

## 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  $\text{\LaTeX}$  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  $\text{\LaTeX}$  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 <img src=fig-ch2/fig1.png> 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  $\text{\LaTeX}$  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  $\text{\LaTeX}$  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