Data Technologies

R and HTML
Background Reading

Chapters 2 and 3 of “Introduction to Data Technologies”

The Web Design Group HTML 4 Reference
http://htmlhelp.com/reference/html40/


The Sweave manual
http://www.ci.tuwien.ac.at/~leisch/Sweave/
The R2HTML package assists in the creation of HTML reports by generating HTML code from R objects.

```
library(R2HTML)

HTMLStart(outdir=".", filename="demoR2HTML")

ftable(Titanic, row.vars=1)

mosaicplot(~ Class + Survived, Titanic)

HTMLplot(Height=400)

HTMLStop()
```
```r
# Table

```
The hard work is done by the `HTML()` generic function.

> HTML(ftable(Titanic, row.vars=1))

```html
<p align= center >
<table cellspacing=0 border=1>
    <caption align=bottom class=captiondataframe>
    </caption>
    <tr><td>
        <table border=0 class=dataframe>
            <td class=cellinside> </td>
            <td class=cellinside>Sex </td>
            <td class=cellinside> Male </td>
            ...
```
Sweave

Sweave is a tool that allows you to write a document, e.g., report.Rnw, with embedded R code.

The function `Sweave()` runs the code chunks and replaces them with the corresponding R output. The result can be a latex document called `report.tex` or, with the R2HTML package, an HTML document called `report.html` (or with the odfWeave package, an ODF document).

- Analysis code and report in one file.
- Output always up to date; always corresponds to the code.
- Reproducible research.
Sweave

A file called demoSweave.Rnw.

```html
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
<html>
    <head>
        <title>A Minimal HTML Document</title>
    </head>
    <body>

<<>>=
summary(Titanic)

@

</body>
</html>
```
Sweave

This is processed by typing ...

> Sweave("demoSweave.Rnw", driver=RweaveHTML)

> summary(Titanic)

- Number of cases in table: **2201**
- Number of factors: **4**
- Test for independence of all factors:
  
  Chi$^2$ = **1637.4**, df = **25**, p-value = **0**

Chi-squared approximation may be incorrect.
Sweave

A file called `demoSweave.html`.

```html
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
<html>
  <head>
    <title>A Minimal HTML Document</title>
  </head>
  <link rel=stylesheet type=text/css href=R2HTML.css>
  <!-- begin{Schunk} !-->
  <!-- begin{Sinput} !-->
  <p><xmp class=command>> summary(Titanic)</xmp></p>
  <!-- end{Sinput} !-->
  <!---- end{Schunk} !-->
  <br><li>Number of cases in table: <b>2201</b></li>
  <br><br><li>Number of factors: <b>4</b></li>
  <br><br><li>Test for independence of all factors:
    <br><p class='character'> Chisq = <b>1637.4</b>, df = <b>25</b>, p-value = <b>0</b> </p>
```
Sweave

- The R code can be hidden \texttt{echo=FALSE}

- If the code produces a plot, that can be automatically included \texttt{fig=TRUE}

- The result of the last expression in a code chunk is automatically formatted using \texttt{HTML()}, unless \texttt{results=html} or \texttt{results=hide}. 
R2HTML and Sweave

The HTML formatting produced by R2HTML is not always very nice. If you want to just show the normal printed format from R, use the following function:

```r
printVerbatim <- function(x) {
  tc <- textConnection("Routput", "w")
  sink(tc)
  print(x)
  sink()
  close(tc)
  cat(Routput, file=.HTML.file, sep="\n")
}
```