

Study Guide: Directory and file structure

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3 Assembling different pieces to a book

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Directory structure for a book project



Overview of the directory structure

- doc: documentation
- doc/src: (DocOnce) source for documentation
- doc/src/chapters: source for individual chapters
- doc/src/book: source for the book
- doc/pub: published (compiled) documents in specific formats
- doc/web: entry point (`index.html`) for GitHub web pages

Can have lots of chapters and more than one book directory if multiple books are relevant

Directory structure within a chapter

Each chapter has a short nickname used in file and directory names.

- Sample nickname: ch2
- ch2: DocOnce source files .do.txt
- ch2/src-ch2: source files for program programs, especially those to be copied into .do.txt files
- ch2/fig-ch2: figures
- ch2/mov-ch2: movies
- ch2/exer-ch2: answers to exercises

The directories src-ch2, fig-ch2, mov-ch2, and similar may have any subdirectory structure, but the names should as indicated here since the setup for DocOnce books has many tools relying on the naming convention.

The total directory structure

Here is a big project:

```
doc
  src
    chapters
      ch2
        fig-ch2
        src-ch2
        mov-ch2
        exer-ch2
      ch3
        fig-ch3
        src-ch3
        mov-ch3
        exer-ch3
    book1
    book2
  pub
    chapters
      ch2
        html
        pdf
        ipynb
      ch3
        html
        pdf
        ipynb
    book
```

The book directory

- One main file for the book: `book.do.txt`
- `book.do.txt` includes chapters from
`.. /chapters/ch2/ch2.do.txt`, etc
- Scripts for compiling, spell checking, ...

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Newcommands

- Files `newcommands*.tex` are by DocOnce treated as files with definition of newcommands for \LaTeX *mathematics*
- Must be in the directory where `doconce` format is run
- Use a common `newcommands.p.tex` for all chapters
- `.p.tex` indicates that it can be run by preprocess and contain different newcommand definition for \LaTeX and MathJax

Example on `doc/chapters/newcommands.p.tex`:

```
%% #if FORMAT in ("latex", "pdflatex")
%% Use footnotesize in subscripts
\newcommand{\subsc}[2]{#1_{\mbox{\footnotesize #2}}}
%% #else
%% In MathJax, a different construction is used
\newcommand{\subsc}[2]{#1_{\small\mbox{#2}}}
%% #endif
```

`make.sh` runs typically

```
preprocess -DFORMAT=pdflatex .../newcommands.p.tex > newcommands.tex
# make latex versions
```

```
preprocess -DFORMAT=html .../newcommands.p.tex > newcommands.tex
# make html versions
```

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Assembling different pieces to a book



Organization of DocOnce chapter files

- Chapter nickname: ch2
- DocOnce file: ch2.do.txt
- ch2.do.txt may contain all the text or just include several files: part1.do.txt, part2.do.txt, part3.do.txt
- No title, author, date, table of contents, or bibliography in ch2.do.txt - otherwise that file cannot be included in a book

ch2.do.txt:

```
# #include "part1.do.txt"  
# #include "part2.do.txt"  
# #include "part3.do.txt"
```

Compiling a chapter requires a wrapper file with title, author, ...

To compile a stand-alone document for the chapter, create `main_ch2.do.txt`:

```
TITLE: Some chapter title
AUTHOR: A. Name Email:somename@someplace.net at Institute One
AUTHOR: A. Two at Institute One & Institute Two
DATE: today

TOC: on

# External documents: ../ch3/main_ch3, ../ch4/main_ch4

# #include "ch2.do.txt"

===== References =====

BIBFILE: ../papers.pub
```

Figures and source code

- `fig-ch2`: figures
- `src-ch2`: source code for program files

Important that figure and source code files have chapter-unique names when combining all files to a book. Use `fig-nickname` and `src-nickname`.

Optional directories:

- `mov-ch2`: movies in various formats
- `exer-ch2`: answers to exercises, project work, etc.

Assembly of chapters to a book

Recall:

DocOnce = *Document Once, Include Anywhere*

- Make `book.do.txt` for including chapters in a book
- The entire book is in `book.tex` (!)
- Compile individual chapters first - it is easier to track down a latex error in a chapter than going from `book.tex` to the relevant `.do.txt` file

A book.do.txt file

TITLE: This is a book title
AUTHOR: A. Name Email:somename@someplace.net at Institute One
AUTHOR: A. Two at Institute One & Institute Two
DATE: today

TOC: on

===== Preface =====

label{ch:preface}

#include "../chapters/preface/preface.do.txt"

===== Heading of a chapter =====

label{ch:ch2}

#include "../chapters/ch2/ch2.do.txt"

Similar inclusion of other chapters

===== Appendix: Heading of an appendix =====

label{ch:somename}

#include "../chapters/nickname/nickname.do.txt"

===== References =====

BIBFILE: ../papers.pub

The book file relies much on running preprocessors

- Sometimes debugging requires you to see the effect of running preprocessors
- The effect of `# include` and `# if` tests are seen in `tmp_preprocess__book.do.txt` (input to mako)
- The effect of Mako variables and functions are seen in `tmp_mako__book.do.txt` (input to doconce translation)

The book directory must be coupled to source and figure directories

Running

```
Terminal> doconce format pdflatex book [options]
```

will most likely involve constructs like

```
@@@CODE src-ch2/myprog.py fromto: def test1@def test2
```

but pdflatex sees no book/src-ch2 directory! A local link resolves the problem:

```
Terminal> ln -s ../chapters/ch2/src-ch2 src-ch2
```

Similar problems for figures!

```
Terminal> ln -s ../chapters/ch2/fig-ch2 fig-ch2
```

Auto-generation of all links (if chapters= is set correctly in scripts.py):

```
>>> import scripts  
>>> scripts.make_links()
```

About figures when publishing HTML

- HTML versions of chapters/book have
`` type of tags in the HTML code
- There must be a `fig-ch2` subdirectory
- *Copy chapters/ch2/fig-ch2 to the directory where the HTML files are published*

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Tools



Making a new chapter

- Clone <https://github.com/hplgit/setup4book-doconce>
- Go to doc/chapters
- Decide on a chapter nickname
- Create a brand new chapter: bash mkdir.sh nickname
- Look at an existing chapter like rules to see syntax/details
- Start writing in nickname/*.do.txt files, programs in src-nickname, place figures in fig-nickname
- Edit make.sh if necessary
- Compile chapter: bash make.sh
- Include ../chapters/nickname/nickname.do.txt with chapter heading in doc/src/book/book.doc.txt

Compiling a chapter

To LaTeX/PDF:

```
Terminal> bash make.sh
```

To HTML:

```
Terminal> bash ../make_html.sh main_nickname.do.txt
```

The doc/src/chapters/make.sh script is quite general and can be edited according to your layout preferences of the L^AT_EX documents.

There is also a script doc/src/chapters/make_html.sh for making HTML versions of the chapter. Just call this as

```
Terminal> bash ../make_html.sh main_mychap
```

Three HTML versions with an index.html table of contents are generated

Compiling the book

Go to book directory and produce LaTeX/PDF book by

```
Terminal> bash make.sh  
Terminal> bash make.sh nospell # turn off spell checking
```

About book styles and tools:

- Current example employs the Springer T2 book layout
- DocOnce supports some other styles and, in general, a user-specific template for the preamble
- `scripts.py` has function `pack_src` for packing all the `src-*` directories in a tarfile for book readers
- `pack_Springer.sh` packs all needed \LaTeX book files for publishing with Springer

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Study guides and slides



- Study guide: presentation of a chapter in a very condensed, effective, summarizing form for overview, use in lectures, and repetition
- Slides: a good way of writing study guides

Why is it so challenging to convert a chapter to slides?

Balance:

- enough information for self-study by *reading* the study guide
- minimized information for *viewing* and *listening* to an oral presentations of the slides

Many iterations and use of slides in teaching over and over again are needed!

For a chapter ch2,

- let slides be in slides-ch2
- a chapter file ch2/part1.do.txt has its slide counterpart in ch2/slides-ch2/part1.do.txt
- ch2/lectures_ch2.do.txt includes all relevant slides-ch2/* files and is the main file for the slide collection

Compile slides:

```
Terminal> bash ../make_lectures.sh lectures_ch2.do.txt
```

Note the possibility to turn the TOC on and off: Beamer has its own table of contents, while HTML5 slides may benefit from having one

The lectures_ch2.do.txt file

```
TITLE: Study Guide: Some title
AUTHOR: Author Name Email:somename@someplace.net at Institute One
DATE: today

# #ifdef WITH_TOC
!split
TOC: on
# #endif

# #include "lec-ch2/part1.do.txt"

# #include "lec-ch2/part2.do.txt"

# #include "lec-ch2/part3.do.txt"
```

The requirements to a slide collection

Tree purposes:

- ① Read as a study guide to get overview before reading the full text of chapter
- ② Watch as slides during an oral presentation
- ③ Read as a study guide to repeat and enforce overview of the material

Rules:

- Make slides self-contained
- Limit the information on the slides!
- Make slides as visual as feasible
- Use references to the underlying chapter text for details