textbackslash author\{}\langle name\rangle\texttt{\}}$

\author
\DUTauthor

Use this macro to set your full name to $\langle name\rangle$, including your middle initial or name. For example

```
\name{Richard P. Feynman}
```

See the Manual §3.1 p8.

$\texttt{\textbackslash title\{}\langle title\rangle\texttt{\}}$

\title
\DUTtitle

Use this macro to set your thesis title to $\langle name\rangle$. For example

```
\title{A New Approach to Quantum Theory}
```

See the Manual p16.

$\texttt{\textbackslash advisor\{}\langle name\rangle\texttt{\}}$

\advisor
\DUTadvisor

Use this macro to set your advisor's name to $\langle name\rangle$. For example

```
\advisor{John A. Wheeler, Ph.D.}
```

You can set multiple advisors, if appropriate, by calling \advisor multiple times.

```
\advisor{John A. Wheeler, Ph.D.}
\advisor{Advisor 2}
```

See the Manual §3.1 p8.

$\texttt{\textbackslash DUTmonth\{}\langle month\rangle\texttt{\}}$
$\texttt{\textbackslash DUTyear\{}\langle year\rangle\texttt{\}}$

\DUTmonth
\DUTyear

Use these macros to set the month with $\langle month\rangle$ (spelled out) and year with $\langle year\rangle$ (four digits) of your thesis defense. For example

```
\DUTmonth{June}
\DUTyear{1942}
```

See the Manual §3.1 p8. There are no non-DUT versions of these commands to avoid collisions with the plain TeX \month and \year (see the month and year entries in the HTML version of David Bausum's *TeX Reference Manual*).

$\texttt{\textbackslash degree\{}\langle degree\rangle\texttt{\}}$

\degree
\DUTdegree

Set your target degree with $\langle degree\rangle$. From the Manual §3.1 p8.

Write out the name of the degree for which you are a candidate. All Ph.D. candidates must use `Doctor of Philosophy`. All Master's degree candidates should use the precise degree name (e.g., `Master of Science in Mechanical Engineering`).

So, for a Ph.D candidate,

```
\degree{Doctor of Philosophy}
```

\copyrighttext{⟨text⟩}

`\copyrighttext`
`\DUTcopyrighttext`
Use this macro to set the copyright text to ⟨text⟩. The default value is "All Rights Reserved.".

```
\copyrighttext{Released to the Public Domain.}
```

See the Manual §3.2 p9.

\copyrighttextCCBYSA

`\copyrighttextCCBYSA`
`\DUTcopyrighttextCCBYSA`
There are a number of predefined copyright messages for ease of use

`\copyrighttextCCBYSA`   Creative Commons Attribution-ShareAlike License Version 3.0.

\tableofcontents

`\tableofcontents`
`\DUTtableofcontents`
Write the table of contents (Manual §3.5 p9). You can control the verbosity by setting `\tocdepth` according to the following table (source).

Depth in document	Section Command	Depth for `\secnumdepth` Command
-1	\part	1
0	\chapter	2
1	\section	3
2	\subsection	4
3	\subsubsection	5
4	\paragraph	6
5	\subparagraph	7

For example, to expose everything down to and including the `\subsection` level, you would add

```
\setcounter{tocdepth}{2}
```

to your preamble (the section before `\begin{document}`, not the `preamble` environment discussed below).

Note that the Manual §3.5 p9 requires "List chapter titles and at least the first and second order subdivisions.", which corresponds to a `\tocdepth` of at least 2.

\listoftables

`\listoftables`
`\DUTlistoftables`
Write the List of Tables page (Manual §3.6 p10). Skip if you have no tables in your thesis.

\listoffigures

`\listoffigures` `\DUTlistoffigures`	Write the List of Figures page (Manual §3.7 p10). Skip if you have no figures in your thesis.

> `\blanklines{⟨num⟩}`

`\blanklines` `\DUTblanklines`	Insert ⟨*num*⟩ blank lines. For example

```
\blanklines{2}
```

The skipped lines are always *single spaced* lines, regardless of the current line spacing in the environment calling this macro.

> `\iffinal{⟨final-mode-action⟩}{⟨draft-mode-action⟩}`

`\iffinal` `\DUTiffinal`	Include final- or draft-specific code.

```
We're in \iffinal{final}{draft} mode!
```

> `\ifdaring{⟨daring-action⟩}{⟨wimpy-action⟩}`

`\ifdaring` `\DUTifdaring`	Include daring-specific code, with wimpy fallbacks.

```
\ifdaring{\singlespacing Muahahahaha!}{mumble mumble}.
```

> `\drexellogobw`

`\drexellogobw`	Draws a black-and-white official vector Drexel logo. The image is exactly 1 inch wide and 1.016 inches tall. This is accomplished using the tikz package (§ 3.2.15). You can enclose this command in a `\scalebox` to alter its size.

2.3 Environments

To help deal with name collisions, all drexel-thesis environments have "secret" aliases. For example, `preamble` can also be used as `DUTpreamble`. This is useful if one of your packages clobbers a drexel-thesis environment, but you still want to use the original.

```
\documentclass{drexel-thesis}
\renewenvironment{preamble}{%
  What preamble?\begingroup\color{white}}{\endgroup}
\begin{document}
\begin{DUTpreamble}
Thwarted again, evil one!
...
```

`preamble` `DUTpreamble`	Generalize the `\frontmatter` for the thesis, setting up page numbering, including the title page, copyright page etc. The `preamble` environment should contain the following elements (in order, see the Manual p8)

- `dedication` environment (optional)

- `acknowledgments` environment (optional)

- `\tableofcontents`

- `\listoftables`

- `\listoffigures`

- `abstract` environment

This will take care of everything from the title page (Manual §3.1), up through the blank page before the text (Manual §3.9).

dedications
DUTdedications

Set the dedications text. Highlights from the Manual §3.3 p9:

> The `Dedications` page is optional.

acknowledgments
DUTacknowledgments

Set the acknowledgments text. Highlights from the Manual §3.4 p9:

> The `Acknowledgments` page is optional, but most theses do include a brief statement of thanks or recognition of any special assistance.

abstract
DUTabstract

Set the thesis abstract text. In the Thesis Manual, see §3.8 Abstract (p10) for details, p20 for an example.
Highlights from the Manual:

> The abstract is a summary that allows readers to determine the value of reading the full thesis. It should include a statement of the problem, an outline of procedures or methods, and a summary of results and conclusions.

- Word limits: 600 for a Master's thesis, 350 for a Ph.D. thesis.

thesis
DUTthesis

Set the thesis text. In the Thesis Manual, see §3.10 Thesis (p11) for details. Highlights from the Manual:

> Divide the text into its major parts/chapters/subsections. No fixed arrangement is necessary. The major parts may contain such subjects as introduction, general argument, description of experimental procedures, research methods, discussion, summary, conclusions, recommendations, and other pertinent topics that are necessary for a complete understanding on the part of a sophisticated or professional reader.

vita
DUTvita

Set the thesis vita text (Ph.D. only). See the Manual §3.15 p12, "Vita", for details.
Highlights from the Manual:

> The Vita is a biography of the student written in the third person in either essay or outline form. It should include the full name, place and date of birth (optional), country of citizenship (optional), institutions attended, degrees and honors received, titles of publications, teaching and professional experience, and other pertinent data. The Vita must be one page or less.

2.4   Hints

2.4.1   Package installation

All the packages this class depends on must be installed somewhere in your texmf tree (they probably already are). If not, you will recieve warning messages on compilation such as

```
! LaTeX Error: File 'missing-package.sty' not found.
```

You should then install the missing package(s) using your operating systems package manager, or grab the missing package from CTAN, and install them following TODO.

2.4.2   Tables and Figures

drexel-thesis loads graphicx to define the \includegraphics macro, caption for pretty caption formatting, floatrow for placing captions, and hypcap for placing caption anchors.

Simple float definitions will look like

```
\begin{table}
   \caption{Some caption text}
   \begin{tabular}{...}
     ...
   \end{tabular}
\end{table}
```

or

```
\begin{float}
   \includegraphics{...}
   \caption{Some caption text}
\end{float}
```

For more useful float information, see the examples in §4.1.2 and the LATEX wikibook page.

2.4.3   Citations

I highly recommend using BIBTEX and natbib. See §4.1 for a simple example.

Suggested options:

super	selects citations in superscript mode.
sort&compress	automatically sorts and compresses compound citations (\pcite{a,b,...}).

2.4.4   References

Easier cross referencing with cleveref. Is a wonderful tool for easy, consistent crosslinking via \cref, \Cref, etc.. The manual is also very good. Note that if you use \parts in your document, you need to tell cleveref how to deal with them:

```
    \usepackage{cleveref}
    \crefname{part}{part}{parts}
```

2.4.5 Hyperlinks

drexel-thesis loads hyperref. with the options:

colorlinks   color the link letters instead of drawing colored boxes.

The default hyperref colors can be a bit jarring. Feel free to use blackref or override them yourself:

```
    \usepackage{xcolor}
    \definecolor{dark-gray}{gray}{0.3}
    \hypersetup{citecolor=dark-gray}
```

See the hyperref manual (§3.4 Extension options) for a list of *color options.

If running with a pdftex-based driver, \author, \title, and \degree automatically set pdfauthor, pdftitle, and pdfsubject respectively. You can use the \hypersetup macro to set options overriding these defaults.

2.4.6 Developing large LaTeX documents

A thesis may take a while to compile, especially if it contains lots of images, etc.. One way to save time, is to use \includeonly when including chapter *.tex files (see the TeX Wikibook). Usage would be something like

```
\documentclass{drexel-thesis}
...
\includeonly{chapter2.tex,chapter3.tex}
\begin{document}
...
\begin{thesis}
\include{chapter1.tex}
\include{chapter2.tex}
\include{chapter3.tex}
\include{chapter4.tex}
\end{thesis}
...
\end{document}
```

which would only compile chapters two and three. Don't confuse the similar commands \include and \input. The more fundamental \input just inserts the file contents at that point, while \include

- may only be used after \begin{document}

- acts like \clearpage \input{} \clearpage

- will not crash on nonexistent files

8

3   Implementation

1 ⟨∗class⟩

For simplicity, we'll derive everything from the standard book class.

3.1   Option Processing

Include xkeyval for easier option parsing. If the package is not installed on your system, see §2.4.1 for installation instructions.

2 \RequirePackage{xkeyval}

Define some booleans to store option states

```
3  \newif\if@mainmatter \@mainmattertrue
4  \newif\if@DUT@subfigopt
5  \newif\if@dottedchapter
6  \newif\if@boldchapter
7  \newif\if@boldpart
8  \newif\if@dottedpart
9  \newif\if@indenttoc
10 \newif\if@blackref
11 \newif\if@draftwatermark
12 \newif\if@mydraftwatermark
13 \newif\if@indentfirst
14 \newif\if@final
15 \newif\if@daring
16 \newif\if@approvalform
```

\iffinal   Setup a user-friendly means for including final- or draft-specific code.

```
17 \newcommand\iffinal[2]{\if@final #1\else #2\fi}
```

\ifdaring   Setup a user-friendly means for including daring-specific code.

```
18 \newcommand\ifdaring[2]{\if@daring #1\else #2\fi}
```

\DUT@makeapprovalform   Typesets the T-1 thesis/dissertation approval form.

```
19 \newcommand\DUT@makeapprovalform{
20   \thispagestyle{empty}
21   \begingroup
22   \newlength{\tempskipa}
23   \newlength{\tempskipb}
```

Don't indent paragraphs on this page.

```
24   \parindent \z@
```

Setup tempskipa = logo width+4pt and tempskipb = textwidth−tempskipa−4pt. The first pt ensures the logo will fit in the left column; the second provides some buffer space between the minipages.

```
25   \settowidth{\tempskipa}{\drexellogobw}
26   \addtolength{\tempskipa}{1em}
27   \setlength{\tempskipb}{\textwidth}
28   \addtolength{\tempskipb}{-\tempskipa}
29   \addtolength{\tempskipb}{-1em}
```

Add the logo and form title in columns. Each column is in a minipage.

```
30   \begin{minipage}[c]{\tempskipa}
```

`\raisebox` drops the logo so that the image is centered on the baseline.

```
31     \raisebox{-0.5\height}{\drexellogobw}
32   \end{minipage}
33   \hfill
34   \begin{minipage}[c]{\tempskipb}
```

Unlike `\newline` or `\\`, `\linebreak` justifies the current line before requesting a newline.

```
35     \textbf{\Huge Office of Graduate Studies} \linebreak
36     \vskip 0.1\baselineskip
```

The original form lacks the spaces around the slash (/), but LaTeX's font and kerning make the second line more compact in our version. Allowing stretchy spaces around the slash helps the second line look more balanced.

```
37     \textbf{\LARGE Dissertation / Thesis Approval Form} \linebreak
38   \end{minipage}
39
40   \vskip 2\baselineskip
41
42   This form is for use by all doctoral and master's students with a
43   dissertation/thesis requirement.  Please print clearly as the
44   library will bind a copy of this form with each copy of the
45   dissertation/thesis.  All doctoral dissertations must conform to
46   university format requirements, which is the responsibility of the
47   student and supervising professor.  Students should obtain a copy of
48   the Thesis Manual located on the library website.
49
50   \vspace*{\fill}
```

Setup tempskipb = left column width and tempskipa = textwidth − tempskipb − 4em. The 4em provides some buffer space between the columns.

```
51   \settowidth{\tempskipb}{Dissertation/Thesis Title:}
52   \setlength{\tempskipa}{\textwidth}
53   \addtolength{\tempskipa}{-\tempskipb}
54   \addtolength{\tempskipa}{-4em}
```

Double space the student-contolled section to allow plenty of space for hand-written entries.

```
55   \begin{spacing}{2}
56     \begin{tabular*}{\textwidth}{@{\extracolsep{\fill}} l p{\tempskipa}}
57       \textbf{Dissertation/Thesis Title:} & \@DUT@title \\
58       \textbf{Author:} & \@DUT@author
59     \end{tabular*}
60
61     \vspace*{\fill}
62
63     \begin{center}
64       \textbf{This dissertation/thesis is hereby accepted and approved.}
```

```
65      \end{center}
66
67      \vspace*{\fill}
68
69      \textbf{Signatures:} \\
70      Examining Committee \\
```

The left most column is left blank and the stretchy space between columns indents
the middle column. I think this looks bad, but that's how Drexel's version of the
T-1 form looks.

```
71      \begin{tabular*}{\textwidth}{@{\extracolsep{\fill}} p{0pt} l p{\tempskipa}}
72        & Chair            & \hrulefill \\
73        & Members          & \hrulefill \\
74        &                  & \hrulefill \\
75        &                  & \hrulefill \\
76        &                  & \hrulefill \\
77        &                  & \hrulefill \\
78        & Academic Advisor & \hrulefill \\
79        & Department Head  & \hrulefill
80      \end{tabular*}
81
82      \vspace*{\fill}
83    \end{spacing}
84
85    \begin{center}\scriptsize
86      Office of Graduate Studies
87      $\bullet$ 3141 Chestnut St.
88      $\bullet$ Randell Hall 240
89      $\bullet$ Philadelphia, PA 19104 \\
90      \textbf{Tel.}: 215-895-0366
91      $\bullet$ \textbf{Fax}: 215-895-0495
92      $\bullet$ \textbf{Email}:
93        \href{mailto:graduate@drexel.edu}{graduate@drexel.edu}
94      $\bullet$ \textbf{Web}:
95        \href{http://www.drexel.edu/provost/graduatestudies/}{%
96                   www.drexel.edu/provost/graduatestudies}
97    \end{center}
98    \endgroup
99    \pagebreak
100 }
```

\drexellogobw Draws a vector art official black-and-white Drexel logo. The image is exactly
1 inch wide and 1.016 inches tall.

```
101 \newcommand\drexellogobw{
102   \begin{tikzpicture}[y=0.8pt, x=0.8pt,yscale=-1, inner sep=0pt, outer sep=0pt]
103   \begin{scope}[cm={{1.25,0.0,0.0,-1.25,(-332.5,550.73629)}},]
104     \path[fill=black,nonzero rule] (266.0000,367.4100) -- (338.0000,367.4100) --
105       (338.0000,440.5890) -- (266.0000,440.5890) -- (266.0000,367.4100) -- cycle;
106     \path[fill=white,nonzero rule] (269.3171,377.0107) -- (334.8469,377.0107) --
107       (334.8469,438.7106) -- (269.3171,438.7106) -- (269.3171,377.0107) -- cycle;
```

```
108    \path[fill=black,nonzero rule] (330.2168,398.2540) .. controls
109    (328.9195,397.9603) and (327.1082,397.5687) .. (326.0555,397.4220) --
110    (326.0555,396.7855) .. controls (327.6468,396.6388) and (327.6956,396.6388) ..
111    (327.6956,395.1942) -- (327.6956,383.2000) .. controls (327.6956,381.8537) and
112    (327.5489,381.7070) .. (326.0313,381.5600) -- (326.0313,380.8747) --
113    (331.9060,380.8747) -- (331.9060,381.5600) .. controls (330.3147,381.7070) and
114    (330.2168,381.8537) .. (330.2168,383.2000) -- (330.2168,398.2540) --
115    cycle(319.4750,387.8511) .. controls (319.6711,389.6870) and
116    (320.6989,390.8372) .. (321.7273,390.8372) .. controls (322.8042,390.8372) and
117    (323.5629,389.5642) .. (323.5629,388.5852) .. controls (323.5629,388.0466) and
118    (323.4650,387.8999) .. (323.1225,387.8999) -- (319.4750,387.8511) --
119    cycle(325.6436,383.5183) .. controls (324.6889,382.7839) and
120    (323.9057,382.4902) .. (323.0734,382.4902) .. controls (321.2375,382.4902) and
121    (319.3037,383.7632) .. (319.3528,386.8472) .. controls (322.0207,386.9454) and
122    (325.1787,387.1900) .. (325.5215,387.2391) .. controls (325.9865,387.3367) and
123    (326.0352,387.3858) .. (326.0352,388.2915) .. controls (326.0352,390.0540) and
124    (324.4443,391.7920) .. (322.3881,391.7920) .. controls (319.1570,391.7920) and
125    (316.8805,388.7813) .. (316.9296,385.7212) .. controls (316.9784,382.8575) and
126    (318.8630,380.5809) .. (322.0698,380.5809) .. controls (322.7551,380.5809) and
127    (324.5910,381.0704) .. (325.9865,383.1021) -- (325.6436,383.5183) --
128    cycle(312.6069,391.4983) -- (312.6069,390.8130) -- (313.2434,390.7393) ..
129    controls (313.7084,390.6659) and (313.5859,390.3968) .. (313.2188,389.7848) ..
130    controls (312.8518,389.1729) and (312.4111,388.5118) .. (311.9216,387.8265) --
131    (310.5019,389.9561) .. controls (310.1836,390.4210) and (310.2327,390.6659) ..
132    (310.6485,390.7147) -- (311.2851,390.8129) -- (311.2851,391.4982) --
133    (305.8754,391.4982) -- (305.8754,390.8129) .. controls (307.1972,390.6659) and
134    (307.3684,390.5680) .. (308.1762,389.3195) -- (310.4527,385.7948) .. controls
135    (309.6938,384.7667) and (308.9839,383.8365) .. (308.4211,383.1021) .. controls
136    (307.3930,381.7803) and (307.0259,381.7557) .. (305.6304,381.5599) --
137    (305.6304,380.8746) -- (310.2327,380.8746) -- (310.2327,381.5599) --
138    (309.5225,381.6824) .. controls (309.1309,381.7557) and (309.0576,381.9027) ..
139    (309.4492,382.5635) .. controls (309.9142,383.3470) and (310.4528,384.1547) ..
140    (310.9914,384.9379) -- (312.5824,382.5147) .. controls (312.9006,382.0252) and
141    (312.8761,381.7069) .. (312.4353,381.6581) -- (311.7258,381.5599) --
142    (311.7258,380.8746) -- (317.5271,380.8746) -- (317.5271,381.5599) .. controls
143    (316.2053,381.7069) and (315.8867,381.8048) .. (314.9323,383.2491) --
144    (312.4599,386.9942) .. controls (313.3168,388.1693) and (314.0021,389.0259) ..
145    (314.2715,389.3683) .. controls (315.2997,390.6168) and (315.5934,390.6659) ..
146    (317.1355,390.8129) -- (317.1355,391.4982) -- (312.6069,391.4982) --
147    cycle(299.3927,387.8511) .. controls (299.5885,389.6870) and
148    (300.6166,390.8372) .. (301.6447,390.8372) .. controls (302.7220,390.8372) and
149    (303.4806,389.5642) .. (303.4806,388.5852) .. controls (303.4806,388.0466) and
150    (303.3827,387.8999) .. (303.0402,387.8999) -- (299.3927,387.8511) --
151    cycle(305.5614,383.5183) .. controls (304.6066,382.7839) and
152    (303.8234,382.4902) .. (302.9911,382.4902) .. controls (301.1552,382.4902) and
153    (299.2215,383.7632) .. (299.2706,386.8472) .. controls (301.9384,386.9454) and
154    (305.0961,387.1900) .. (305.4389,387.2391) .. controls (305.9039,387.3367) and
155    (305.9530,387.3858) .. (305.9530,388.2915) .. controls (305.9530,390.0540) and
156    (304.3617,391.7920) .. (302.3058,391.7920) .. controls (299.0745,391.7920) and
157    (296.7982,388.7813) .. (296.8470,385.7212) .. controls (296.8961,382.8575) and
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158    (298.7808,380.5809) .. (301.9876,380.5809) .. controls (302.6729,380.5809) and
159    (304.5087,381.0704) .. (305.9039,383.1021) -- (305.5614,383.5183) --
160    cycle(292.7087,391.8408) .. controls (291.4360,391.4492) and
161    (289.8205,391.1067) .. (288.6211,390.9109) -- (288.6211,390.3477) .. controls
162    (290.1387,390.2007) and (290.1875,390.1519) .. (290.1875,388.6585) --
163    (290.1875,383.2000) .. controls (290.1875,381.8537) and (290.0408,381.7070) ..
164    (288.5965,381.5600) -- (288.5965,380.8747) -- (294.6428,380.8747) --
165    (294.6428,381.5600) .. controls (292.8557,381.7070) and (292.7087,381.8537) ..
166    (292.7087,383.2000) -- (292.7087,388.1448) .. controls (293.2476,389.2217) and
167    (293.8105,389.5154) .. (294.2266,389.5154) .. controls (294.6182,389.5154) and
168    (295.0098,389.3196) .. (295.3526,388.9771) .. controls (295.4993,388.8301) and
169    (295.7930,388.7813) .. (296.0625,388.8789) .. controls (296.6253,389.0993) and
170    (297.0660,389.8091) .. (297.0660,390.4211) .. controls (297.0660,391.1067) and
171    (296.4298,391.8408) .. (295.5484,391.8408) .. controls (294.3487,391.8408) and
172    (293.3697,390.2986) .. (292.7823,389.3684) -- (292.7086,389.3684) --
173    (292.7086,391.8408) -- cycle(276.3892,394.4356) .. controls
174    (276.3892,395.0721) and (276.3892,395.5125) .. (276.5362,395.6350) .. controls
175    (276.6829,395.7574) and (277.3194,395.8553) .. (278.1272,395.8553) .. controls
176    (282.0438,395.8553) and (284.6874,394.0440) .. (284.6874,388.8055) .. controls
177    (284.6874,384.7422) and (282.5821,381.8782) .. (278.5188,381.8782) .. controls
178    (276.6341,381.8782) and (276.3892,382.3435) .. (276.3892,384.5952) --
179    (276.3892,394.4356) -- cycle(271.6405,396.7855) -- (271.6405,396.0999) ..
180    controls (273.4518,395.9532) and (273.6476,395.7574) .. (273.6476,393.1138) --
181    (273.6476,384.5464) .. controls (273.6476,381.9028) and (273.4518,381.7070) ..
182    (271.4447,381.5599) -- (271.4447,380.8746) -- (277.4419,380.8746) .. controls
183    (283.1695,380.8746) and (287.8206,383.5183) .. (287.8206,389.5399) .. controls
184    (287.8206,391.6941) and (286.8903,393.5054) .. (285.7643,394.6314) .. controls
185    (284.1488,396.1981) and (281.6522,396.7855) .. (278.9104,396.7855) --
186    (271.6405,396.7855);
187  \path[fill=white,nonzero rule] (277.1649,373.9784) -- (277.1649,371.3099) ..
188    controls (277.1649,370.4792) and (277.1239,369.7235) .. (276.0893,369.7235) ..
189    controls (275.0546,369.7235) and (275.0137,370.4792) .. (275.0137,371.3099) --
190    (275.0137,373.9784) -- (273.9584,373.9784) -- (273.9584,370.9013) .. controls
191    (273.9584,369.5942) and (274.8978,368.9613) .. (276.0893,368.9613) .. controls
192    (277.2808,368.9613) and (278.2201,369.5942) .. (278.2201,370.9013) --
193    (278.2201,373.9784) -- (277.1649,373.9784);
194  \path[fill=white,nonzero rule] (285.3943,369.0631) -- (285.3943,373.9784) --
195    (284.4072,373.9784) -- (284.4072,370.1253) -- (284.3933,370.1119) --
196    (282.5215,373.9785) -- (280.9557,373.9785) -- (280.9557,369.0632) --
197    (281.9429,369.0632) -- (281.9429,373.1344) -- (281.9563,373.1482) --
198    (283.8966,369.0632) -- (285.3943,369.0632);
199  \path[fill=white,nonzero rule] (287.9938,369.0631) -- (289.0489,369.0631) --
200    (289.0489,373.9783) -- (287.9938,373.9783) -- (287.9938,369.0631) -- cycle;
201  \path[fill=white,nonzero rule] (293.1186,369.0631) -- (294.2692,369.0631) --
202    (296.0802,373.9784) -- (295.0383,373.9784) -- (293.7518,370.1047) --
203    (293.7380,370.1047) -- (292.4581,373.9784) -- (291.3076,373.9784) --
204    (293.1186,369.0631);
205  \path[fill=white,nonzero rule] (298.3125,369.0631) -- (301.6824,369.0631) --
206    (301.6824,369.8804) -- (299.3678,369.8804) -- (299.3678,371.1940) --
207    (301.4647,371.1940) -- (301.4647,372.0109) -- (299.3678,372.0109) --
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208    (299.3678,373.1615) -- (301.6078,373.1615) -- (301.6078,373.9784) --
209    (298.3125,373.9784) -- (298.3125,369.0631);
210  \path[fill=white,nonzero rule] (305.3086,373.1615) -- (306.1936,373.1615) ..
211    controls (306.6566,373.1545) and (306.9291,372.9710) .. (306.9291,372.5352) ..
212    controls (306.9291,372.0997) and (306.6566,371.8682) .. (306.1936,371.8613) --
213    (305.3086,371.8613) -- (305.3086,373.1615) -- cycle(305.3086,371.0444) --
214    (306.4251,371.0444) .. controls (306.7722,371.0306) and (306.8403,370.6564) ..
215    (306.8675,370.3840) .. controls (306.9153,369.9413) and (306.9631,369.4989) ..
216    (307.0515,369.0631) -- (308.2158,369.0631) .. controls (308.0181,369.3356) and
217    (307.9771,369.9141) .. (307.9297,370.2275) .. controls (307.8413,370.9082) and
218    (307.8413,371.4052) .. (307.0309,371.4936) -- (307.0309,371.5074) .. controls
219    (307.6369,371.6368) and (308.0521,372.0588) .. (308.0521,372.6986) .. controls
220    (308.0521,373.6995) and (307.1877,373.9719) .. (306.3436,373.9785) --
221    (304.2533,373.9785) -- (304.2533,369.0632) -- (305.3086,369.0632) --
222    (305.3086,371.0444);
223  \path[fill=white,nonzero rule] (314.2601,372.5761) .. controls
224    (314.2601,373.5633) and (313.5181,374.0806) .. (312.5650,374.0806) .. controls
225    (311.5572,374.0806) and (310.5225,373.5836) .. (310.5225,372.4605) .. controls
226    (310.5225,371.5889) and (311.4619,371.2759) .. (312.1495,371.1056) .. controls
227    (312.5719,370.9969) and (313.2729,370.9560) .. (313.2729,370.3771) .. controls
228    (313.2729,369.8529) and (312.7146,369.7235) .. (312.2926,369.7235) .. controls
229    (311.7412,369.7235) and (311.4282,370.0912) .. (311.4691,370.6358) --
230    (310.3932,370.6358) .. controls (310.3592,369.3968) and (311.1558,368.9613) ..
231    (312.2792,368.9613) .. controls (313.3341,368.9613) and (314.3963,369.3834) ..
232    (314.3963,370.6017) .. controls (314.3963,371.5889) and (313.2935,371.8001) ..
233    (312.5447,371.9906) .. controls (312.1227,372.0928) and (311.6459,372.1540) ..
234    (311.6459,372.6851) .. controls (311.6459,373.1140) and (312.0408,373.3184) ..
235    (312.4288,373.3184) .. controls (312.9393,373.3184) and (313.2048,373.0731) ..
236    (313.2457,372.5761) -- (314.2601,372.5761);
237  \path[fill=white,nonzero rule] (316.8870,369.0631) -- (317.9422,369.0631) --
238    (317.9422,373.9783) -- (316.8870,373.9783) -- (316.8870,369.0631) -- cycle;
239  \path[fill=white,nonzero rule] (320.2146,373.1615) -- (321.6782,373.1615) --
240    (321.6782,369.0631) -- (322.7335,369.0631) -- (322.7335,373.1615) --
241    (324.1971,373.1615) -- (324.1971,373.9784) -- (320.2146,373.9784) --
242    (320.2146,373.1615);
243  \path[fill=white,nonzero rule] (327.7961,369.0631) -- (328.8511,369.0631) --
244    (328.8511,370.6701) -- (330.5056,373.9784) -- (329.4231,373.9784) --
245    (328.3881,371.7251) -- (327.3741,373.9784) -- (326.1417,373.9784) --
246    (327.7961,370.6701) -- (327.7961,369.0631);
247  \path[fill=black,nonzero rule] (317.2675,431.5469) .. controls
248    (316.1860,431.3992) and (315.2214,430.7506) .. (314.6366,429.7477) .. controls
249    (314.1108,428.7739) and (313.9058,427.3581) .. (314.6661,426.4142) .. controls
250    (315.0459,425.9718) and (315.5138,425.6179) .. (316.0986,425.5884) .. controls
251    (317.6768,425.7655) and (318.7000,427.4174) .. (320.2199,427.8005) .. controls
252    (321.2140,428.1250) and (322.0325,427.5647) .. (322.7342,427.0042) .. controls
253    (323.2604,426.6797) and (323.9912,426.7681) .. (324.4882,427.0926) .. controls
254    (322.8511,425.7652) and (321.7401,423.7889) .. (321.5650,421.6357) .. controls
255    (321.3308,422.6386) and (320.7169,423.7299) .. (319.7232,424.0839) .. controls
256    (318.6126,424.4971) and (317.6480,423.8183) .. (316.8877,423.0810) .. controls
257    (316.1864,422.3436) and (315.8940,421.3997) .. (315.5138,420.5146) .. controls
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258    (316.0400,420.9868) and (316.6834,421.6063) .. (317.4725,421.7536) .. controls
259    (318.4665,422.0486) and (319.4020,421.7241) .. (320.1911,421.1344) .. controls
260    (320.4540,420.8689) and (320.7759,420.6328) .. (320.8927,420.2199) .. controls
261    (319.8990,419.5415) and (319.5772,418.3909) .. (319.6358,417.1814) .. controls
262    (319.3142,418.1254) and (318.9636,419.2760) .. (317.8818,419.6889) .. controls
263    (317.1801,419.9839) and (316.3032,419.8955) .. (315.7479,419.3054) .. controls
264    (315.2800,418.8038) and (315.2509,418.0075) .. (315.3678,417.3291) .. controls
265    (315.8062,415.4120) and (317.5602,414.2909) .. (319.2265,413.7304) .. controls
266    (320.9514,413.1109) and (322.5299,411.5180) .. (322.7345,409.6304) .. controls
267    (322.9978,409.6893) and (323.4362,409.8956) .. (323.6700,409.6006) .. controls
268    (323.9329,410.4856) and (324.3422,411.6362) .. (325.3945,411.9309) .. controls
269    (326.1545,412.2262) and (326.9439,411.9309) .. (327.5287,411.4001) .. controls
270    (328.1426,410.7217) and (328.4350,409.8366) .. (328.2595,408.8927) .. controls
271    (328.1717,408.5093) and (327.9962,408.1553) .. (327.7625,407.8308) .. controls
272    (327.8502,408.2732) and (327.9088,408.9814) .. (327.6164,409.3943) .. controls
273    (327.3823,409.7188) and (327.0316,409.9548) .. (326.6515,409.9548) .. controls
274    (326.3594,409.9843) and (326.1548,409.8075) .. (326.0084,409.5714) .. controls
275    (325.6869,408.1258) and (327.4995,407.7424) .. (327.5578,406.3856) .. controls
276    (327.5873,405.6482) and (327.2949,404.9695) .. (326.6518,404.6453) .. controls
277    (325.9505,404.3503) and (325.1902,404.6155) .. (324.6932,405.1466) .. controls
278    (324.4303,405.3824) and (324.2256,405.6777) .. (324.1087,405.9724) .. controls
279    (324.6346,405.7072) and (325.5995,405.4416) .. (326.1548,405.9433) .. controls
280    (326.4180,406.1790) and (326.5346,406.4740) .. (326.5346,406.8280) .. controls
281    (326.5932,407.3591) and (326.1839,407.8014) .. (325.8333,408.0964) .. controls
282    (325.5114,408.3325) and (325.1607,408.4798) .. (324.7515,408.5388) .. controls
283    (324.9856,408.0669) and (324.9564,407.4180) .. (324.6346,407.0051) .. controls
284    (324.1087,406.2677) and (323.1733,406.3264) .. (322.3547,406.4151) .. controls
285    (321.4779,404.2030) and (319.0516,403.0230) .. (316.8884,402.4330) --
286    (315.3098,402.3151) .. controls (316.3039,401.6956) and (317.3562,401.2234) ..
287    (318.4086,400.7222) .. controls (318.9639,401.7251) and (319.7530,402.8458) ..
288    (320.9517,403.0819) .. controls (321.8285,403.1998) and (322.6471,402.9048) ..
289    (323.1441,402.1969) .. controls (323.5534,401.4595) and (323.8163,400.4566) ..
290    (323.4657,399.6011) -- (323.0855,398.8932) .. controls (323.2610,399.5421) and
291    (323.0563,400.3682) .. (322.5011,400.8695) .. controls (322.2087,401.1056) and
292    (321.8285,401.2234) .. (321.4484,401.1645) .. controls (321.0977,401.1056) and
293    (320.7471,400.8695) .. (320.6302,400.5156) .. controls (320.2500,398.7753) and
294    (322.8226,398.7458) .. (322.5302,396.9761) .. controls (322.4719,396.5039) and
295    (322.2673,396.1205) .. (321.8580,395.7961) .. controls (321.2444,395.2948) and
296    (320.1331,395.2358) .. (319.4026,395.6192) .. controls (318.9348,395.7961) and
297    (318.5255,396.1795) .. (318.1457,396.5039) .. controls (317.5609,396.1795) and
298    (316.6546,396.1503) .. (316.1284,396.6221) .. controls (315.3393,397.2711) and
299    (315.1930,398.2147) .. (314.9592,399.1292) .. controls (311.7435,400.3977) and
300    (308.7325,402.2561) .. (306.2186,404.9698) .. controls (304.4354,406.8872) and
301    (303.6460,409.5125) .. (304.0553,412.1968) .. controls (304.4646,414.6744) and
302    (304.2305,417.5357) .. (302.0966,419.0108) .. controls (301.1026,419.5415) and
303    (299.8161,419.8071) .. (298.7055,419.3647) .. controls (297.5945,418.8929) and
304    (296.8346,417.6539) .. (296.8054,416.4150) .. controls (296.8640,414.2026) and
305    (298.0919,412.3444) .. (299.0860,410.4565) .. controls (300.0214,408.2146) and
306    (299.6121,405.4122) .. (297.8581,403.7607) .. controls (296.4842,402.0793) and
307    (294.5259,401.5780) .. (293.0057,400.1914) .. controls (292.8010,399.9848) and
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308    (292.7136,399.6606) .. (292.8305,399.3951) .. controls (293.3275,398.7462) and
309    (294.2921,398.7462) .. (295.1107,398.8051) .. controls (296.8644,399.1296) and
310    (298.1796,400.4570) .. (299.8459,400.9288) .. controls (300.8986,401.0764) and
311    (301.9215,400.7225) .. (302.4771,399.8080) .. controls (302.6817,399.4246) and
312    (302.8569,398.9230) .. (302.7109,398.4511) .. controls (302.5648,397.9790) and
313    (302.2138,397.5367) .. (301.8046,397.3300) .. controls (301.5416,397.2122) and
314    (301.1615,397.2416) .. (300.8691,397.2711) .. controls (301.2201,397.3893) and
315    (301.6585,397.6546) .. (301.7754,398.1264) .. controls (301.8631,398.5101) and
316    (301.7463,398.9230) .. (301.4830,399.2180) .. controls (301.1615,399.5130) and
317    (300.8108,399.6607) .. (300.3724,399.6607) .. controls (300.6353,399.3359) and
318    (300.8691,398.8935) .. (300.8108,398.3919) .. controls (300.6939,397.6251) and
319    (300.1678,396.8877) .. (299.4075,396.6811) .. controls (299.0277,396.5633) and
320    (298.6475,396.7106) .. (298.3260,396.9172) .. controls (298.0339,397.1533) and
321    (297.9167,397.4188) .. (297.7707,397.7138) .. controls (297.9753,397.5072) and
322    (298.2383,397.3599) .. (298.5306,397.3893) .. controls (298.9399,397.4482) and
323    (299.2323,397.6840) .. (299.3783,398.0678) .. controls (299.4661,398.3330) and
324    (299.4661,398.6873) .. (299.3197,398.9230) .. controls (299.1446,399.1885) and
325    (298.8522,399.3657) .. (298.5015,399.2769) .. controls (297.3906,398.9230) and
326    (297.1568,397.3599) .. (296.0167,397.0056) .. controls (294.5551,396.8877) and
327    (293.0057,397.0649) .. (291.4858,396.9761) -- (286.8671,396.8582) .. controls
328    (286.6042,396.9466) and (286.2824,397.0056) .. (286.1655,397.3009) .. controls
329    (285.6393,398.1856) and (286.9549,399.1885) .. (285.8439,399.8673) .. controls
330    (283.0376,401.7843) and (279.9097,403.7017) .. (278.0679,406.8283) .. controls
331    (276.4017,409.6307) and (274.9692,413.8490) .. (277.0735,416.9166) .. controls
332    (278.1845,418.5095) and (280.0263,419.4535) .. (282.0432,419.0995) .. controls
333    (283.6508,418.8929) and (284.9956,417.5656) .. (285.4049,416.0316) --
334    (285.4927,415.5005) .. controls (284.8787,416.5921) and (283.8850,417.6834) ..
335    (282.6277,418.0963) .. controls (282.7449,417.7718) and (282.6863,417.3000) ..
336    (282.6280,416.9461) .. controls (282.3942,417.4771) and (281.7509,417.9490) ..
337    (281.1664,418.1556) .. controls (281.4293,417.6834) and (281.7220,417.1229) ..
338    (281.6340,416.5037) .. controls (281.2247,416.9755) and (280.6111,417.4474) ..
339    (279.9386,417.2705) .. controls (280.4647,416.8282) and (280.9326,416.3560) ..
340    (281.1373,415.6776) .. controls (280.6697,415.9726) and (279.9680,416.2676) ..
341    (279.3246,416.0021) .. controls (279.8803,415.6482) and (280.8743,415.3531) ..
342    (280.8743,414.4386) .. controls (280.5819,414.6453) and (280.1727,414.7337) ..
343    (279.8217,414.6453) -- (279.3832,414.4386) .. controls (279.8217,414.2618) and
344    (280.4356,414.1145) .. (280.7571,413.6424) -- (281.0204,413.1705) .. controls
345    (280.4064,413.2294) and (279.7634,413.1407) .. (279.3246,412.6689) .. controls
346    (279.9972,412.5510) and (280.6988,412.4626) .. (281.1373,411.8432) .. controls
347    (280.5525,411.6955) and (279.9386,411.3710) .. (279.7339,410.7221) .. controls
348    (280.2896,411.0171) and (281.1373,411.0171) .. (281.6634,410.5747) .. controls
349    (281.0204,410.2208) and (280.3478,409.5423) .. (280.5233,408.6868) .. controls
350    (281.0790,409.1291) and (281.8681,409.5129) .. (282.6283,409.1586) .. controls
351    (281.8098,408.8047) and (281.2836,407.9789) .. (281.2541,407.1528) --
352    (281.2836,406.9171) .. controls (281.8681,407.5955) and (282.6284,408.0378) ..
353    (283.5344,407.8610) .. controls (282.7453,407.4773) and (282.3943,406.6810) ..
354    (282.4820,405.7959) .. controls (282.6284,405.8846) and (282.7453,406.0910) ..
355    (282.9208,406.2092) .. controls (283.4761,406.5631) and (284.0314,406.9171) ..
356    (284.6745,406.9465) .. controls (284.2360,406.3565) and (283.6221,405.5893) ..
357    (283.8854,404.7341) .. controls (284.2946,405.5013) and (285.0546,406.3270) ..
```

```
358    (285.9314,406.4154) .. controls (285.4930,405.8254) and (285.3470,405.0881) ..
359    (285.3470,404.3212) .. controls (285.9609,405.1765) and (286.8669,406.1794) ..
360    (287.8901,406.5631) .. controls (287.5391,405.9141) and (287.2176,404.8225) ..
361    (287.5977,404.0262) .. controls (287.8901,404.9997) and (288.5040,406.0026) ..
362    (289.2348,406.6512) .. controls (289.0885,405.8254) and (289.3517,405.0586) ..
363    (289.9948,404.4980) -- (290.0534,404.5569) .. controls (290.0239,405.6191) and
364    (290.4332,406.5333) .. (290.9594,407.3299) .. controls (290.8425,406.6220) and
365    (291.2517,405.9730) .. (291.8657,405.6188) -- (292.1289,405.5009) .. controls
366    (291.8365,406.2386) and (291.6319,407.0938) .. (291.7779,408.0083) .. controls
367    (292.3041,407.4478) and (293.0644,406.7693) .. (293.9117,406.8872) .. controls
368    (292.6551,408.0083) and (291.3978,409.2473) .. (290.8716,410.8104) .. controls
369    (291.3686,410.2797) and (292.1577,409.9254) .. (293.0054,409.9847) .. controls
370    (291.4272,411.1054) and (289.9948,413.0523) .. (289.8484,415.0876) .. controls
371    (290.1994,414.2618) and (290.9885,413.6125) .. (291.8071,413.3178) .. controls
372    (290.6961,414.9697) and (289.5269,416.8868) .. (290.1405,419.1286) .. controls
373    (290.2868,418.0668) and (290.9008,416.8868) .. (292.0117,416.5626) .. controls
374    (291.3978,417.7129) and (290.5792,418.8929) .. (290.7544,420.3676) .. controls
375    (290.8127,421.2821) and (291.1051,422.1671) .. (291.6312,422.9045) .. controls
376    (291.2514,422.0784) and (291.1928,420.7808) .. (291.9528,420.0137) --
377    (292.0114,419.9548) .. controls (291.7776,422.2556) and (292.6544,424.5269) ..
378    (294.6422,425.5888) -- (295.4022,426.0016) .. controls (294.7883,425.2050) and
379    (294.3793,424.3498) .. (294.3793,423.3171) .. controls (295.2558,425.2050) and
380    (297.0976,427.0635) .. (299.4364,426.9456) .. controls (299.7870,426.9751) and
381    (300.1086,426.9158) .. (300.4301,426.8569) .. controls (299.4655,426.4146) and
382    (298.2668,425.6769) .. (298.1499,424.4677) .. controls (299.7284,425.9129) and
383    (301.9503,426.7096) .. (304.1133,425.9129) .. controls (304.6103,425.7063) and
384    (305.1656,425.4411) .. (305.4872,425.0279) .. controls (304.7272,425.4411) and
385    (303.8504,425.1166) .. (303.2070,424.7034) .. controls (302.9149,424.4972) and
386    (302.5056,424.2021) .. (302.3888,423.8482) .. controls (303.8795,424.4088) and
387    (306.1597,424.7922) .. (307.3289,423.2877) -- (308.0598,422.1374) .. controls
388    (307.2707,422.6685) and (306.3352,423.1108) .. (305.3120,422.9046) .. controls
389    (305.1365,422.8453) and (304.9610,422.7569) .. (304.7858,422.6092) .. controls
390    (306.4226,422.5503) and (308.0306,421.7537) .. (308.7028,420.2200) --
391    (308.9075,419.3055) .. controls (308.4982,420.1021) and (307.6505,420.8984) ..
392    (306.6859,420.9279) .. controls (307.2412,420.3382) and (308.0892,419.7482) ..
393    (308.3521,418.9221) .. controls (308.9078,417.6831) and (309.0538,416.1789) ..
394    (310.3985,415.4121) .. controls (310.9247,415.1466) and (311.4800,414.9694) ..
395    (312.0648,414.8810) .. controls (310.0479,415.7068) and (309.3171,418.1258) ..
396    (309.1707,420.2495) .. controls (309.6677,419.6303) and (310.3108,419.0694) ..
397    (311.0125,418.7748) .. controls (310.6615,419.2171) and (310.3108,419.5121) ..
398    (309.9307,419.9839) .. controls (308.7614,421.4001) and (308.0598,423.2582) ..
399    (308.4982,425.1461) .. controls (308.8197,426.3553) and (309.6383,427.3582) ..
400    (310.4274,428.3611) .. controls (309.7846,427.1224) and (309.6674,425.3233) ..
401    (310.4569,424.1137) .. controls (310.8367,423.5237) and (311.3632,423.0221) ..
402    (311.8893,422.6387) .. controls (310.8661,423.9955) and (310.3982,426.0013) ..
403    (311.0122,427.7419) .. controls (311.8890,430.1312) and (314.3444,431.3993) ..
404    (316.7123,431.5764) -- (317.2676,431.5469);
405  \path[fill=white,nonzero rule] (314.4906,424.9100) .. controls
406    (314.8707,424.6150) and (315.4260,424.4378) .. (315.9231,424.6444) .. controls
407    (316.0109,424.6739) and (316.0986,424.7328) .. (316.2155,424.7623) .. controls
```

```
408        (315.7770,424.2905) and (315.3091,423.3171) .. (314.4906,423.5237) .. controls
409        (313.7892,424.0544) and (314.0522,425.1461) .. (313.9936,425.9424) .. controls
410        (314.0231,425.5295) and (314.1982,425.2050) .. (314.4906,424.9100);
411      \path[fill=white,nonzero rule] (312.1524,410.9578) .. controls
412        (312.7372,411.0167) and (313.2634,411.4001) .. (313.5849,411.8723) .. controls
413        (313.9356,410.8101) and (314.4621,409.1880) .. (313.5849,408.1851) .. controls
414        (313.3220,407.9196) and (313.0005,407.8014) .. (312.6203,407.8014) .. controls
415        (311.1587,407.8901) and (310.5157,409.4238) .. (310.1060,410.6627) .. controls
416        (309.8140,411.5183) and (309.8140,412.4623) .. (309.6968,413.4062) .. controls
417        (310.1355,412.3735) and (310.8663,410.9283) .. (312.1524,410.9578);
418      \path[fill=white,nonzero rule] (320.8934,398.4803) .. controls
419        (321.1563,398.2147) and (321.3023,397.9200) .. (321.2440,397.5363) .. controls
420        (321.2440,397.2122) and (320.9517,396.8874) .. (320.6887,396.7695) .. controls
421        (320.0748,396.5039) and (319.3440,396.7106) .. (318.8178,397.0056) .. controls
422        (319.3145,397.5068) and (319.6072,398.0969) .. (319.6947,398.7458) .. controls
423        (320.1331,398.8047) and (320.5424,398.7163) .. (320.8934,398.4803);
424      \path[fill=white,nonzero rule] (322.0034,426.5913) .. controls
425        (322.0616,426.2668) and (321.8865,426.0013) .. (321.6232,425.8834) .. controls
426        (321.1848,425.7652) and (320.6000,425.7652) .. (320.2785,426.1195) .. controls
427        (320.1324,426.3258) and (320.0447,426.6208) .. (320.2199,426.8274) .. controls
428        (320.6586,427.3581) and (321.6818,427.2403) .. (322.0034,426.5913);
429      \path[fill=white,nonzero rule] (317.0930,398.3624) .. controls
430        (317.0639,398.0968) and (316.8592,397.8611) .. (316.5963,397.8018) .. controls
431        (316.2453,397.7723) and (316.1575,398.0968) .. (316.0701,398.3624) --
432        (316.0406,398.7753) -- (317.0929,398.3624);
433      \path[fill=white,nonzero rule] (323.3484,407.8309) .. controls
434        (323.3193,407.3590) and (322.9977,407.1524) .. (322.5885,407.0051) .. controls
435        (322.7345,407.4474) and (322.7640,407.9785) .. (322.7057,408.4504) .. controls
436        (322.9686,408.3325) and (323.2315,408.1259) .. (323.3484,407.8309);
437    \end{scope}
438    \end{tikzpicture}
439 }
```

subfig Set subfig flag

```
440 \DeclareOptionX{subfig}{\@DUT@subfigopttrue}
```

finalspace

```
441 \DeclareOptionX{finalspace}{
442   \setlength\overfullrule{0pt}
443   \def\@DUT@toc@sep{1} % content page separation (# blanklines between entries)
444   \def\@ssp{1} % single space
445   \def\@dsp{2} % double space
446   \def\@tsp{3} % triple space
447 }
```

draftspace

```
448 \DeclareOptionX{draftspace}{
449   \setlength\overfullrule{5pt}
450   \def\DUT@toc@sep{0} % content page separation (# blanklines between entries)
```

```
451    \def\@ssp{1} % single space
452    \def\@dsp{1} % double space
453    \def\@tsp{2} % triple space
```
Don't force chapters onto right-hand pages.
```
454    \PassOptionsToClass{openany}{book}
455 }
```

dottedpart
```
456 \DeclareOptionX{dottedpart}{\@dottedparttrue}
```

dottedchapter
```
457 \DeclareOptionX{dottedchapter}{\@dottedchaptertrue}
```
 1

boldpart
```
458 \DeclareOptionX{boldpart}{\@boldparttrue}
```

boldchapter
```
459 \DeclareOptionX{boldchapter}{\@boldchaptertrue}
```

dottedtoc
```
460 \DeclareOptionX{dottedtoc}{
461    \setkeys{drexel-thesis.cls}{dottedpart}
462    \setkeys{drexel-thesis.cls}{dottedchapter}
463 }
```

boldtoc
```
464 \DeclareOptionX{boldtoc}{
465    \setkeys{drexel-thesis.cls}{boldpart}
466    \setkeys{drexel-thesis.cls}{boldchapter}
467 }
```

indenttoc   Set indenttoc flag
```
468 \DeclareOptionX{indenttoc}{\@indenttoctrue}
```

blackref   Set blackref flag
```
469 \DeclareOptionX{blackref}{\@blackreftrue}
```

draftwatermark   Set draftwatermark flag
```
470 \DeclareOptionX{draftwatermark}{%
471    \@draftwatermarktrue
472    \@mydraftwatermarkfalse}
```

mydraftwatermark   Set mydraftwatermark flag
```
473 \DeclareOptionX{mydraftwatermark}{%
474    \@mydraftwatermarktrue
475    \@draftwatermarkfalse}
```

indentfirst Set indentfirst flag

476 `\DeclareOptionX{indentfirst}{\@indentfirsttrue}`

Define the book options that final and draft need to access.

oneside

477 `\DeclareOptionX{oneside}{\PassOptionsToClass{oneside}{book}}`

twoside

478 `\DeclareOptionX{twoside}{\PassOptionsToClass{twoside}{book}}`

final

479 `\DeclareOptionX{final}{`
480 `  \@finaltrue`
481 `  \setkeys{drexel-thesis.cls}{oneside}`
482 `  \setkeys{drexel-thesis.cls}{finalspace}`
483 `  \setkeys{drexel-thesis.cls}{dottedtoc}`
484 `}`

draft

485 `\DeclareOptionX{draft}{`
486 `  \@finalfalse`
487 `  \setkeys{drexel-thesis.cls}{twoside}`
488 `  \setkeys{drexel-thesis.cls}{draftspace}`
489 `  \setkeys{drexel-thesis.cls}{dottedtoc}`
490 `  \setkeys{drexel-thesis.cls}{mydraftwatermark}`
491 `}`

daring

492 `\DeclareOptionX{daring}{`
493 `  \@daringtrue`
494 `}`

approvalform

495 `\DeclareOptionX{approvalform}{`
496 `  \@approvalformtrue`
497 `}`

Use the default book implementation for any remaining options including oneside, twoside, leqno, fleqn, ...

498 `\DeclareOptionX*{\PassOptionsToClass{\CurrentOption}{book}}`

Execute the default options

499 `\ExecuteOptionsX{final}`

Process options and load the book class

500 `\ProcessOptionsX\relax`
501 `\LoadClass{book}`

3.2 Internal package includes

Include some other packages we'll need. If the package is not installed on your system, see §2.4.1 for installation instructions.

For many packages, we want the same functionality for both final and draft modes. We pass final to most of those packages to override a possible draft option passed to drexel-thesis.

3.2.1 setspace

setspace for double spacing.

502 \RequirePackage{setspace}

3.2.2 calc

calc for \set@lines@length macro (page 28).

503 \RequirePackage{calc}

3.2.3 graphicx

graphicx for \includegraphics. Not strictly necessary, but I can't imagine a thesis without figures.

504 \RequirePackage[final]{graphicx}

We include the graphicx package now so we can pass final, because some later packages include it with no options, and a final include after that produces errors like

```
l.104 \RequirePackage
                  [final]{ifpdf}
The package graphicx has already been loaded with options:
  []
There has now been an attempt to load it with options
  [final]
```

3.2.4 draftmark

The Comp. Sci. class used draftcopy to add their watermarks, but as of the current 2002/02/25 v2.16, it uses postscript specials, and so doesn't work with pdfLATEX. Instead we use the recent (catalogued 2009/11/03) draftmark which unfortunately has a number of apparently non-standard dependencies (etextools, etoolbox, lastpage, ltxnew, pagerange, xifthen, if only I had the space to install texlive-latexextra :p). The output is, however, very flexible, and it *does* work with both LATEX and pdfLATEX. If you don't like the default watermark, you can also adjust the particulars with \draftmarksetup.

505 \if@draftwatermark
506   \RequirePackage[draft,allpages,mark={DRAFT \today},
507   fontsize=2cm,grayness=0.9]{draftmark}
508 \fi

Here is Evan's alternative implementation This will not look right as a DVI, but it'll look fine once rendered to either a PS or PDF.

```
509 \if@mydraftwatermark
```

Use eso-pic for `\AddToShipoutPicture`.

```
510   \RequirePackage{eso-pic}
```

Use xcolor for `\definecolor`.

```
511   \RequirePackage{xcolor}
512   \definecolor{watermark}{rgb}{0.9,0.9,0.9}
```

Set the font explicitly to avoid being effected by the last text on the page having some strange font. `\sffamily` sets a sans serif font.

```
513   \newcommand{\watermarkfont}{%
514     \color{watermark}}%\fontfamily{phv}\selectfont\sffamily}
515   \newcommand{\watermark}{%
516     \rule{4.25in}{0pt}\raisebox{5.5in}{%
517       \makebox[0pt]{%
```

`\rotatebox` and `\resizebox` from graphicx.

```
518 \rotatebox[origin=c]{45}{%
519         \resizebox{!}{1.5in}{%
520           {\watermarkfont DRAFT}%
521     }}}}
522     \raisebox{4.2in}{%
523       \makebox[0pt]{%
524 \rotatebox[origin=c]{45}{%
525         \resizebox{!}{.6in}{%
526           {\watermarkfont \qquad\today}%
527     }}}}}
528   \AddToShipoutPicture{\watermark{}}
529 \fi
```

3.2.5   indentfirst

Indent the first paragraph after sections etc. with indentfirst.

```
530 \if@indentfirst
531   \RequirePackage{indentfirst}
532 \fi
```

3.2.6   geometry

Setup page margins with geometry. From the Manual p5:

- The left margin must be at least 1 1/2" (1.5 inches) throughout the document.

- All other margins (top, bottom, and right) must be at least 1".

And from the Manual §1.5 p4, Print Version:

The paper size must be 8 1/2" x 11".

```
533 \RequirePackage[letterpaper,margin=1in,bindingoffset=0.5in]{geometry}
```

Note that we include the geometry package after loading book to override the margin manipulation that takes place in book.

3.2.7   tocloft

Typeset the table of contents, etc., with tocloft.

```
534 \if@DUT@subfigopt
535   \RequirePackage[subfigure]{tocloft}
536 \else
537   \RequirePackage{tocloft}
538 \fi
```

The subfigure option sets up tocloft for subfig/subfigure compatibility. See the tocloft manual §2.1 for details.

The configuration of tocloft takes place in §3.5.12, §3.5.13, and §3.5.14.

3.2.8   caption

Get nice caption formatting with caption. From the Manual p5:

- The left margin must be at least 1 1/2" (1.5 inches) throughout the document.

- All other margins (top, bottom, and right) must be at least 1".

```
539 \RequirePackage[margin=10pt,labelfont=bf,labelsep=colon]{caption}
```

You can change these settings if you like using \captionsetup.

3.2.9   floatrow

Enforce caption placement with floatrow. From the Manual §2.3 p6, "Tables and Figures",

- Place figure captions below figures.
- Place table captions above tables.

```
540 \RequirePackage{floatrow}
541 \floatsetup[table]{style=plaintop}
542 \floatsetup{captionskip=10pt}
543 \floatsetup[table]{captionskip=10pt}
```

Use fr-subfig for floatrow/subfig compatibility. See the floatrow documentation (Sec. 7.1, "The subfig package") and subfig documentation (Sec. 4.3, "FloatRow Package") for details.

```
544 \if@DUT@subfigopt
545   \RequirePackage{fr-subfig}
546 \fi
```

We set up the three-line surrounding spaces in §3.5.1.

You can change these settings using \floatsetup, but you probably won't need to.

3.2.10   subfig

Allow multi-part figures with subfig.

```
547 \if@DUT@subfigopt
548   \RequirePackage{subfig}
549 \fi
```

3.2.11   fancyhdr

fancyhdr for correct page numbering and fancy headers. From the Manual §2.3 p5, "Pagination"

> Place page numbers in the upper right-hand corner of the page, 3/4"
> from the top.

```
550 \RequirePackage{fancyhdr}
```

Setup the standard `fancy` format.

```
551 \pagestyle{fancy}
552 \fancyhf{}
```

Turn off the header rule by setting its width to 0.

```
553 \renewcommand{\headrulewidth}{0pt}
```

0.4 pt is fancyhdr's default `\headrulewidth`, so we'll recycle the value.

```
554 \renewcommand{\footrulewidth}{0.4pt}
```

`\leftmark` is the higher level mark, see `\chaptermark` below. `\rightmark` is the lower level mark, see `\sectionmark` below. We put the lower level mark to the outside because it changes more often. Page numbers also go on the outside.

```
555 \fancyfoot[RE,LO]{\scshape\leftmark}
556 \fancyfoot[LE,RO]{\scshape\rightmark}
557 \fancyhead[LE,RO]{\thepage}
```

Override the `plain` format (for part pages, etc.).

```
558 \fancypagestyle{plain}{
559   \fancyhf{}
560   \renewcommand{\footrulewidth}{0pt}
561   \fancyhead[LE,RO]{\thepage}
562 }
```

Keep the `empty` format at its default.

```
563 \fancypagestyle{empty}{
564   \fancyhf{}
565   \renewcommand{\footrulewidth}{0pt}
566 }
```

Note that the chapter/section footer is not required. You can remove the footer text and rule entirely with.

```
\renewcommand{\footrulewidth}{0pt}
\fancyfoot[RE,LO]{}
\fancyfoot[LE,RO]{}
```

3.2.12 ifpdf

ifpdf for detecting PDF drivers. We use it to configure hyperref below.

```
567 \RequirePackage{ifpdf}
```

3.2.13 hyperref

hyperref for hyperlinks. Not strictly necessary, but I can't imagine a thesis without it. We actually include this later (§3.4), because hyperref sticks its fingers into *everything* and we want it to use our versions of some macros (e.g., \@sect) but not others (e.g., thebibliography).

3.2.14 hypcap

hypcap for placing caption hyperlink anchors. Must be included after hypercap, so the actual inclusion is in §3.4.1).

3.2.15 tikz

tikz for vector drawing natively in TeX. This package is currently only required for the approvalform option (it is used in drawing the Drexel logo on the approval form).

```
568 \if@approvalform\RequirePackage{tikz}\fi
```

3.3 LaTeX overrides and extensions

Here we change the behavior of a bunch of macros and environments from latex.ltx (generated by format.ins in base). We'll copy in their original notes along with their code, following the relevant documentation an order given in format.ins and the associated *.dtx files.

3.3.1 ltsect.dtx

\title \
\DUTtitle \
\@DUT@title

\title for use in \maketitle. If not given \maketitle will produce a warning message (ltsect.dtx, L117).

We extend \title to set hyperref's pdftitle. (ltsect.dtx, L117).

```
569 \renewcommand{\title}[1]{
570   \gdef\@DUT@title{#1}
571   \ifpdf \hypersetup{pdftitle={\@DUT@title}} \fi
572 }
573 \let\DUTtitle\title
574 \def\@DUT@title{\@latex@error{No \noexpand\title given}\@ehc}
```

\author \
\DUTauthor \
\@DUT@author

\author for use in \maketitle. If not given \maketitle will produce a warning message (ltsect.dtx, L129).

We extend \author to set hyperref's pdfauthor if we're writing a PDF to avoid using \AtBeginDocument or some such. (ltsect.dtx, L129).

25

```
575 \renewcommand{\author}[1]{
576   \gdef\@DUT@author{#1}
577   \ifpdf \hypersetup{pdfauthor={\protect\@DUT@author}} \fi
578 }
579 \let\DUTauthor\author
580 \def\@DUT@author{\@latex@error{No \noexpand\author given}\@ehc}
```

In a similar vein, we some additional meta-info macros.

\DUTmonth   \DUTmonth (defense month) for use in \maketitle. If not given \maketitle will
\@DUT@month   produce an error message.

```
581 \def\DUTmonth#1{\gdef\@DUT@month{#1}}
582 \def\@DUT@month{\@latex@error{No \noexpand\DUTmonth given}\@ehc}
```

\DUTyear   \DUTyear (defense year) for use in \maketitle. If not given \maketitle will
\@DUT@year   produce an error message.

```
583 \def\DUTyear#1{\gdef\@DUT@year{#1}}
584 \def\@DUT@year{\@latex@error{No \noexpand\DUTyear given}\@ehc}
```

\degree   \degree for use in \maketitle. If not given \maketitle will produce an error
\DUTdegree   message.
\@DUT@degree
```
585 \def\degree#1{\gdef\@DUT@degree{#1}
586   \ifpdf \hypersetup{pdfsubject={\@DUT@degree}} \fi}
587 \let\DUTdegree\degree
588 \def\@DUT@degree{\@latex@error{No \noexpand\degree given}\@ehc}
```

\copyrighttext   \copyrighttext for use in \@DUT@makecopyright. There are a number of blurbs
\DUTcopyrighttext predefined in §3.5.3.
\@copyrighttext
```
589 \def\copyrighttext#1{\gdef\@DUT@copyrighttext{#1}}
590 \let\DUTcopyrighttext\copyrighttext
591 \def\@DUT@copyrighttext{All Rights Reserved.}
```

\advisor   \advisor stores advisor names, and \@DUT@advisor prints them out nicely for
\DUTadvisor   the abstract environment. If no advisors are given \@DUT@advisor will produce
\@DUT@advisor an error message. We get a bit fancier here to support multiple advisors.

```
592 \newcounter{@DUT@advisors}
593 \setcounter{@DUT@advisors}{0}
```

Store a new advisor name.

```
594 \newcommand\advisor[1]{%
595   \ifx
```

If #1 is \empty, this call is a no-op.

```
596     \empty{#1}
597   \else
```

Save the advisors to \@DUT@advisor@a, \@DUT@advisor@b, ... \alph{*COUNTER*}
(ltcounts.dtx, L319) prints the value of *COUNTER* as a lowercase letter: $1 = $ a,
$2 = $ b, etc.

```
598     \stepcounter{@DUT@advisors}
```

26

```
599        \expandafter\gdef\csname @DUT@advisor@\alph{@DUT@advisors}\endcsname{#1}
600   \fi}
```

Format and print a list of advisor names.

```
601 \newcommand\@DUT@advisor{%
602   \ifnum\c@@DUT@advisors=0%
603     \@latex@error{No \noexpand\advisor given}\@ehc%
604   \else%
```

Start a group so the scratch counter *count@* is restored afterwards[1].

```
605     \begingroup%
```

Because *count@* is a TEX counter register not wrapped by LATEX's counter sugar, we don't use LATEX's \setcounter to set *count@* to one.

```
606       \count@\@ne
```

Print the first advisor, using TEX's \@alph macro instead of LATEX's \alph.

```
607 %     \begin{macrocode}
608       \csname @DUT@advisor@\@alph\count@\endcsname\relax%
```

For any remaining advisors...

```
609       \loop\ifnum\count@<\c@@DUT@advisors%
```

Advance *count@* using TEX's \advance macro instead of LATEX's \stepcounter.

```
610         \advance\count@\@ne
```

Print the connecting text.

```
611         \ifnum\count@=\c@@DUT@advisors%
612           \ifnum\c@@DUT@advisors=2%
```

The next advisor if the last of two.

```
613             {\ and\ }%
614           \else%
```

The next advisor if the last of many.

```
615             {, and\ }%
616           \fi%
617         \else%
```

The next advisor is not the last.

```
618           {,\ }%
619         \fi%
```

Print the advisor's name.

```
620         \csname @DUT@advisor@\@alph\count@\endcsname\relax%
621       \repeat%
622     \endgroup%
623   \fi}
```

---

[1]See the discussion in localloc for some points on counter allocation.

baselineskip

\@DUT@baselineskip Since we'll be messing with the spacing, save the single-spaced baseline.

```
624 \newlength\@DUT@baselineskip
625 \setlength\@DUT@baselineskip\baselineskip
```

> $\set@lines@length\{\langle length \rangle\}\{\langle N \rangle\}$

\set@lines@length Many specifications in the Manual refer to "$\langle N \rangle$ blank lines". \set@lines@length allows you to set a length to a given number of lines, protecting against external spacing environments. It requires calc for the multiplication.

```
626 \newcommand{\set@lines@length}[2]{%
627   \setlength{#1}{\@DUT@baselineskip * {#2}}}
```

Fix \@ssect and \@sect from latex.ltx to give single spaced headings.

\@sect Pseudocode for the \@sect command

```
\@sect{NAME}{LEVEL}{INDENT}{BEFORESKIP}{AFTERSKIP}{STYLE}[ARG1]{ARG2}
         ==
 BEGIN
  IF LEVEL > \c@secnumdepth
    THEN \@svsec :=L null
    ELSE \refstepcounter{NAME}
         \@svsec :=L BEGIN \@seccntformat{#1}\relax END
  FI
  IF AFTERSKIP > 0
    THEN \begingroup
           STYLE
           \@hangfrom{\hskip INDENT\@svsec}
           {\interlinepenalty 10000 ARG2\par}
         \endgroup
         \NAMEmark{ARG1}
         \addcontentsline{toc}{NAME}
           { IF LEVEL > \c@secnumdepth
               ELSE \protect\numberline{\theNAME} FI
             ARG1 }
    ELSE \@svsechd == BEGIN STYLE
                            \hskip INDENT\@svsec
                            ARG2
                            \NAMEmark{ARG1}
                            \addcontentsline{toc}{NAME}
                              { IF LEVEL > \c@secnumdepth
                                  ELSE
                                    \protect\numberline{\theNAME}
                                  FI
                                ARG1 }
                      END
  FI
  \@xsect{AFTERSKIP}
END
```

(ltsect.dtx, L295).

28

```
628 \def\@sect#1#2#3#4#5#6[#7]#8{%
629   \ifnum #2>\c@secnumdepth
630     \let\@svsec\@empty
631   \else
632     \refstepcounter{#1}%
633     \protected@edef\@svsec{\@seccntformat{#1}\relax}%
634   \fi
635   \@tempskipa #5\relax
636   \ifdim \@tempskipa>\z@
637     \begingroup
```

Here we deviate from `ltsect.dtx` to ensure single spacing for the section title.

```
638       \setstretch{\@ssp}%
639       #6{%
640         \@hangfrom{\hskip #3\relax\@svsec}%
641           \interlinepenalty \@M #8\@@par}%
642     \endgroup
643     \csname #1mark\endcsname{#7}%
644     \addcontentsline{toc}{#1}{%
645       \ifnum #2>\c@secnumdepth \else
646         \protect\numberline{\csname the#1\endcsname}%
647       \fi
648       #7}%
649   \else
650     \def\@svsechd{%
651       #6{\hskip #3\relax
652       \@svsec #8}%
653       \csname #1mark\endcsname{#7}%
654       \addcontentsline{toc}{#1}{%
655         \ifnum #2>\c@secnumdepth \else
656           \protect\numberline{\csname the#1\endcsname}%
657         \fi
658         #7}}%
659   \fi
660   \@xsect{#5}}
```

\@ssect Pseudocode for the **\@ssect** command

```
\@ssect{INDENT}{BEFORESKIP}{AFTERSKIP}{STYLE}{ARG} ==
  BEGIN
   IF AFTERSKIP > 0
     THEN \begingroup
             STYLE
             \@hangfrom{\hskip INDENT}{\interlinepenalty 10000 ARG\par}
           \endgroup
     ELSE \@svsechd == BEGIN STYLE
                             \hskip INDENT
                             ARG
                       END
   FI
   \@xsect{AFTERSKIP}
  END
```

29

(`ltsect.dtx`, L521).

```
661 \def\@ssect#1#2#3#4#5{%
662    \@tempskipa #3\relax
663    \ifdim \@tempskipa>\z@
664        \begingroup
```

Here we deviate from `ltsect.dtx` to ensure single spacing for the section title.

```
665            \setstretch{\@ssp}%
666            #4{%
667                \@hangfrom{\hskip #1}%
668                    \interlinepenalty \@M #5\@@par}%
669        \endgroup
670    \else
671        \def\@svsechd{#4{\hskip #1\relax #5}}%
672    \fi
673    \@xsect{#3}}
```

3.3.2 `ltbibl.dtx`

`\bibliography`
`thebibliography`

A bibliography is created by the `thebibliography` environment, which generates a title such as "Bibliography", and a list of entries. The BibTeX program will create a file containing such an environment, which will be read in by the `\bibliography` command. With BibTeX, the following commands will be used.

The document class must define the thebibliography environment. This environment has a single argument, which is the widest bibliography label– e.g., if the [Knuth67] is the widest entry, then this argument will be Knuth67. The `\thebibliography` command must begin a list environment, which the `\endthebibliography` command ends.

`\bibliography`

`\bibliography{⟨file1,file2,...,filen⟩}` : specifies the bibdata files. Writes a `\bibdata` entry on the `.aux` file and tries to read in `mainfile.bbl`.

We don't need to change it, but it explains why we need to override `thebibliography` even when we don't use it directly. (`ltbibl.dtx`, L284).

```
674 %\def\bibliography#1{%
675 %  \if@filesw
676 %      \immediate\write\@auxout{\string\bibdata{#1}}%
677 %  \fi
678 %  \@input@{\jobname.bbl}
679 %}
```

3.3.3 `ltoutput.dtx`

`\@DUT@clearpage`
`\@DUT@cleardoublepage`

Versions of `\clear*page` that only work when `\if@final` is true (`ltoutput.dtx`, L877 and L904).

```
680 \newcommand\@DUT@clearpage{\if@final \clearpage \fi}
681 \newcommand\@DUT@cleardoublepage{\if@final \cleardoublepage \fi}
```

\@DUT@blankpage Add a useful extension to insert a blank page without numbering. In draft mode, this macro is a no-op.

```
682 \newcommand\@DUT@blankpage{%
683   \if@final
684     \@DUT@clearpage
685     \thispagestyle{empty}
686     \hphantom{0}
687     \@DUT@clearpage
688   \else\fi
689 }
```

> \blanklines{⟨N⟩}
> \blanklines*{⟨N⟩}

\blanklines Insert ⟨N⟩ blank lines. The starred forms use \vspace, which inserts space even at the start and end of pages. The p forms add a trailing \par. *I'm still trying to get this part working cleanly...*

```
690 \newlength\@DUT@blanklines@length
691 \newcommand{\@blanklines@setup}[1]{%
692   \set@lines@length{\@DUT@blanklines@length}{#1}%
693   %\typeout{BLANKLINES -- #1}%
694   %\showthe\@DUT@blanklines@length
695 }
696 \newcommand{\blanklines}{\@ifstar\@sblanklines\@blanklines}
697 \newcommand{\@blanklines}[1]{%
698   \@blanklines@setup{#1}%
699   \vspace{\@DUT@blanklines@length}}
700 \newcommand{\@sblanklines}[1]{%
701   \@blanklines@setup{#1}%
702   \vspace*{\@DUT@blanklines@length}}
703 \newcommand{\blanklinesp}{\@ifstar\@sblanklines\@blanklines}
704 \newcommand{\@blanklinesp}[1]{%
705   \@blanklines@setup{#1}%
706   \vspace{\@DUT@blanklines@length}\par}
707 \newcommand{\@sblanklinesp}[1]{%
708   \@blanklines@setup{#1}%
709   \vspace*{\@DUT@blanklines@length}\par}
```

3.4 hyperref inclusion

This is the awkward hyperref inclusion. See §3.2.13 for an explanation of why we stash it here.

```
710 \RequirePackage[final]{hyperref}
```

Nobody likes the default colored boxes. Color the text itself.

```
711 \hypersetup{colorlinks}
```

If blackref is set, set all hyperref colors to black.

```
712 \if@blackref
713   \hypersetup{linkcolor=black}
714   \hypersetup{anchorcolor=black}
715   \hypersetup{citecolor=black}
716   \hypersetup{filecolor=black}
717   \hypersetup{menucolor=black}
718   \hypersetup{runcolor=black}
719   \hypersetup{urlcolor=black}
720 \fi
```

3.4.1 hypcap

hypcap for placing caption hyperlink anchors. Not strictly necessary, but we're using hyperref, and the poor link targets are annoying.

```
721 \RequirePackage[all]{hypcap}
```

all redefines the figure and table environments to place the anchor at the start of the float.

3.5 book overrides and extensions

Here we change the behavior of a bunch of macros and environments from book (generated by `classes.ins` from `classes.dtx`) in base). We'll copy in their original notes along with their code, following the relevant documentation an order given in `classes.dtx`.

3.5.1 Floats on a text page

\floatsep When a floating object is placed on a page with text, these parameters control the
\textfloatsep separation between the float and the other objects on the page.

\floatsep is the space between adjacent floats that are moved to the top or bottom of the text page.

\textfloatsep is the space between the main text and floats at the top or bottom of the page.

\intextsep is the space between in-text floats and the text. We don't bother overriding this one, because we've handled it with floatrow in §3.2.9.

From the Manual §2.3 p6, "Tables and Figures"

> Insert at least 3 single-spaced lines of space above table captions and figures and below figure captions, tables, and other graphics.

(`classes.dtx`, L1426)

```
722 \set@lines@length{\floatsep}{\@ssp}
723 \set@lines@length{\textfloatsep}{\@tsp}
```

3.5.2 The title

\maketitle Automate the creation of the title page. From Manual §3.1 p8, "Title Page", and the example on p16.

- This page is counted but not numbered (it counts as page i, but should not have a page number). TODO: How is this implemented?

Our definition simplifies `book`'s by ignoring footnotes. (`classes.dtx`, L1796)

```
724 \newcommand\@DUT@maketitle{
725   \begin{@DUT@titlepage}%
```

Add some bookmarks if we're using pdfLaTeX. The `frontmatter` bookmark is set at the *part* level (-1) to hold all bookmarks from the `preamble` environment, since those entries are all chapters.

```
726     \ifpdf
727       \pdfbookmark[-1]{Front Matter}{Front Matter}
728       \pdfbookmark[0]{Title Page}{Title Page}
729     \fi
```

Add some stretchy space to center the title vertically if we're not in draft mode.

```
730     \if@final \vspace*{\fill} \fi
```

Here is the title text itself.

```
731     \begin{center}%
732       {\setstretch{\@tsp} \bfseries \@DUT@title \par}%
```

We want two blank lines (triple spacing) between the title and the remaining material, so add three but don't end the paragraph.

```
733       \blanklines{\@tsp}%
734       \setstretch{\@dsp}%
735       A Thesis\\
736       Submitted to the Faculty\\
737       of\\
738       Drexel University\\
739       by\\
740       \@DUT@author\\
741       in partial fulfillment of the\\
742       requirements for the degree\\
743       of\\
744       \@DUT@degree\\
745       \@DUT@month\ \@DUT@year
746     \end{center}\par
```

Some more stretchy space for the bottom if we're not in draft mode.

Add some stretchy space to center the title vertically if we're not in draft mode.

```
747     \if@final \vspace*{\fill} \fi
748   \end{@DUT@titlepage}%
```

And that's it. We reset the footnote counter for the rest of the document and save space by freeing the memory associated with the \maketitle and \and macros (by setting them equal to \relax).

```
749    \setcounter{footnote}{0}%
750    \global\let\maketitle\relax
751    \global\let\and\relax
752 }
```

3.5.3   Copyright pages

\@DUT@makecopyright   The Manual allows for the selection of different copyrights, so we define a base
macro that generates a proper copyright page containing `\@copyrighttext`, which
the user can set with `\copyrighttext`. From Manual §3.2 p9, "Copyright Page".

- Include a copyright page with the following information: a copyright notice, full legal name of author, and date of publication on file.

- This page is neither counted nor numbered.

In final mode, we start off on a new page and center the blurb. In draft mode, we dive right into the text.

```
753 \newcommand\@DUT@makecopyright{%
754    \@DUT@clearpage
```

If we're using pdfLaTeX, add a bookmark.

```
755    \ifpdf \pdfbookmark[0]{Copyright Page}{Copyright Page} \fi
756    \if@final \vspace*{\fill} \fi
757    \begin{center}
758      \copyright~Copyright \@DUT@year\\
759      \@DUT@author.  \@DUT@copyrighttext
760    \end{center}
761    \if@final \vspace*{\fill} \else \blanklinesp{2} \fi
```

Turn off page numbering for this page.

```
762    \thispagestyle{empty}
763 }
```

\copyrighttextCCBYSA   The Creative Commons Attribution-ShareAlike License.

\DUTcopyrighttextCCBYSA
```
764 \newcommand\copyrighttextCCBYSA{
765    \begin{quote}
766      This work is licensed under the terms of the Creative Commons
767      Attribution-ShareAlike license Version 3.0.  The license is
768      available at \\
769      \url{http://creativecommons.org/licenses/by-sa/3.0/}.
770    \end{quote}
771 }
772 \let\DUTcopyrighttextCCBYSA\copyrighttextCCBYSA
```

3.5.4   Mark commands

Default initializations of `\*mark` commands. These commands are used in the definition of the page styles.

\chaptermark   Setup colon rather than period separated chapter marks. (`classes.dtx`, L2053)

```
773 \renewcommand\chaptermark[1]{%
774   \markboth {%
775     \ifnum \c@secnumdepth >\m@ne
776       \if@mainmatter
777         \@chapapp\ \thechapter: \ %
778       \fi
779     \fi
780     #1}{}}
```

\schaptermark   Setup unnumbered chapter marks for fancyhdr.

```
781 \newcommand\schaptermark[1]{\markboth{#1}{}}
```

\sectionmark   Setup space rather than period separated section marks. (`classes.dtx`, L2054)

```
782 \renewcommand{\sectionmark}[1]{%
783   \markright {%
784     \ifnum \c@secnumdepth >\z@
785       \thesection \ %
786     \fi
787     #1}}
```

3.5.5   Front Matter, Main Matter, and Back Matter

A book contains these three (logical) sections. The switch `\@mainmatter` is true if and only if we are processing main matter[2]. When this switch is false, the `\chapter` command does not print chapter numbers.

\mainmatter   This command clears the page (in final mode), starts arabic page numbering and turns on chapter numbering. Since this restarts the page numbering from 1, it should also ensure that a recto page is used.

    We replace book's `\clear*page` calls with `\@DUT@clearpage` calls. (`classes.dtx`, L2211)

```
788 \renewcommand\mainmatter{%
789   \@DUT@cleardoublepage
790   \@mainmattertrue
791   \pagenumbering{arabic}}
```

3.5.6   Parts

\part   The command to start a new part of our document.

    We start a new (righthand) page and use the *plain* pagestyle, replacing book's `\clear*page` calls with `\@DUT@clearpage` calls and dropping twopage code. (`classes.dtx`, L2249)

```
792 \renewcommand\part{%
793   \if@openright
```

---

[2] Wikipedia suggests *body matter* for the main content, but LaTeX's book uses *Main Matter*. We're a LaTeX class, so we'll stick with "main matter" for consistency.

```
794     \@DUT@cleardoublepage
795   \else
796     \@DUT@clearpage
797   \fi
798   \thispagestyle{plain}%
799   \@tempswafalse
```

Add some stretchy space for vertical centering if we're in final mode.

```
800   \if@final \null\vfil \fi
```

Here we use `\secdef` to indicate which commands to use to make the actual heading.

```
801   \secdef\@part\@spart}
```

`\@part`   This macro does the actual formatting of the title of the part. We replace book's `\Huge` with `\large`, and make use of `\numberline` for consistent spacing.

When *secnumdepth* is larger than -2, we have a numbered part, otherwise it is unnumbered. (`classes.dtx`, L2310)

```
802 \def\@part[#1]#2{%
803     \ifnum \c@secnumdepth >-2\relax
804       \refstepcounter{part}%
805       \addcontentsline{toc}{part}%
806         {\protect\numberline{\thepart}#1}%
807     \else
808       \addcontentsline{toc}{part}{#1}%
809     \fi
```

We empty the mark registers and center the title on the page. Also we prevent breaking between lines and reset the font.

```
810     \markboth{}{}%
811     {\centering
812     \interlinepenalty \@M
813     \normalfont
```

When this is a numbered part we have to print the number.

```
814     \ifnum \c@secnumdepth >-2\relax
815       \large\bfseries \partname\nobreakspace\thepart
816       \par
```

We leave some space before we print the title and leave the finishing up to `\@endpart`.

```
817         \vskip 20\p@
818     \fi
819     \large \bfseries #2\par}%
820     \@endpart}
```

`\@spart`   This macro does the actual formatting of the title of the part when the star form of the user command was used. In this case we *never* print a number. Otherwise the formatting is the same. (`classes.dtx`, L2402)

```
821 \def\@spart#1{%
822     {\centering
```

```
823      \interlinepenalty \@M
824      \normalfont
825      \large \bfseries #1\par}%
826    \@endpart}
```

\@endpart This macro finishes the part page, for both `\@part` and `\@spart`. We drop book's twoside handling. If `\if@final` is true, we fill the current page. (`classes.dtx`, L2435)

```
827 \def\@endpart{
828   \if@final \vfil\newpage \fi
```

Then, when we are in twosided mode and the chapters are supposed to be on the right hand sides, we produce a completely blank page. We don't need to check `\if@final` here, because draftspace set `\@openrighttrue`.

```
829   \if@twoside
830     \if@openright
831       \null
832       \thispagestyle{empty}%
833       \newpage
834     \fi
835   \fi}
```

3.5.7   Chapters

\chapter book always starts a chapter on a new page, but we don't want to do that if we're in draft mode. (`classes.dtx`, L2472).

```
836 \renewcommand\chapter{%
837   \if@openright\@DUT@cleardoublepage\else\@DUT@clearpage\fi
838   \thispagestyle{plain}%
```

Then we prevent floats from appearing at the top of this page because it looks weird to see a floating object above a chapter title.

```
839   \global\@topnum\z@
```

Then we suppress the indentation of the first paragraph by setting the switch `\@afterindent` to false. We use `\secdef` to specify the macros to use for actually setting the chapter title.

```
840   \@afterindentfalse
841   \secdef\@chapter\@schapter}
```

\listed@schapter `\chapter` declares numbered chapters, which are listed in the table of contents. `\chapter*` declares unnumbered chapters, which are *not* listed in the TOC. `\listed@schapter` declares an unnumbered chapter that *is* listed in the TOC.

```
842 \newcommand\listed@schapter[1]{%
843   \if@openright\@DUT@cleardoublepage\else\@DUT@clearpage\fi
844   \thispagestyle{plain}%
845   \global\@topnum\z@
846   \phantomsection
847   \addcontentsline{toc}{chapter}{#1}
```

```
848    \@afterindentfalse
849    \@schapter{#1}}
```

\@chapter This macro is called when we have a numbered chapter. When *secnumdepth* is larger than −1 and \@mainmatter is true, we display the chapter number. We drop book's twocolumn code. (classes.dtx, L2496).

```
850 \def\@chapter[#1]#2{
```

Inform the user that a new chapter is about to be typeset by writing a message to the terminal. Some users place \label in their chapter argument:

```
\chapter{Bla bla\label{x}}
```

rather than after (as recommended by the LaTeX Wikibook and The Not So Short Introduction to LaTeX 2ε (§2.8, p36)):

```
\chapter{Bla bla}
\label{x}
```

The embedded \label chokes \typeout so we temporarily redefine \label to just gobble its contents. \@DUT@label stores the original definition.

```
851    \let\@DUT@label=\label%
852    \renewcommand{\label}[1]{}%
853    \typeout{\@chapapp\space\thechapter. #1}%
```

Restore \label to its previous glory.

```
854    \let\label=\@DUT@label%
```

Now we can get on with the real work.

```
855    \ifnum \c@secnumdepth >\m@ne
856      \if@mainmatter
857        \refstepcounter{chapter}%
858        \addcontentsline{toc}{chapter}{\protect\numberline{\thechapter}#1}%
859      \else
860        \addcontentsline{toc}{chapter}{#1}%
861      \fi
862    \else
863      \addcontentsline{toc}{chapter}{#1}%
864    \fi
```

After having written an entry to the table of contents we store the (alternative) title of this chapter with \chaptermark.

```
865    \chaptermark{#1}%
```

For nicer lists of figures and tables, we could add some white space to separate the chapters. However, nice lists ≠ Manual specifications.

```
866 %    \addtocontents{lof}{\protect\addvspace{10\p@}}%
867 %    \addtocontents{lot}{\protect\addvspace{10\p@}}%
```

Then we call upon \@makechapterhead to format the actual chapter title. \@afterheading which takes care of suppressing the indentation.

```
868    \@makechapterhead{#2}%
869    \@afterheading}
```

\@makechapterhead The `\@chapter` macro uses `\@makechapterhead`⟨*text*⟩ to format the heading of the chapter. From the Manual §3.11 p11.

> Chapter headings must be bold and centered. The chapter number and title must be on the same line, separated by a colon or period, as shown in the example below:

> ### CHAPTER 1: INTRODUCTION

> Headings must not be larger than 12 points. Headings must be single spaced.

`book` sets `\@chapapp` and `\thechapter` (e.g., "Chapter 5") on a line above the chapter title, but that doesn't match the Manual's specification.

We begin by leaving some white space. The we open a group in which we have a paragraph indent of 0pt, and in which we have the text set ragged right. We also reset the font. (`classes.dtx`, L2540).

```
870 \def\@makechapterhead#1{%
871 %    \end{macro}
872 % Adding even a \vspace*{0\p@} here seems to increase the vertical
873 % space above the chapter heading by two lines.  I'm not sure why.
874 % Workaround is to pass the ``value of blanklines you want minus two''
875 % to |\blanklines*|.  HACK!
876 %    \begin{macro}
877   \blanklines*{-1}% HACK!
878   {\parindent \z@ \raggedright \normalfont
```

Ensure single spacing.

```
879     \setstretch{\@ssp}%
```

Prevent a pagebreak from occuring in the middle of or after the title.

```
880     \interlinepenalty\@M
```

Check whether the number of the chapter has to be printed.

```
881     \ifnum \c@secnumdepth >\m@ne
```

Check whether there *is* a number to be printed.

```
882       \if@mainmatter
```

Setup a "Chapter #: Title" heading.

```
883        \center \large \bfseries \@chapapp{} \thechapter: #1\par\nobreak
884       \else
```

Setup a "Title" heading.

```
885        \center \large \bfseries #1\par\nobreak
886       \fi
887     \else
888       \center \large \bfseries #1\par\nobreak
889     \fi
```

Put a little space before the chapter body. We use four blank lines to comply with the Manual §3.13 p12

Begin the list of sources four spaces below the heading.

```
890    \blanklines{4}
891  }
892 }
```

\@schapter This macro is called when we have an unnumbered chapter. We drop `classes.dtx`'s `twocolumn` code and set marks for `fancyhdr`. (`classes.dtx`, L2582).

```
893 \def\@schapter#1{
```

Inform the user that a new chapter is about to be typeset by writing a message to the terminal.

```
894    \typeout{\@chapapp\space #1}%
895    \schaptermark{#1}%
896    \@makeschapterhead{#1}%
897    \@afterheading}
```

\@makeschapterhead The macro above uses **\@makeschapterhead**⟨*text*⟩ to format the heading of the chapter. It is similar to **\@makechapterhead** except that it never has to print a chapter number. (`classes.dtx`, L2595).

```
898 \def\@makeschapterhead#1{%
899    \blanklines*{-1}% HACK!
900    {\parindent \z@ \raggedright \normalfont
901      \setstretch{\@ssp}%
902      \interlinepenalty\@M
903      \center \large \bfseries  #1\par\nobreak
904      \blanklines{4}%
905    }
906 }
```

3.5.8 Lower level headings

\section Setup section headings in **\large** rather than `book`'s **\Large**. (`classes.dtx`, L2623).

```
907 \renewcommand\section{%
908    \@startsection {section}{1}{\z@}%
909      {-3.5ex \@plus -1ex \@minus -.2ex}%
910      {2.3ex \@plus.2ex}%
911      {\normalfont\large\bfseries}}
```

3.5.9 Defining new environments

We don't override any of `book`'s environments, but this is where `classes.dtx` defines its environments (L2996), so we'll put ours here too.

preamble
DUTpreamble
```
912 \newenvironment{preamble}{%
913    \cleardoublepage
914    \@mainmatterfalse
```

```
915   \pagenumbering{roman}
916   \if@approvalform
917     \ifpdf
918       \pdfbookmark[-1]{Approval Form}{Approval Form}
919     \fi
920     \DUT@makeapprovalform
921   \fi
```

From Manual §3.1 p8, "Title Page".

```
922   \@DUT@maketitle
```

From Manual §3.2 p9, "Copyright Page".

```
923   \@DUT@makecopyright
924 }{%
```

From the Manual §3.9, p11:

> Include a blank page (with no page number) before the first page of
> text. The blank page is neither numbered nor counted.

```
925   \@DUT@blankpage
926 }
```

LaTeX's \newenvironment and company work by defining \X and \endX for the
environment X. We can alias the preamble environment by saving these macros.

```
927 \let\DUTpreamble\preamble
928 \let\endDUTpreamble\endpreamble
```

dedications   From the Manual §3.3 p9
DUTdedications

- The heading Dedications must appear at the top of the page. The heading
  must be bold, centered, and without punctuation.

- This page is counted and numbered in lowercase Roman numerals.

```
929 \newenvironment{dedications}{%
930   \@DUT@clearpage
931   \ifpdf
932     \phantomsection
933     \pdfbookmark[0]{\DUTdedicationsname}{\DUTdedicationsname}
934   \fi
935   \chapter*{\DUTdedicationsname}
936   \setstretch{\@dsp}%
937 }{%
938   \par\setstretch{\@ssp}%
939 }
940 \let\DUTdedications\dedications
941 \let\endDUTdedications\enddedications
```

acknowledgments   From the Manual §3.4 p9
DUTacknowledgments

- The heading Acknowledgments must appear at the top of the page. The
  heading must be bold, centered, and without punctuation.

- This page is counted and numbered in lowercase Roman numerals.

```
942 \newenvironment{acknowledgments}{%
943   \@DUT@clearpage
944   \ifpdf
945     \phantomsection
946     \pdfbookmark[0]{\DUTacknowledgmentsname}{\DUTacknowledgmentsname}
947   \fi
948   \chapter*{\acknowledgmentsname}
949   \setstretch{\@dsp}%
950 }{%
951   \par\setstretch{\@ssp}%
952 }
```

abstract
DUTabstract
```
953 \newenvironment{abstract}{%
954   \listed@schapter{\abstractname}%
```

Suck up some blank space to position the rest of the header right under the chapter title.

```
955   \blanklines{-4}%
```

From the Manual §3.9 p10

- The following heading must be centered at the top of the page

  Abstract
  Full Title of Dissertation or Thesis
  Author's Name as it appears on the Dissertation or Thesis

  In the example on p20, they list the advisor's name after the author, but that is not specified in the text on p10.

- The text begins four lines below this heading.

On p20

- These pages are numbered using lowercase Roman numerals.
- Note that the heading is single spaced, but the abstract is double spaced.

```
956     \begin{center}
957       \setstretch{\@ssp}%
958       \@DUT@title\\
959       \@DUT@author\\
```

If you're feeling daring, break the rules and add "Advisor(s):" to set off your list of advisor names.

```
960       \ifdaring{%
961         \ifnum\c@@DUT@advisors=\@ne%
962         Advisor:
963         \else%
```

```
964        Advisors:
965        \fi}{}
966      \@DUT@advisor\\
967    \end{center}
968  \blanklines{4}%
969  \setstretch{\@dsp}%
970  \@nobreaktrue
971  \@afterindentfalse
972  \@afterheading
973 }{%
974  \par\setstretch{\@ssp}%
975 }
976 \let\DUTabstract\abstract
977 \let\endDUTabstract\endabstract
```

From the Manual §3.10 p11

- The pages are counted and numbered in Arabic numerals.

```
978 \newenvironment{thesis}{%
979   \mainmatter
980   \setstretch{\@dsp}%
981 }{%
982   \setstretch{\@ssp}%
983   \@DUT@clearpage
984   \ifpdf
985     \phantomsection
986     \pdfbookmark[-1]{Back Matter}{Back Matter}
987   \fi
988 }
989 \let\DUTthesis\thesis
990 \let\endDUTthesis\endthesis
```

Vita

From the Manual §3.15 p13

- The heading `Vita` must appear at the top of the page. The heading must be bold, centered, and without punctuation.

- The Vita text should begin four spaces below the heading.

- List the Vita separately in the Table of Contents.

- The page is counted and numbered in Arabic numerals.

```
991 \newenvironment{vita}{%
992   \listed@schapter{\vitaname}
993   \setstretch{\@dsp}%
994 }{%
995   \par\setstretch{\@ssp}%
```

```
996 }
997 \let\DUTvita\vita
998 \let\endDUTvita\endvita
```

3.5.10 Titlepage

titlepage   In the normal environments, the titlepage environment does nothing but start and
end a page, and inhibit page numbers. We inhibit the paging in draft mode, since
it seems silly to waste a whole page on the title. We also drop the twocolumn code.
(`classes.dtx`, L3111)

```
 999 \renewenvironment{titlepage}%
1000   {\thispagestyle{empty}%
1001     \setcounter{page}\z@}%
1002   {\if@final \newpage \else \blanklinesp{2} \par \fi}
1003 \let\@DUT@titlepage\titlepage
1004 \let\end@DUT@titlepage\endtitlepage
```

3.5.11 Appendix

\appendix   The \appendix command is not really an environment, it is a macro that makes
\DUTappendix   some changes in the way things are done.

In the article document class the \appendix command must do the following:

- reset the section and subsection counters to zero,

- redefine \thesection to produce alphabetic appendix numbers. This redef-
  inition is done globally to ensure that it survives even if \appendix is issued
  within an environment such as multicols.

In addition to book's (or hyperref's) activity, we fiddle with the tocloft chapter
settings add switch to global double-spacing. (`classes.dtx`, L3177)

```
1005 \let\@DUT@appendix\appendix
1006 \renewcommand\appendix{%
1007   \@DUT@appendix%
```

Setup TOC entries like

<div align="center">

Appendix A: Chapter Title

</div>

We don't need to worry about the vita environment (page), because it is a
\listed@schapter, and therefore lacks a \numberline section in its *.toc entry.

We increase numwidth to 6.5em to make room for Appendix~ before the chapter
number/letter, and add a colon after it.

The \protect calls get the macros into *.toc unexpanded, so they function
correctly when LaTeX parses *.toc.

```
1008   \addtocontents{toc}{%
1009     \protect\cftsetindents{chapter}{0pt}{6.5em}
1010     \protect\renewcommand{\protect\cftchappresnum}{\protect\appendixname~}
1011     \protect\renewcommand{\protect\cftchapaftersnum}{:}}
```

We also turn on double spacing by default, since we're no longer wrapped in the `thesis` environment.

```
1012    \setstretch{\@dsp}%
1013 }
1014 \let\DUTappendix\appendix
```

3.5.12 Table of Contents

From Manual §3.5 p9, "Table of Contents", and the example on p17.

- Do not list any sections that precede the `Table of Contents` (e.g., `Dedications`, `Acknowledgments`). Do not list the `Table of Contents` itself.

- These pages are counted and numbered in lowercase Roman numerals.

`\cfttoctitlefont` Take advantange of toclofts's TOC title code. (`tocloft.dtx`, L1501)

```
\cfttoctitlefont\contentsname}{\cftaftertoctitle}
```

by setting it equal to something ending in `\chapter*`. That way LATEXparses the whole thing as

```
...\chapter*\contentsname}{\cftaftertoctitle}
```

which will set up the TOC page correctly.

```
1015 \renewcommand\cfttoctitlefont{%
```

Start a new page in final mode

```
1016    \@DUT@clearpage
```

Add a bookmark if we're using pdfLATEX.

```
1017    \ifpdf
1018      \phantomsection
1019      \pdfbookmark[0]{\contentsname}{\contentsname}
1020    \fi
```

`\chapter*` to gobble and format the next token (`\contentsname`).

```
1021    \chapter*}
```

`\aftertoctitleskip` Don't add any extra space after the title (the chapter will take care of that).

```
1022 \setlength\cftaftertoctitleskip{0pt}
```

`\l@DUT@toc@sep` Define a length for TOC/LOF/LOT spacing.

```
1023 \newlength\l@DUT@toc@sep
1024 \set@lines@length{\l@DUT@toc@sep}{\@DUT@toc@sep}
```

`\DUT@toc@high@font` Define a font for high level (part, chapter) entries.

```
1025 \newcommand{\DUT@toc@high@font}{\normalsize\scshape}
```

`\DUT@toc@low@font` Define a font for low level (section, table, figure) entries.

```
1026 \newcommand{\DUT@toc@low@font}{\normalfont}
```

`\DUT@toc@page@font` Define a font for page numbers.

```
1027 \newcommand{\DUT@toc@page@font}{\normalfont}
```

`\cftbeforepartskip` Setup parts. See the tocloft manual for a description of the commands.
`\cftpartfont`
`\cftpartleader`
`\cftpartdotsep`
`\cftpartpagefont`

```
1028 \setlength\cftbeforepartskip{\l@DUT@toc@sep}
1029 \cftsetindents{part}{0pt}{3em}
1030 \if@boldpart   \renewcommand{\cftpartfont}{\bfseries\DUT@toc@high@font}
1031 \else          \renewcommand{\cftpartfont}{\DUT@toc@high@font}
1032 \renewcommand{\cftpartleader}{\cftdotfill{\cftpartdotsep}}
1033 \if@dottedpart \renewcommand{\cftpartdotsep}{\cftdotsep}
1034 \else          \renewcommand{\cftpartdotsep}{\cftnodots} \fi
1035 \renewcommand{\cftpartpagefont}{\DUT@toc@page@font}
```

`\cftbeforechapskip` Setup chapters and appendicies. Some of these settings are adjusted for appendi-
`\cftchapaftersnum` cies in particular by `\appendix` (Sec. 3.5.11).
`\cftchapfont`
`\cftchapleader`
`\cftchapdotsep`
`\cftchappagefont`

```
1036 \setlength\cftbeforechapskip{\l@DUT@toc@sep}
1037 \cftsetindents{chapter}{0pt}{1.5em}
1038 \renewcommand{\cftchapaftersnum}{.}
1039 \if@boldchapter   \renewcommand{\cftchapfont}{\bfseries\DUT@toc@high@font}
1040 \else             \renewcommand{\cftchapfont}{\DUT@toc@high@font} \fi
1041 \renewcommand{\cftchapleader}{\cftdotfill{\cftchapdotsep}}
1042 \if@dottedchapter \renewcommand{\cftchapdotsep}{\cftdotsep}
1043 \else             \renewcommand{\cftchapdotsep}{\cftnodots} \fi
1044 \renewcommand{\cftchappagefont}{\DUT@toc@page@font}
```

`\cftbeforesecskip` Setup sections, subsections, etc.
`\cftsecfont`
`\cftpagefont`
`\cftbeforesubsecskip`
`\cftsubsecfont`
`\cftsubsecpagefont`
`\cftbeforesubsubsecskip`
`\cftsubsubsecfont`
`\cftsubsubsecpagefont`

```
1045 %\cftsetindents{chap}{0pt}{1.5em}
1046 \setlength\cftbeforesecskip{\l@DUT@toc@sep}
1047 \cftsetindents{section}{0pt}{3em}
1048 \renewcommand{\cftsecfont}{\DUT@toc@low@font}
1049 \renewcommand{\cftsecpagefont}{\DUT@toc@page@font}
1050 \setlength\cftbeforesubsecskip{\l@DUT@toc@sep}
1051 \cftsetindents{subsection}{0pt}{4.5em}
1052 \renewcommand{\cftsubsecfont}{\DUT@toc@low@font}
1053 \renewcommand{\cftsubsecpagefont}{\DUT@toc@page@font}
1054 \setlength\cftbeforesubsubsecskip{\l@DUT@toc@sep}
1055 \cftsetindents{subsubsection}{0pt}{6em}
1056 \renewcommand{\cftsubsubsecfont}{\DUT@toc@low@font}
1057 \renewcommand{\cftsubsubsecpagefont}{\DUT@toc@page@font}
```

The default indents above are all `0pt`. If indenttoc was given, override this,
restoring the tocloft defaults, see the tocloft manual, Table 1.

```
1058 \if@indenttoc
1059   \cftsetindents{chapter}{0pt}{1.5em}
1060   \cftsetindents{section}{1.5em}{2.3em}
1061   \cftsetindents{subsection}{3.8em}{3.2em}
```

```
1062    \cftsetindents{subsubsection}{7.0em}{4.1em}
1063 \fi
```

3.5.13   List of figures

From the Manual §3.7 p10

- The heading `List of Figures` must appear at the top of the first page.
- The heading must be bold, centered, and without punctuation. List figure captions exactly as they appear below the figures in the text.
- Single space each entry, but double-space between entries.
- Separate figure captions from page numbers with right-justified tabs and dot leaders.
- Do not use periods to separate captions and page numbers.
- These pages are counted and numbered in lowercase Roman numerals.

`\cftloftitlefont` Much like our `\cfttoctitlefont`, but the list of figures gets listed in the TOC.

```
1064 \renewcommand\cftloftitlefont{\listed@schapter}
```

`\afterloftitleskip` Don't add any extra space after the title (the chapter will take care of that). Actually we make a one-line correction so the first line matches the first line in the TOC. HACK!

```
1065 \setlength\cftafterloftitleskip{-12pt}
```

`\cftbeforefigskip` Setup figure entries.
`\cftfigindent`
`\cftfigfont`
`\cftfigpagefont`

```
1066 \setlength{\cftbeforefigskip}{\l@DUT@toc@sep}
1067 \setlength{\cftfigindent}{0pt}
1068 \renewcommand{\cftfigfont}{\DUT@toc@low@font}
1069 \renewcommand{\cftfigpagefont}{\DUT@toc@page@font}
```

3.5.14   List of tables

From the Manual §3.6 p10

- The heading `List of Tables` must appear at the top of the first page.
- The heading must be bold, centered, and without punctuation.
- List table captions exactly as they appear above the tables in the text.
- Single space each entry, but double-space between entries.
- Separate table captions from page numbers with right-justified tabs and dot leaders.

47

- Do not use periods to separate captions and page numbers. These pages are counted and numbered in lowercase Roman numerals.

\cftlottitlefont Much like our \cfttoctitlefont, but the list of tables gets listed in the TOC.

1070 \renewcommand\cftlottitlefont{\listed@schapter}

\afterlottitleskip Don't add any extra space after the title (the chapter will take care of that). Actually we make a one-line correction so the first line matches the first line in the TOC. HACK!

1071 \setlength\cftafterlottitleskip{-12pt}

\cftbeforetabskip Setup table entries.

\cfttabindent 1072 \setlength{\cfttabindent}{0pt}

\cfttabfont 1073 \setlength{\cftbeforetabskip}{\l@DUT@toc@sep}

\cfttabpagefont 1074 \renewcommand{\cfttabfont}{\DUT@toc@low@font}

1075 \renewcommand{\cfttabpagefont}{\DUT@toc@page@font}

3.5.15 Bibliography

thebibliography The thebibliography environment is a list environment. To save the use of an extra counter, it should use enumiv as the item counter. Instead of using \item, items in the bibliography are produced by the following commands:
\bibitem{⟨name⟩} : Produces a numbered entry cited as ⟨name⟩.
\bibitem[⟨label⟩]{⟨name⟩} : Produces an entry labeled by ⟨Label⟩ and cited by ⟨name⟩.

Override book's version, adding a line to the table of contents. We split out the section-creation code into \bib@heading for natbib compatibility. (classes.dtx, L4063).

1076 \renewenvironment{thebibliography}[1]
1077   {\bib@heading%
1078   \list{\@biblabel{\@arabic\c@enumiv}}%
1079   {\settowidth\labelwidth{\@biblabel{#1}}%
1080   \leftmargin\labelwidth
1081   \advance\leftmargin\labelsep
1082   \@openbib@code
1083   \usecounter{enumiv}%
1084   \let\p@enumiv\@empty
1085   \renewcommand\theenumiv{\@arabic\c@enumiv}}%

Because it's hard to do line breaks in bibliographies.

1086   \sloppy

This is setting the normal (non-infinite) value of \clubpenalty for the whole of this environment, so we must reset its stored value also. (Why is there a % after the second 4000 below?)

1087   \clubpenalty4000
1088   \@clubpenalty \clubpenalty
1089   \widowpenalty4000%

48

Cause a '.' (period) not to produce an end-of-sentence space.

```
1090        \sfcode'\.\@m}
```

Warn if an empty 'thebibliography' environment is found.

```
1091        {\def\@noitemerr
1092          {\@latex@warning{Empty 'thebibliography' environment}}%
1093        \endlist}
```

\bib@heading natbib messes with thebibliography. We setup \bib@heading so we will still get our table of contents entry.

```
1094 \newcommand{\bib@heading}{%
1095   \listed@schapter{\bibname}%
1096 }
```

3.5.16 Index

theindex The environment theindex can be used for indices. It makes an index with two columns, with each entry a separate paragraph. At the user level the commands \item, \subitem and \subsubitem are used to produce index entries of various levels. When a new letter of the alphabet is encountered an amount of \indexspace white space can be added.

Override book's version, adding a line to the table of contents. We split out the section-creation code into \bib@heading for natbib compatibility. (classes.dtx, L4107).

```
1097 \renewenvironment{theindex}
1098                {\if@twocolumn
1099                   \@restonecolfalse
1100                 \else
1101                   \@restonecoltrue
1102                 \fi
```

Here we add our TOC entry, and setup two columns by hand to avoid the \clearpage in LaTeX's default \twocolumn.

```
1103   \listed@schapter{\indexname}
1104   \global\columnwidth\textwidth
1105   \global\advance\columnwidth-\columnsep
1106   \global\divide\columnwidth\tw@
1107   \global\hsize\columnwidth
1108   \global\linewidth\columnwidth
1109   \global\@twocolumntrue
1110   \global\@firstcolumntrue
1111   \col@number \tw@
```

Parameter changes to \columnseprule and \columnsep have to be done after \twocolumn has acted. Otherwise they can affect the last page before the index.

```
1112                \parindent\z@
1113                \parskip\z@ \@plus .3\p@\relax
1114                \columnseprule \z@
1115                \columnsep 35\p@
1116                \let\item\@idxitem}
```

When the document continues after the index and it was a one column document we have to switch back to one column after the index.

```
1117                    {\if@restonecol\onecolumn\else\@DUT@clearpage\fi}
```

3.5.17 Words

Set the official names of the various sections encountered. Some of these are not defined in `classes.dtx` but are close analogs of those that are.

`\dedicationsname`   From the Manual §3.3 p9, "The heading `Dedications` must appear at the top of the page."

```
1118 \newcommand\dedicationsname{Dedications}
1119 \let\DUTdedicationsname\dedicationsname
```

`\acknowledgmentsname`   From the Manual §3.4 p9, "The heading `Acknowledgments` must appear at the top of the page."

```
1120 \newcommand\acknowledgmentsname{Acknowledgments}
1121 \let\DUTacknowledgmentsname\acknowledgmentsname
```

`\contentsname`   From the Manual §3.5 p9, "The heading `Table of Contents` must appear at the top of the page." (`classes.dtx`, L4331)

```
1122 \renewcommand\contentsname{Table of Contents}
1123 \let\DUTcontentsname\contentsname
```

`\listtablename`   From the Manual §3.6 p10, "The heading `List of Tables` must appear at the top of the page." (`classes.dtx`, L4333)

```
1124 \renewcommand\listtablename{List of Tables}
1125 \let\DUTlisttablename\listtablename
```

`\listfigurename`   From the Manual §3.7 p10, "The heading `List of Figures` must appear at the top of the page." (`classes.dtx`, L4332)

```
1126 \renewcommand\listfigurename{List of Figures}
1127 \let\DUTlistfigurename\listfigurename
```

`\abstractname`   From the Manual §3.8 p10, "The following heading must be centered at the top of the first page: `Abstract`...." (`classes.dtx`, L4367)

```
1128 \newcommand\abstractname{Abstract}
1129 \let\DUTabstractname\abstractname
```

`\bibname`   From the Manual §3.13 p12, "The heading `Bibliography` (or `List of References`) must appear at the top of first page." (`classes.dtx`, L4344)

```
1130 \renewcommand\bibname{Bibliography}
1131 \let\DUTbibname\bibname
```

`\appendixname`   From the Manual §3.14 p12, "Number the appendicies consecutively either alphabetically or numerically (`Appendix A`, `Appendix B`...or `Appendix 1`, `Appendix 2`...)." (`classes.dtx`, L4366)

```
1132 \renewcommand\appendixname{Appendix}
1133 \let\DUTappendixname\appendixname
```

\vitaname From the Manual §3.15 p13, "The heading `Vita` must appear at the top of the page."

```
1134 \newcommand\vitaname{Vita}
1135 \let\DUTvitaname\vitaname
```

\DUTnames Some packages (e.g., babel) mess with our `\*name` values and we have to restore them.

3.6   Remaining details

3.6.1   Terminal blank page

Add a terminal blank page (when `\if@final` is true) From the Manual §3.16 p13

> Include a blank page (with no page number) at the end of the thesis or dissertation. The blank page is neither counted nor numbered.

```
1136 \AtEndDocument{\@DUT@blankpage}
```

```
1137 ⟨/class⟩
```

4   Examples

4.0.2   Template

```
1138 ⟨∗template⟩
1139 % See drexel-thesis.pdf for details.
1140 \documentclass{drexel-thesis}
1141
1142 %% Enter the appropriate information here
1143 \author{}     % Fullname
1144 \title{}      % Title Of Thesis
1145 \DUTmonth{}   % Name of the month of you defense
1146 \DUTyear{}    % Year you are defending
1147 \degree{}     % Your target degree, spelled out
1148 \advisor{}    % Advisor's full name, degree
1149 \copyrighttext{} % If not "All Rights Reserved."
1150
1151 %% unsrt style give references in order of citation
1152 \bibliographystyle{unsrt}
1153
1154 \begin{document}
1155 \begin{preamble}
1156
1157 \begin{dedications} % OPTIONAL
1158 %% Type dedications here
1159 \end{dedications}
1160
1161 \begin{acknowledgments} % OPTIONAL
1162 %% Type acknowledgments here
```

```
1163 \end{acknowledgments}
1164
1165 \tableofcontents
1166 \listoftables  % If you have tables
1167 \listoffigures % If you have figures
1168
1169 \begin{abstract}
1170 %% Type abstract here
1171 \end{abstract}
1172 \end{preamble}
1173
1174 \begin{thesis}
1175 %% If your thesis does not use \part{}s, you may want to add a
1176 %% part-level PDF bookmark to set the main matter of from the front
1177 %% matter.
1178 %%\pdfbookmark[-1]{Main Matter}{Main Matter}
1179
1180 %% Use include statements to include your main thesis code
1181 %% from seperate files.
1182 %%\include{part1}
1183 %%...
1184 \end{thesis}
1185
1186 \bibliography{references} % Include references.bib BibTeX
1187
1188 \appendix % If you have appendices
1189 %% include files with your appendicies (if any) here
1190 %%\include{appendixA}
1191 %%...
1192
1193 \begin{vita} % Ph.D. only.
1194 %%Vita text.
1195 \end{vita}
1196
1197 \end{document}
1198 ⟨/template⟩
```

4.1   A better example

4.1.1   Main

```
1199 ⟨∗example | example − draft⟩
1200 %% See drexel-thesis.pdf for details.
1201 ⟨example⟩\documentclass[subfig,blackref,approvalform]{drexel-thesis}
1202 ⟨example − draft⟩\documentclass[draft,subfig]{drexel-thesis}
1203
1204 %% Enter the appropriate information here
1205 \author{Johny Henry}
1206 \title{Inadequacies of Steam-Driven Boring Machines}
1207 \DUTmonth{July}
1208 \DUTyear{1872}
```

```
1209 \degree{Doctor of Philosophy}
1210 \advisor{Collis Potter Huntington, R.R.D.}
1211 \advisor{Advisor 2, Ph.D.}
1212 \advisor{Advisor 3, Ph.D.}
1213 \copyrighttext{\copyrighttextCCBYSA}
1214
1215 \usepackage[super,sort&compress]{natbib} % fancy citation extensions
1216 \bibliographystyle{unsrtnat}
1217
1218 \usepackage{fancyvrb} % nicer verbatim handling
1219 \DefineShortVerb{\|}  % \verb+TEXT+  ->  |TEXT|
1220
```

Sometimes other packages clobber drexel-thesis's macros and environments. It's ok though, the originals are all aliased to \DUT*. We'll just have to use DUTpreamble instead.

```
1221 \renewenvironment{preamble}{% look, we're clobbering an environment!
1222   What preamble?\begingroup\color{white}}{\endgroup}
1223
```

Use blindtext for dummy text creation. blindtext requires babel.

```
1224 \usepackage[english]{babel} % English blindtext
1225 \usepackage{blindtext} % macros for producing dummy output
```

babel messes with some of our words (§3.5.17), so we have to reset them. See the TEX FAQ for details.

```
1226 \addto\captionsenglish{\DUTnames}
1227
1228 \begin{document}
1229 \begin{DUTpreamble} % "DUT" because original preamble was clobbered.
1230
1231 \begin{dedications}
1232 We're in \iffinal{final}{draft} mode!
1233
1234 \Blindtext[3]
1235 \end{dedications}
1236
1237 \begin{acknowledgments}
1238 \Blindtext[3]
1239 \end{acknowledgments}
1240
1241 \tableofcontents
1242 \listoftables
1243 \listoffigures
1244
1245 \begin{abstract}
1246 \Blindtext[3]
1247 \end{abstract}
1248 \end{DUTpreamble}
1249
1250 \begin{thesis}
```

```
1251 \include{example-1}
1252 \end{thesis}
1253
1254 \bibliography{example-ref}
1255
1256 \appendix
1257 \include{example-a}
1258
1259 \begin{vita}
1260 \Blindtext[3]
1261 \end{vita}
1262
1263 \end{document}
1264 ⟨/example | example − draft⟩
```

4.1.2 Part

```
1265 ⟨∗example − part⟩
1266 \part{A Part Heading}
1267 \chapter{A Chapter Heading}
1268 \section{A Section Heading}
1269 The following sectioning commands are available:
1270 \begin{quote}
1271  part \\
1272  chapter \\
1273  section \\
1274  subsection \\
1275  subsubsection \\
1276  paragraph \\
1277  subparagraph
1278 \end{quote}
1279
1280 \subsection{natbib}
1281 You can cite your references with |natbib|'s |\citet| and |\citep|
1282 macros.  See
1283 \href{http://www.ctan.org/tex-archive/macros/latex/contrib/natbib/}
1284 {the natbib manual} for details.
1285
1286 Here we have a text citation \citet{rief97} followed by a
1287 parenthetical citation\citep{rief97}.
1288
1289 \subsubsection{Tables and Figures}
1290 \Blindtext[2]
1291 \begin{table}
1292   \begin{center}
1293   \begin{tabular}{r@{.}l r@{.}l r@{.}l}
1294     \multicolumn{2}{c}{Time (s)} &
1295       \multicolumn{2}{c}{John Henry (m)} &
1296       \multicolumn{2}{c}{Steam drill (m)} \\
1297     0&0 & 0&0 & 0&0 \\
1298     10&0 & 4&3 & 3&75 \\
```

```
1299    30&0 & 11&9 & 10&1 \\
1300     \ldots
1301   \end{tabular}
1302   \caption{A table float.} % low caption allowed with floatrow
1303 %% Note the strange |r@{.}l| notation in the |\tabular| column
1304 %% definition.  This allows for numbers aligned at the decimal point
1305 %% (see \href{http://www.stat.unipg.it/tex-man/ltx-68.html}{here}).
1306 %%
1307 %% |\multicolumn{num_cols}{alignment}{contents}| allows the headings
1308 %% to span the pre- and post-decimal columns.
1309   \end{center}
1310 \end{table}
1311 \Blindtext[2]
1312 \begin{figure}
1313   \caption{A figure float. \blindtext} % high caption allowed with floatrow
1314   \begin{center}
1315     \includegraphics[width=0.4\textwidth]{drexel-logo}
1316   \end{center}
1317 \end{figure}
1318 \Blindtext[3]
1319 \begin{figure}
1320   \begin{center}
1321     \subfloat[][]{%
1322       \includegraphics[width=0.2\textwidth]{drexel-logo}%
1323       \label{fig:sub-a}}
1324     \subfloat[][]{%
1325       \includegraphics[width=0.2\textwidth]{drexel-logo}%
1326       \label{fig:sub-b}}
1327     \caption{(a) One subfig float. (b) Another subfig float.%
1328       \label{fig:both}}
1329   \end{center}
1330 \end{figure}
1331 You can reference the subfig floats individually (\ref{fig:sub-a}) or
1332 together (\ref{fig:both}).
1333
1334 \Blindtext[3]
1335
1336 \part{Another Part}
1337 \chapter{Another Chapter}
1338 \Blindtext[5]
1339 \chapter{A Long Title Bla Bla Bla Bla Bla Bla Bla Bla Bla Bla Bla
1340 Bla Bla Bla Bla Bla Bla Bla Bla Bla Bla Bla Bla Bla Bla Bla}
1341 \Blindtext[5]
1342 ⟨/example − part⟩
```

4.1.3   BibTEX

What goes into the BIBTEX file `example-ref.bib`? For more information, check out this basic tutorial. If you want to get deeper, take a look at Tame the BeaST. Other resources: how the process works, entry types, fields, entries and fields,

[assorted style examples](#), and [assorted BIBTEXtools](#).

Here is an example BIBTEX file to get you started. We define strings for the publishers, journals, and authors to avoid duplication, minimize the risk of typos, etc.

```
1343 ⟨∗example − bibtex − refs⟩
1344 %% Publishers
1345 @String{APS = "American Physical Society"}
1346
1347 %% Journals
1348 @String{SCI = "Science"}
1349
1350 %% Authors
1351 @String{MRief = "Rief, Matthias"}
1352 @String{MGautel = "Gautel, Mathias"}
1353 @String{FOesterhelt = "Oesterhelt, Filipp"}
1354 @String{JFernandez = "Fernandez, Julio M."}
1355 @String{HGaub = "Gaub, Hermann E."}
1356
1357 %% Articles
1358 @Article{rief97,
1359   author = MRief #" and "# MGautel #" and "# FOesterhelt #" and "#
1360           JFernandez #" and "# HGaub,
1361   title = "Reversible Unfolding of Individual Titin Immunoglobulin
1362           Domains by {AFM}",
1363   journal = SCI,
1364   volume =  276,
1365   number =  5315,
1366   pages =   "1109--1112",
1367   year =    1997,
1368   doi =     "10.1126/science.276.5315.1109",
1369   URL =     "http://www.sciencemag.org/cgi/content/abstract/276/5315/1109",
1370   eprint =  "http://www.sciencemag.org/cgi/reprint/276/5315/1109.pdf",
1371   mynote = "Seminal paper for force spectroscopy on Titin. Cited by
1372           Dietz '04 (ref 9) as an example of how unfolding large
1373           proteins is easily interpreted (vs.\ confusing unfolding in
1374           bulk), but Titin is a rather simple example of that, because
1375           of its globular-chain structure.",
1376 }
1377 %% ...
1378 ⟨/example − bibtex − refs⟩
```

4.1.4   Appendix

```
1379 ⟨∗example − appendix⟩
1380 \chapter{Some Appendix Heading}
1381 \Blindtext[5]
1382 \chapter{Another Appendix Heading}
1383 \Blindtext[5]
1384 ⟨/example − appendix⟩
```

5 Known bugs and issues

5.1 Hacks

- `\vspace*{0\p@}` space between page top and chapter headings (`\@makechapterhead` and `\@makeschapterhead`, Sec. 3.5.7).

- Extra space under LOT and LOF titles compared to TOC. (Secs. 3.5.13 and 3.5.14).

5.2 Bugs

- Different space between chapter heading and section heading, vs. chapter heading and text. Compare *A Chapter Heading* and *Another Chapter* in `example.pdf`. This is a problem (although with opposite order) in the `book` class itself. For example, compile

```
\documentclass{book}
\begin{document}
\chapter{Chapter with text}
Bla bla bla.
\chapter{Chapter with section}
\section{Section}
Bla bla bla.
\end{document}
```

- Footer overlap if chapter/section names are particularly long. See *Section in long-titled chapter* in `example.pdf`. Workaround: turn off sections in the footer:

```
\fancyfoot[RE,LO]{\scshape\leftmark}
\fancyfoot[LE,RO]{}
```

For more header or footer manipulation ideas, see §3.2.11.

Change History