Class Note and Slides Using Sweave in R

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6 May 2020, ICH CodeClub

Introduction

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 LaTeXdocuments to generate a PDF file that includes:
  - narrative, analysis and equations,
  - graphics,
  - code,
  - and the results of computations.

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  - code,
  - and the results of computations.

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 LaTeXhassle-free.

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

Pre-requisites:

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- The distribution of LaTeXdepends on your operating system. I have used `MikTex` and `TexMaker`

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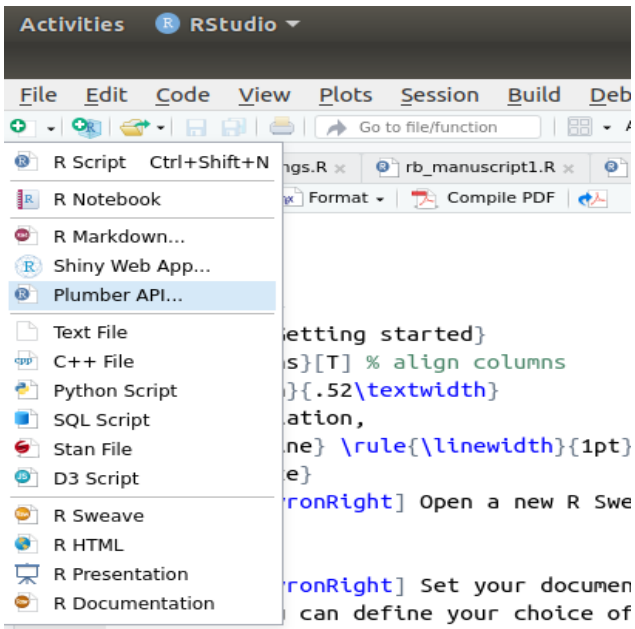
Check your OS:

- 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`,
- LaTeXonline services like Papeeria, Overleaf, ShareLaTeX, Datazar, and LaTeX base offer the ability to edit, view and download LaTeX files and resulting PDFs.

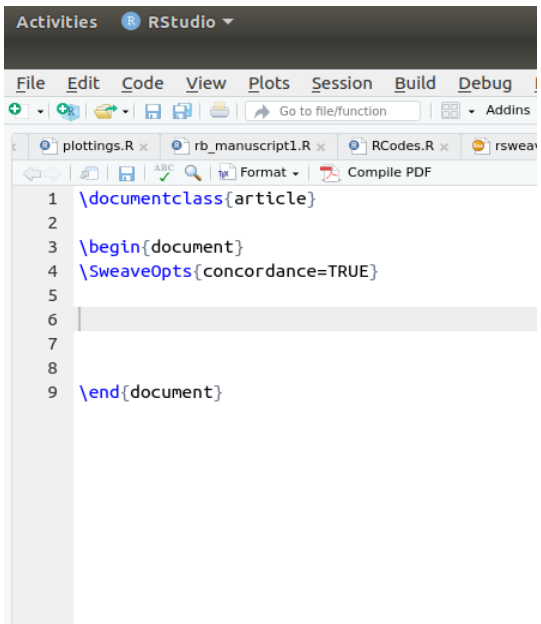
Getting started

- 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

```
\documentclass[a4paper, 11pt, oneside]{scrartcl}

\usepackage[english]{babel}
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}

\usepackage{graphicx}
\usepackage[space]{grffile}
\usepackage{url}
\usepackage{booktabs}
\usepackage{indentfirst}
\usepackage{empheq}
\usepackage{amssymb,amssymb,mathrsfs}
\usepackage[extra]{tipa}
\allowdisplaybreaks
\usepackage{multicol}
\usepackage{multirow}
\usepackage{array}
\usepackage{nameref}
\renewcommand{\sfdefault}{iwona}
\usepackage[margin=1.2in]{geometry}
\usepackage{enumerate}
\usepackage{color}
```

Slide

```
\documentclass[9pt]{beamer}

\usepackage[english]{babel}
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}

\usepackage{graphicx}
\usepackage[space]{grffile}
\usepackage{url}
\usepackage{booktabs}
\usepackage{indentfirst}
\usepackage{empheq}
\usepackage{amssymb,amssymb,mathrsfs}
\usepackage[extra]{tipa}
\allowdisplaybreaks
\usepackage{multicol}
\usepackage{multirow}
\usepackage{array}
\usepackage{nameref}
\renewcommand{\sfdefault}{iwona}
%\usepackage[margin=1.2in]{geometry}
\usepackage{enumerate}
\usepackage{color}
```

Format | Compile PDF

```
%title page ------------------------------------------------------------
\title{Class Note and Slides Using Sweave in R}
\author{Mohammed Moinuddin, PhD \\
m.moinuddin@ucl.ac.uk}

\vspace{2in}
\affil{PPP Dept, UCL Institute of Child Health}
\date{6 May 2020, ICH CodeClub}

\begin{document}
\SweaveOpts{concordance=TRUE}
\maketitle

\newpage
\tableofcontents

\newpage
\section{Introduction}
\noindent Sweave is a powerful and flexible system for creating dynamic re
using \LaTeX. Sweave enables the embedding of R code within \LaTeX docume
includes:
```

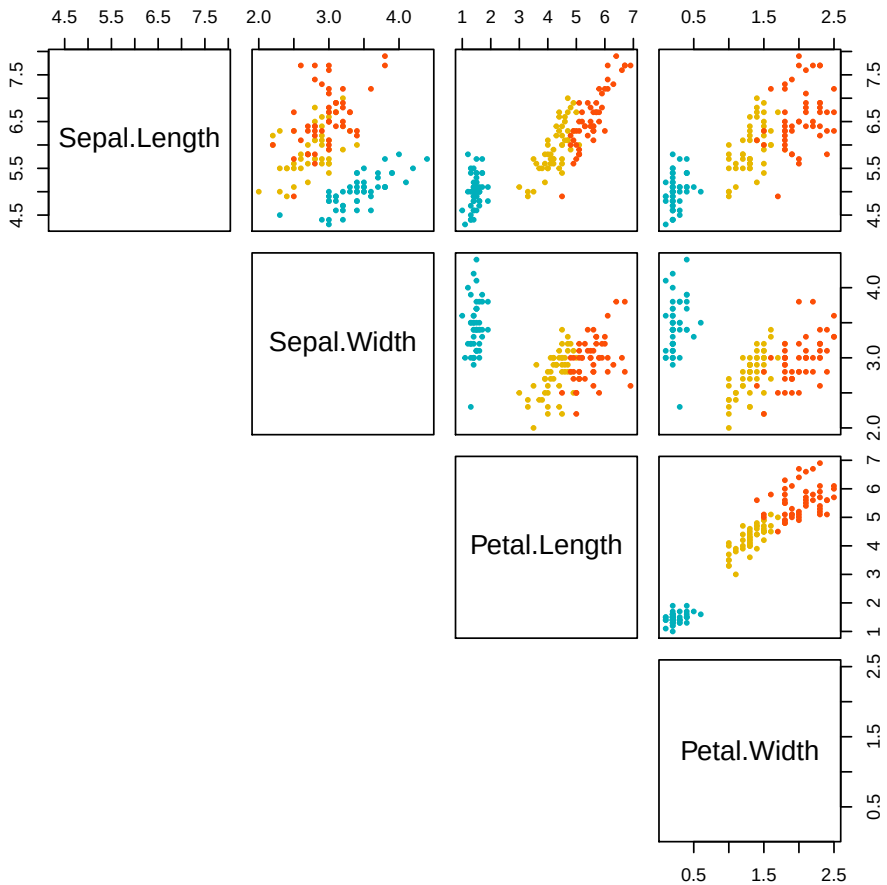
Format | Compile PDF

```
%title page ------------------------------------------------------------
\title{Class Note and Slides Using Sweave in R\\
\noindent\makebox[\linewidth]{\color{carmine} \rule{\paperwidth}{2pt}}}

\author{Mohammed Moinuddin, PhD \\
m.moinuddin@ucl.ac.uk}

\institute{PPP Dept, UCL Institute of Child Health}
\date{6 May 2020, ICH CodeClub}


\begin{document}
\SweaveOpts{concordance=TRUE}

\begin{frame}
\titlepage
\end{frame}

\begin{frame}
\frametitle{Introduction}
\begin{columns}[T] % align columns
\begin{column}{.52\textwidth}
What is this and what it does?
{\color{carmine} \rule{\linewidth}{1pt}}
```

R-code in slide

- 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)
```



External figures