008-`knitr` and Large Documents

Thesis type projects

May 28, 2015

Abstract

When writing large documents such as a thesis, book, or even a manuscript, it is recommended to split the markup document into several smaller ones. I will show how this is accomplished with `knitr` (Xie, 2015, 2013, 2014; Gandrud, 2015).

Contents

1 How it is done traditionally in LaTeX

Suppose we have a file structure as shown in Figure 1

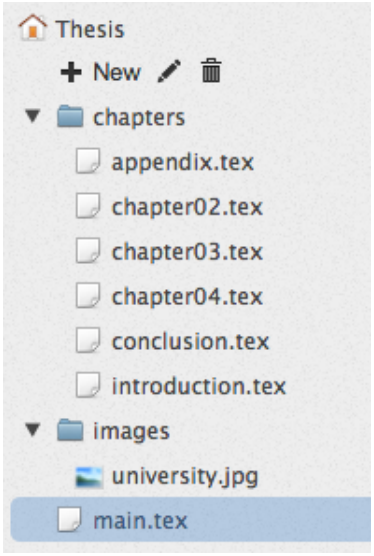

Figure 1: Thesis file structure. (source: sharelatex.com)

Then to add these chapters into the document we use the `\input` command in the root document:

```
\chapter*{Abstract}

\tableofcontents

\chapter{Introduction}
\input{chapters/introduction}

\chapter{Chapter Two Title}
\input{chapters/chapter02}

\chapter{Chapter Three Title}
\input{chapters/chapter03}

\chapter{Chapter Four Title}
\input{chapters/chapter04}

\chapter{Conclusion}
\input{chapters/conclusion}

\bibliographystyle{apa}
\bibliography{main.bib}

\appendix
```

```
\chapter{Appendix Title}
\input{chapters/appendix}
```

2 Large documents with knitr

For knittable documents we need to use `knitr`'s parent-child options. It allows us to include knittable children in parent documents, and to `knit` each child document separately (Gandrud, 2015). Rather than use the \`input` commands, we use the `child` code chunk option which takes as its value the file path of the child document. See below for an example, and `008-final-report.Rnw` for the source code. (please ignore the single quote placed before the << below, as this was only placed to avoid compiling errors)

```
'<<set-parent, echo=FALSE>>=
knitr::set_parent("008-parent.Rnw")
@

\title{008-Example of \texttt{knitr} and Large Documents}
\author{Car accident data}
\maketitle

'<<setup, echo=FALSE,warning=FALSE,message=FALSE,cache=FALSE, results='hide'>>=
options(width=60, digits=2)
opts_chunk$set(echo = FALSE, tidy = TRUE, cache = FALSE, warning = FALSE, message = FALSE)
knitr::read_chunk("008-packages.R")
knitr::read_chunk("008-analysis.R")
@

'<<required-packages,echo=FALSE,warning=FALSE,message=FALSE, eval=TRUE, results='hide'>>=
@

'<<intro, child='008-intro.Rnw'>>=
@

'<<model, child='008-model.Rnw'>>=
@

\bibliography{008-bibliography}

\newpage
\appendix
\section{Session Information}
'<<echo=TRUE>>=
sessionInfo()
@
```

References

Christopher Gandrud. *repmis: Miscellaneous Tools for Reproducible Research*, 2015. URL http://CRAN.R-project.org/package=repmis. R package version 0.4.2. 1, 3

Yihui Xie. *Dynamic Documents with R and knitr*. Chapman and Hall/CRC, Boca Raton, Florida, 2013. URL http://yihui.name/knitr/. ISBN 978-1482203530. 1

Yihui Xie. knitr: A comprehensive tool for reproducible research in R. In Victoria Stodden, Friedrich Leisch, and Roger D. Peng, editors, *Implementing Reproducible Computational Research*. Chapman and Hall/CRC, 2014. URL http://www.crcpress.com/product/isbn/9781466561595. ISBN 978-1466561595. 1

Yihui Xie. *knitr: A General-Purpose Package for Dynamic Report Generation in R*, 2015. URL http://yihui.name/knitr/. R package version 1.10.5. 1

A Session Information

```
sessionInfo()
```

```
## R version 3.2.0 (2015-04-16)
## Platform: x86_64-pc-linux-gnu (64-bit)
## Running under: Ubuntu 14.04.2 LTS
##
## locale:
##  [1] LC_CTYPE=en_CA.UTF-8       LC_NUMERIC=C
##  [3] LC_TIME=en_CA.UTF-8        LC_COLLATE=en_CA.UTF-8
##  [5] LC_MONETARY=en_CA.UTF-8    LC_MESSAGES=en_CA.UTF-8
##  [7] LC_PAPER=en_CA.UTF-8       LC_NAME=C
##  [9] LC_ADDRESS=C               LC_TELEPHONE=C
## [11] LC_MEASUREMENT=en_CA.UTF-8 LC_IDENTIFICATION=C
##
## attached base packages:
## [1] grid      stats     graphics  grDevices utils
## [6] datasets  base
##
## other attached packages:
## [1] vcd_1.3-2    knitr_1.10.5
##
## loaded via a namespace (and not attached):
## [1] colorspace_1.2-6 MASS_7.3-39      magrittr_1.5
## [4] formatR_1.2      tools_3.2.0      stringi_0.4-1
## [7] methods_3.2.0    stringr_1.0.0    evaluate_0.7
```