

Class Note and Slides Using Sweave in R

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What is this and what it does?

- Sweave is a powerful and flexible system for creating dynamic reports and reproducible research using \LaTeX .
- Sweave enables the embedding of R code within \LaTeX documents to generate a PDF file that includes:
 - narrative, analysis and equations,
 - graphics,
 - code,
 - and the results of computations.

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I am fascinated

- 🕒 I can modify my presentation theme, colour etc. The CambridgeUS is modified here,
- 🍃 Object management is easy. I can put my image wherever I like to see them,
- 😊 I can make my slides live with colours, bullets and objects,
- 💳 I do not pay,
- 🌐 I can go online with \LaTeX hassle-free.

It's free ! - I like this, You?

Pre-requisites:



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- * The distribution of \LaTeX depends on your operating system. I have used MikTeX and TexMaker

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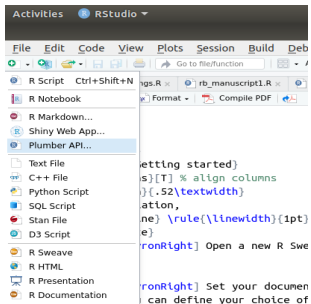
Check your OS:

- 🍏 The MacTeX distribution contains everything you need,
- 🪟 Check out the MiKTeX or proTeXt or TeX Live distributions,
- 🐧 Check your Linux distributions software source for a TeX distribution including \LaTeX . I am using Ubuntu,
- 🌐 \LaTeX online services like Papeeria, Overleaf, ShareLaTeX, Datazar, and LaTeX base offer the ability to edit, view and download LaTeX files and resulting PDFs.

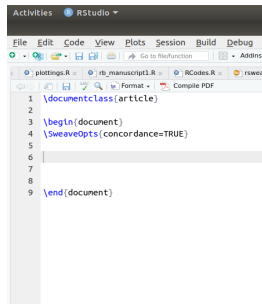
Getting started

- Open a new R Sweave script (go to **File | New** and select “R Sweave”) in your RStudio,
- Set your document class, paper size, font, language and other packages as the priority,
- Save the file before compiling. File name does not accept spaces in.
- Click the **Compile PDF** button to run the script.

(a)



(b)



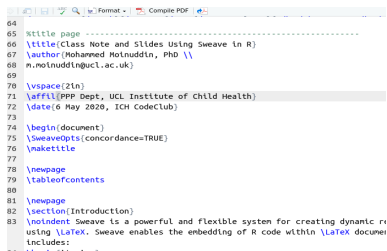
Note vs Slide

Note

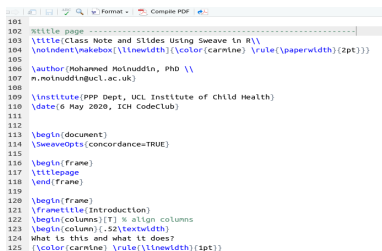
```
1 \documentclass[a4paper, 11pt, oneside]{scrartcl}
2
3 \usepackage[english]{babel}
4 \usepackage[utf8]{inputenc}
5 \usepackage[T1]{fontenc}
6
7 \usepackage{graphicx}
8 \usepackage[space]{grffile}
9 \usepackage{url}
10 \usepackage{booktabs}
11 \usepackage[indentfirst]
12 \usepackage{empheq}
13 \usepackage{amssymb,amssymb,mathrsfs}
14 \usepackage{extra}{tipa}
15 \allowdisplaybreaks
16 \usepackage{multicol}
17 \usepackage{multirow}
18 \usepackage{array}
19 \usepackage{nameref}
20 \renewcommand{\sfdefault}{\lwnona}
21 \usepackage[margin=1.2in]{geometry}
22 \usepackage{enumerate}
23 \usepackage{color}
```

Slide

```
1 \documentclass[9pt]{beamer}
2
3 \usepackage[english]{babel}
4 \usepackage[utf8]{inputenc}
5 \usepackage[T1]{fontenc}
6
7 \usepackage{graphicx}
8 \usepackage[space]{grffile}
9 \usepackage{url}
10 \usepackage{booktabs}
11 \usepackage{indentfirst}
12 \usepackage{empheq}
13 \usepackage{amssymb,amssymb,mathrsfs}
14 \usepackage{extra}{tipa}
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19 \usepackage{nameref}
20 \renewcommand{\sfdefault}{\lwnona}
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```



```
64 %title page .....
65 \title{Class Note and Slides Using Sweave in R}
66 \author{Mohammed Motnuddin, PhD \\\n.motnuddin@ucl.ac.uk}
67
68 \vspace{2in}
69
70 \affil{PPP Dept, UCL Institute of Child Health}
71 \date{6 May 2020, ICH CodeClub}
72
73 \begin{document}
74 \SweaveOpts{concordance=TRUE}
75 \maketitle
76
77 \newpage
78 \tableofcontents
79
80 \newpage
81 \section{Introduction}
82 \noindent Sweave is a powerful and flexible system for creating dynamic R
83 using \LaTeX. Sweave enables the embedding of R code within \LaTeX documents.
```



```
101 %title page .....
102 \title{Class Note and Slides Using Sweave in R}
103 \noindent\makebox[\linewidth]{\color{carmine} \rule{\paperwidth}{2pt}}
104
105 \author{Mohammed Motnuddin, PhD \\\n.motnuddin@ucl.ac.uk}
106
107 \institute{PPP Dept, UCL Institute of Child Health}
108 \date{6 May 2020, ICH CodeClub}
109
110 \begin{document}
111 \SweaveOpts{concordance=TRUE}
112
113 \begin{frame}
114 \titlepage
115 \end{frame}
116
117 \begin{frame}
118 \frame{Introduction}
119 \begin{columns}[T] % align columns
120 \begin{column}{.52\textwidth}
121 What is this and what it does?
122 \color{carmine} \rule{\linewidth}{1pt}
123 \end{column}
124 \end{columns}
```


- use the Chunks menu at the top right of the source editor (green colored)
- set the options *echo*, *fig*, *message*, *warning* etc

```
> my_cols <- c("#00AFBB", "#E7B800",  
+             "#FC4E07")  
> pairs(iris[,1:4], pch = 19,  
+       cex = 0.5,  
+       col = my_cols[iris$Species],  
+       lower.panel=NULL)
```

