

Study Guide: Directory and file structure

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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, ...

Newcommands

- Files newcommands*.tex are treated by DocOnce as files with definitions 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_{\footnotesize \#2}}
%% else
%% In MathJax, a different construction is used
\newcommand{\subsc}[2]{\#1_{\small \#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
```

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 into 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:someone@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

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 \LaTeX 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

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!

Slide directory

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  
  
# ifndef 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

Three purposes:

- ➊ Read as a study guide to get overview before reading the full text of chapter
- ➋ Watch as slides during an oral presentation
- ➌ 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