I Found Sweavel, And I Liked It!

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Sweave is great, but I was disappointed with the quality of the output when R code was rendered. The tilde symbol ~ came out as a small squiggle above the line, and the ← symbol did not look so great either. I Googled for help on "Sweave ugly tilde" and found Prof Harrell's Sweavel.sty file (`http://biostat.mc.vanderbilt.edu/wiki/Main/SweaveTemplate`). Awesome! I'm going to use it from now on.

This LyX document is a small minimial self contained Rweave example using Sweavel.sty. I believe you will see, in the pdf output, that Sweavel beautifies R output with pleasant colored boxes and nice looking symbols.

Not all user document customizations are inter-changeable between the two classes Sweave and Sweavel. Sweavel.sty is a nearly clean "drop in" replacement for Sweave.sty. One difference is that the user must avoid customizations that depend on Verbatim. We often used re-defined Rinput and Routput with the "Verbatim" class (example in ERT box above). Those changes don't work anymore because Sweavel does not use Verbatim. It uses the much nicer "listings" class. I had already been using listings in LyX, I feel fortunate to find it used in Sweavel.

Sweavel allows various customizations. In an ERT block above (if you are reading this in LyX), some possible changes are displayed. For fun, I adjusted the color of R output's foreground and background.

I'm showing one trick here that is handy. Instead of having Sweave write the output into the document, put include=F to NOT put it into the document automatically, but it still goes into the R session. You can use LaTeX input to put it in the document wherever you want. That's handy, but lets don't worry about that right now.

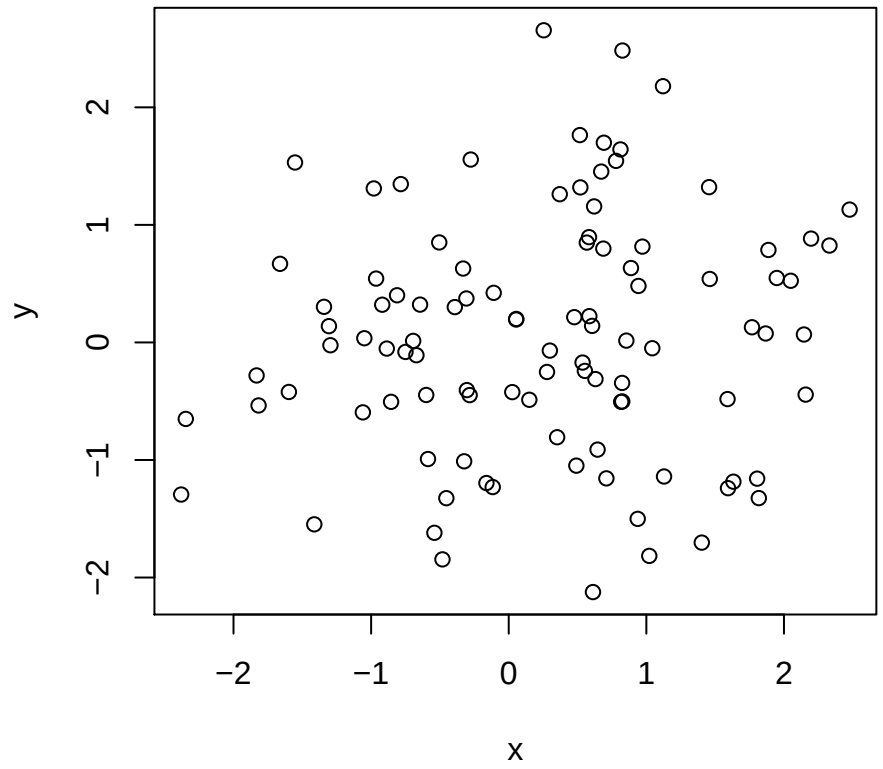
This is what the echoed input looks like, if you allow it to shade the background (here is gray95):

```
x ← rnorm(100)
y ← rnorm(100)
```

This command

```
plot(x, y)
```

Figure 1: A Floating Scatterplot



creates a scatter plot, as shown in Figure 1. Note, if you are reading this in LyX, the Sweave idiom I use combines fig=T, include=F. That writes the graphic into the plots subdirectory, but does not put it into the document automatically. When I need the figure, I use ERT

```
\includegraphics {plots/plot-t2}
```

to put the figure into the float, but I could as well have used the LyX GUI menu "insert / graphic". It does the exact same thing. (There's some messing about to be done with this because LyX uses a temporary directory "somewhere over there" and the \includegraphics wants the figure in the subdirectory plots "right here." To work around that, it is necessary to copy the tex and pdf files from "over there" to "right here" after Rweave runs. I can explain that magic some other time.)

The following regression model is created without the include=F idiom. Sweave just plops the results into the document where it is called. It puts the command in a gray95 shaded box. The output "box" has a red line around the outside. I'm not sure if I like colors, but it is nice to know they are available (and can be turned off, as you see if you open the first bit of code in the LyX file).

```
mod <- lm(y ~ x)
summary(mod)
```

```
Call:
lm(formula = y ~ x)

Residuals:
     Min       1Q   Median       3Q      Max
-2.20347 -0.60278 -0.01114  0.61898  2.60970

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.02205    0.10353   0.213    0.832
x            0.09454    0.09114   1.037    0.302

Residual standard error: 1.011 on 98 degrees of freedom
Multiple R^2: 0.01086,    Adjusted R^2: 0.0007664
F-statistic: 1.076 on 1 and 98 DF,  p-value: 0.3022
```

How can you do this? Install Sweavel.sty, configure LaTeX to use it. Then, when LyX to Rweave is concerned, I'm using LyX and R "my way," the way I originally proposed on the LyX wiki years ago (`http://wiki.lyx.org/LyX/LyxWithRThroughSweave`), but if you use it the other way, the way Gregor Gorjanc proposes, I expect you can get it to work. Basically, install Sweavel.sty and wherever you were calling Sweave.sty, call Sweavel.sty now. Prof Harrell's page says it is necessary to install the R package "SweaveUtilListings," but I've not yet figured out how/why that might play a role in all of this. But I do have it installed, because he's usually right in my experience.