Some simple R code blocks in an org buffer.

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1 Introduction

This is an example document to demonstrate some simple R blocks in an org document. Convert it either to pdf or html using the appropriate export tools.

1.1 Getting started

Here we compare the output from `:results value` with `:results output`. Within each code block, press `C-c C-c` to see (or update) the results.

```
1 + 2
3 + 4
```

```
    7
```

```
1 + 2
3 + 4
```

```
    [1] 3
    [1] 7
```

2 Process an org table in R

We use org-mode to create a nice-looking table, which we want to process in R.

name	maths	physics
joe	75	90
fred	80	50
harry	90	75

2.1 Process the results

We would like to read in the table, and then compute the weighted sum of the scores for each student. Note how we refer to the table above through its *tblname*.

```
ave <- (0.7 * scores$maths) + (0.3 * scores$physics)
data.frame(name=scores$name, score=ave)
```

```
       name score
    1   joe  79.5
    2  fred  71.0
    3 harry  85.5
```

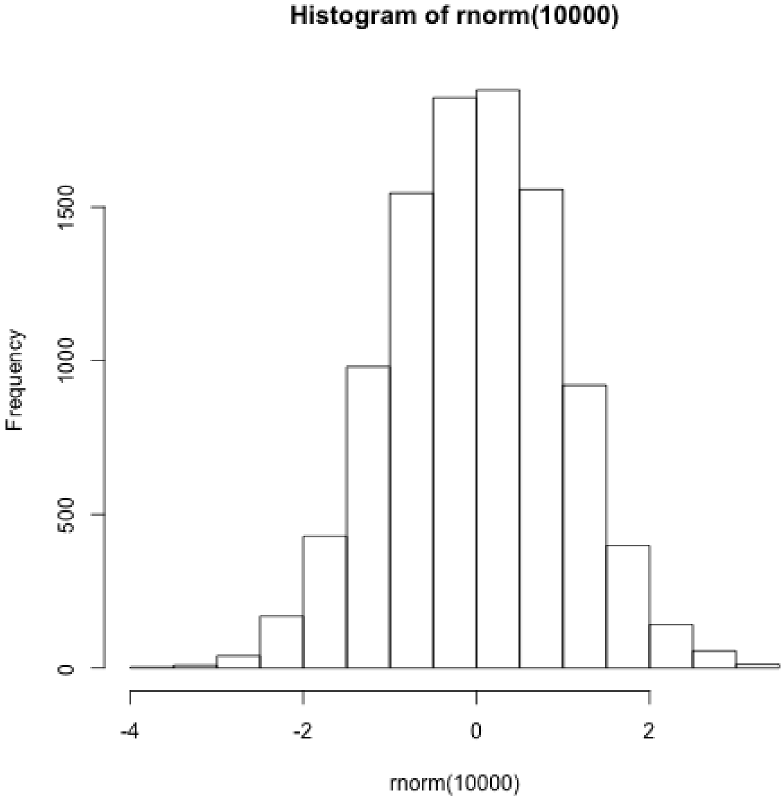
3 Comparing base vs lattice graphics output

Unfortunately you need to have slightly different expressions for generating *base* and *lattice* graphics output.

3.1 Example of base graphics output

With base graphics, e.g. to make a histogram, try the following snippet. Here we generate a png file, just hit `C-c C-c` within the code to eval it, and generate the resulting file.

```
hist( rnorm(1e4))
```



Emacs can view png's within a buffer, and even show them inline using the minor mode `iimage-mode`. Turn this on with `M-x turn-on-image-mode`. (Warning: this sometimes places the images in the wrong place.)

3.2 Example of lattice graphics output

When using lattice graphics, you will need to set `:results output graphics` rather than just `:results graphics`. For example, here we generate a contour plot of the function

$$\log F - F + \log S - S = k$$

where F and S are varied to see what the constant k should be. Note that we export the code, rather than exporting both the code and the results (in this case the graphics). The results line is still output though (delete it to check). However, note that the caption line must come before the file: line.

```
library(lattice)
f <- seq(from=0.1, to=4, length=100)
s <- f
grid <- expand.grid(x=f, y=s)
grid$z <- log(grid$x) - grid$x + log(grid$y) - grid$y
levelplot(z ~ x + y, grid, more=TRUE, contour=TRUE,xlab=’fish’, ylab=’shark’)
```

4 Passing results from one language to another via org.

We can have code snippets in different languages, and plug them together using the textual output from one code block. Here is a simple example where we take some output from a shell command and feed it into an R block. (Of course, this example can be done entirely in R . . .)

```
ls -sS /etc | grep -v total | head -5
```

376	services
16	moduli
48	php.ini.default
32	amavisd.conf
64	authorization

This table is named *biggest-files*, which can be passed to an R function to create a little pie chart:

```
pie(f[,1], labels = f[,2])
```

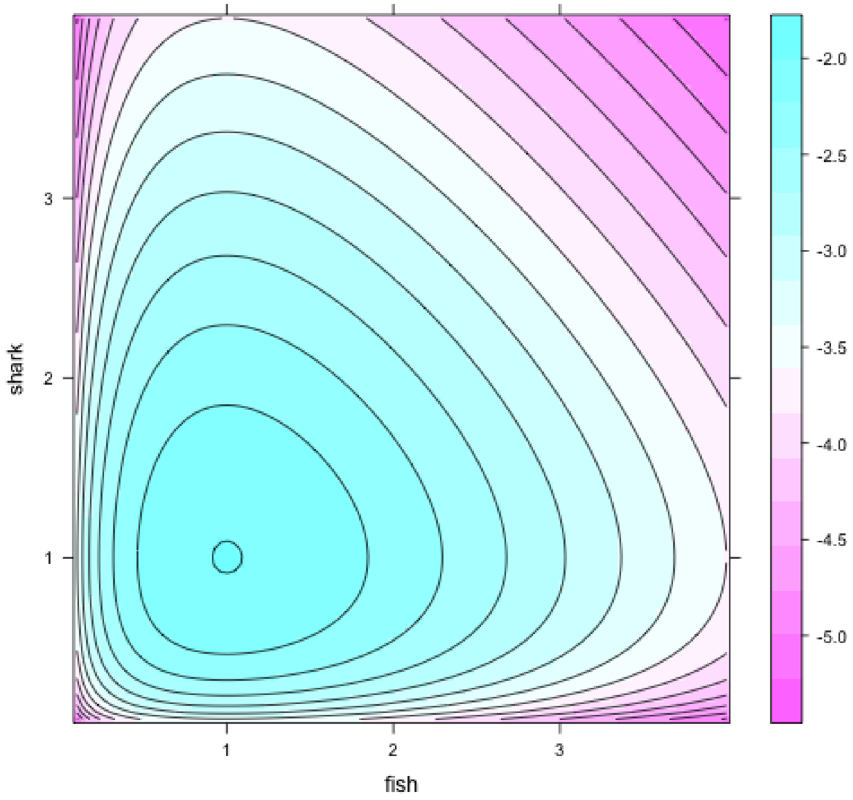
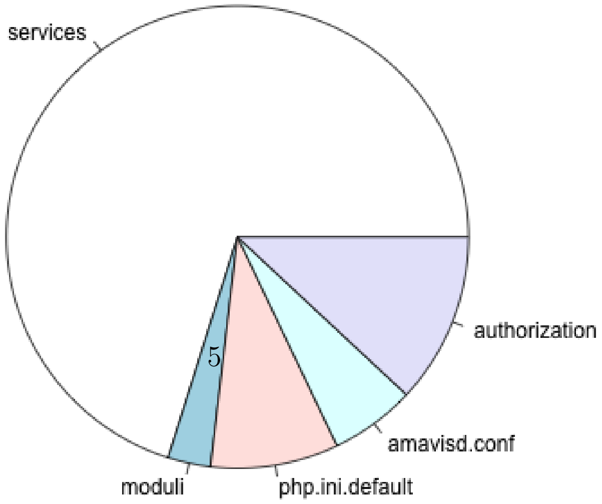


Figure 1: Lattice contour plot showing populations of sharks and fish.



5 Why :session?

We have not used :session here in the calls, for simplicity. But you might find it useful, for several reasons.

- You can see what is happening, rather than running in batch.
- A bit quicker than starting a new session each time.
- State kept from one block to another in the process.

Example from http://orgmode.org/worg/org-contrib/babel/intro.html

6 Sources

http://orgmode.org/worg/org-contrib/babel/languages/ob-doc-R.html

The main documentation page. Many examples adapted from here or other Org Babel (OB) pages.