

Sweave Example

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The `Sweave` function facilitates creation of documents that blend R code, its output, and documentation or other text. The user begins by creating a `noweb` source file, which is a text file with the extension `.Rnw`. It resembles a `.tex` file, but it has two kinds of segments (called “chunks”) in it: *documentation chunks* and *code chunks*. By default, the document begins with a documentation chunk. Each code chunk must start with

```
<<>>=
```

at the beginning of a line. Optionally, a name for the code chunk may be included in the angle brackets:

```
<<name>>=
```

Code chunk names may be used to pass options to Sweave to control the final output.

Each documentation chunk (except the first) begins with

```
@
```

at the beginning of a line.

In this example, we create a small data frame, run a linear regression model, and produce diagnostic plots. Since we do not specify any options in a code chunk name, the default behavior occurs: both the code and its output are included in the final document.

```
> set.seed(15)
> x <- 1:5
> y <- rnorm(1 - 0.5 * x)
> mydat <- data.frame(cbind(x, y))
> print(mydat)
```

```
  x      y
1 1 0.2588229
2 2 1.8311207
3 3 -0.3396186
4 4 0.8971982
5 5 0.4880163
```

```
> summary(lmout <- lm(y ~ x, data = mydat))
```

Call:

```
lm(formula = y ~ x, data = mydat)
```

Residuals:

```
      1      2      3      4      5  
-0.46339  1.15646 -0.96673  0.31764 -0.04398
```

Coefficients:

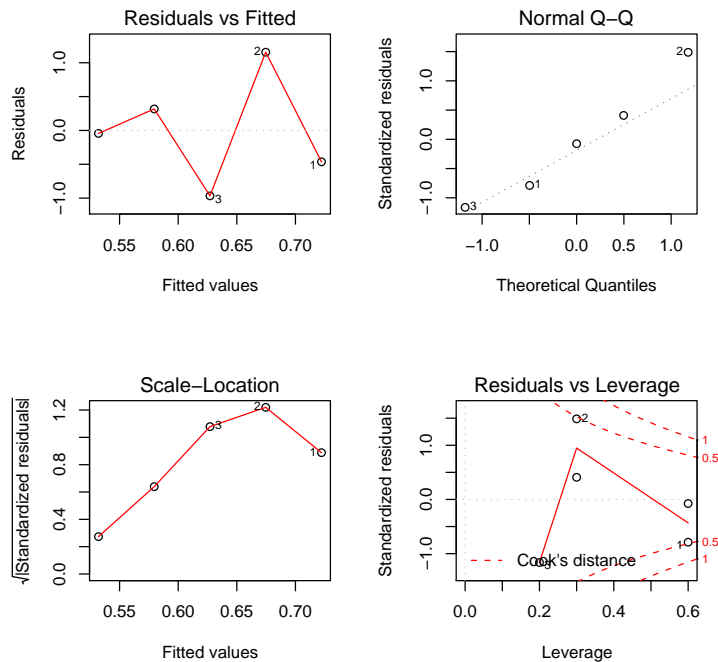
```
              Estimate Std. Error t value Pr(>|t|)  
(Intercept)  0.76977    0.97442   0.790   0.487  
x            -0.04755    0.29380  -0.162   0.882
```

Residual standard error: 0.9291 on 3 degrees of freedom

Multiple R-Squared: 0.008657, Adjusted R-squared: -0.3218

F-statistic: 0.0262 on 1 and 3 DF, p-value: 0.8817

Next we will create plots. The options `fig` and `echo` in the code chunk name tell Sweave to include the actual plots produced, and to suppress printing (echoing) of the R code.



This time we will show the code that produces the figure, instead of the figure itself.

```
> par(mfrow = c(2, 2))
> plot(lmout)
```

It is also possible to include the scalar results of R expressions in text chunks. For example, the logit of 0.237 is -1.16919789014933.

To process this .Rnw file, one goes into R and runs the Sweave function.

```
Sweave(file="firsttry.Rnw")
```

Alternatively, if working in Linux or Unix, one may enter

```
echo 'Sweave("firsttry.Rnw")' | R --vanilla --quiet
```

at the Linux/Unix prompt without having to go into R.

Either way of running the **Sweave** function will create the L^AT_EX source file `firsttry.tex` and the graphics files `firsttry-002.pdf` and `firsttry-002.ps`. The final typeset document may be produced by running

```
latex firsttry
```

at the Linux/Unix prompt. If in Windows, a batch file or the TeXnic Center may be used to process the `.tex` file.