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Working Habits

How to make your life easier and more efficient.

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Lancaster University

CHICAS
combining health information, computation and statistics

Command Line

```
> readmydata=function(f,...){
    d = read.csv(f,...)
    d$old=d$age>5;
    d
  }
> data = readmydata("data.csv")
> fit = glm(y~x,data=data)
> summary(fit)
```

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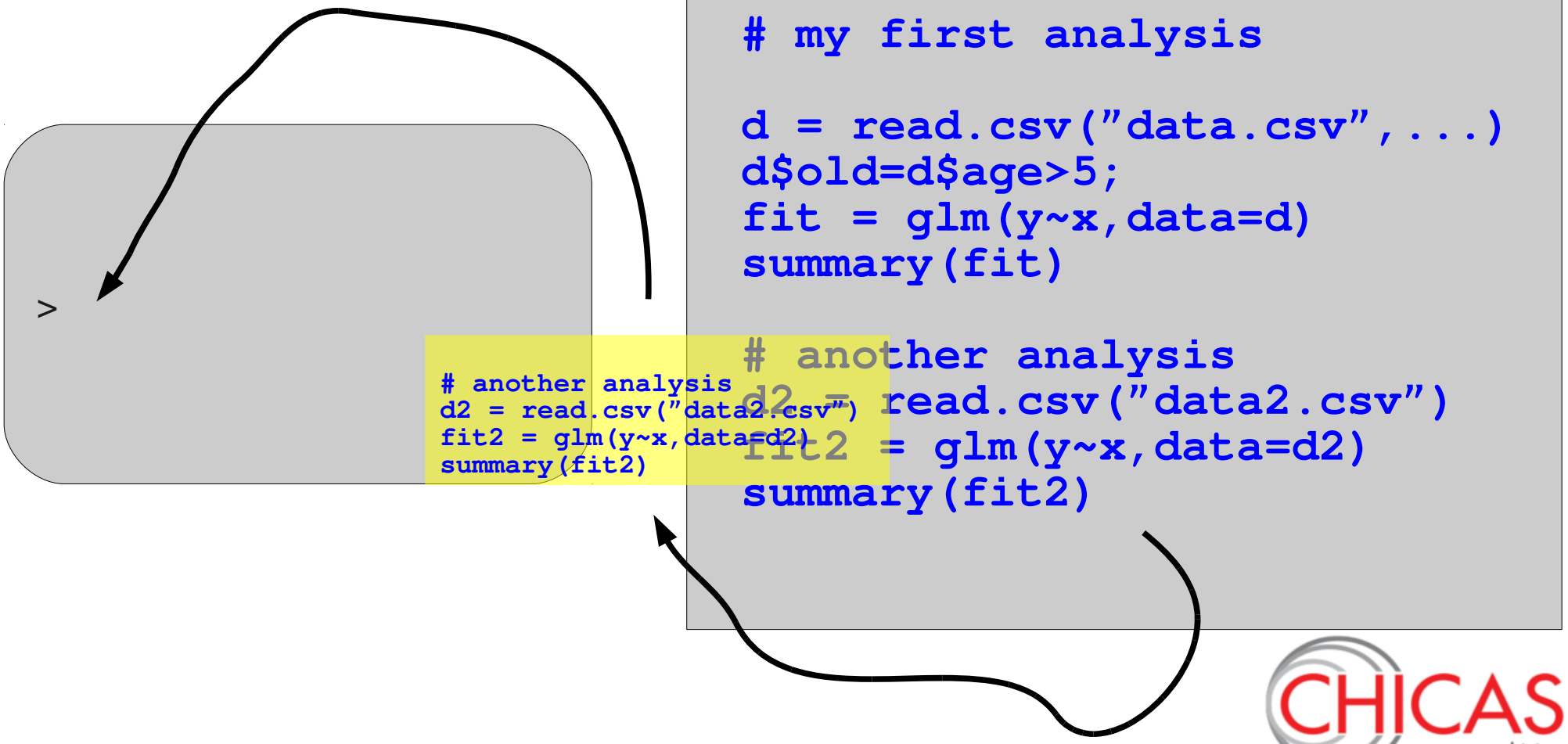
Cut and Paste



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Source

first.R

```
# my first analysis
d = read.csv("data.csv",...)
d$old=d$age>5;
fit = glm(y~x,data=d)
summary(fit)
```

```
>source("first.R")
```

second.R

```
# another analysis
d2 = read.csv("data2.csv")
fit2 = glm(y~x,data=d2)
summary(fit2)
```

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(One) function per file

```
> source('first.R')
> first('data.csv')
> source('second.R')
> second('data.csv')
> second('data2.csv')
```

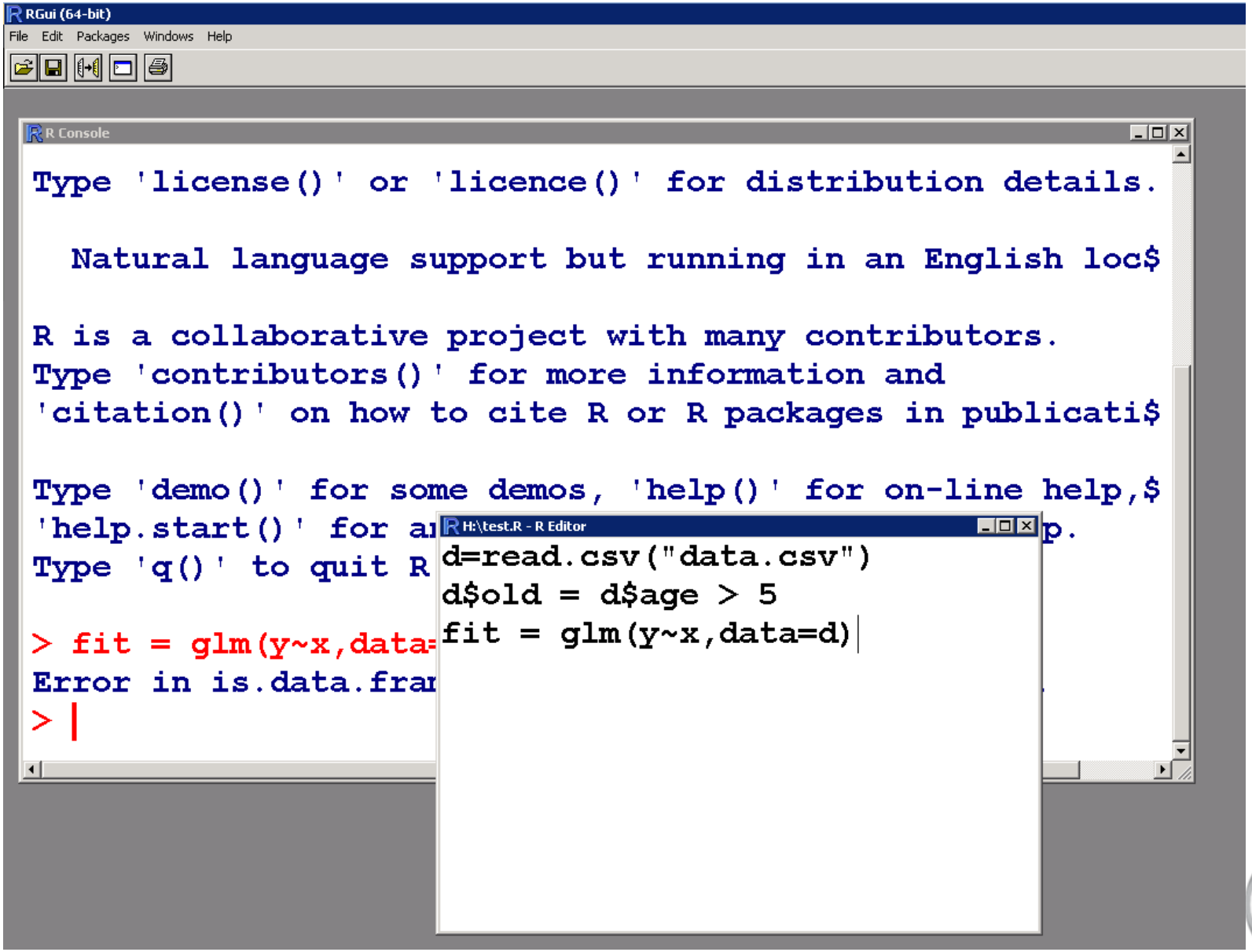
first.R

```
# my first analysis
first=function(f){
d = read.csv(f,...)
d$old=d$age>5;
fit = glm(y~x,data=d)
summary(fit)
}
```

second.R

```
# another analysis
second=function(f){
d2 = read.csv(f)
fit2 = glm(y~x,data=d2)
summary(fit2)
}
```

Windows GUI



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RStudio

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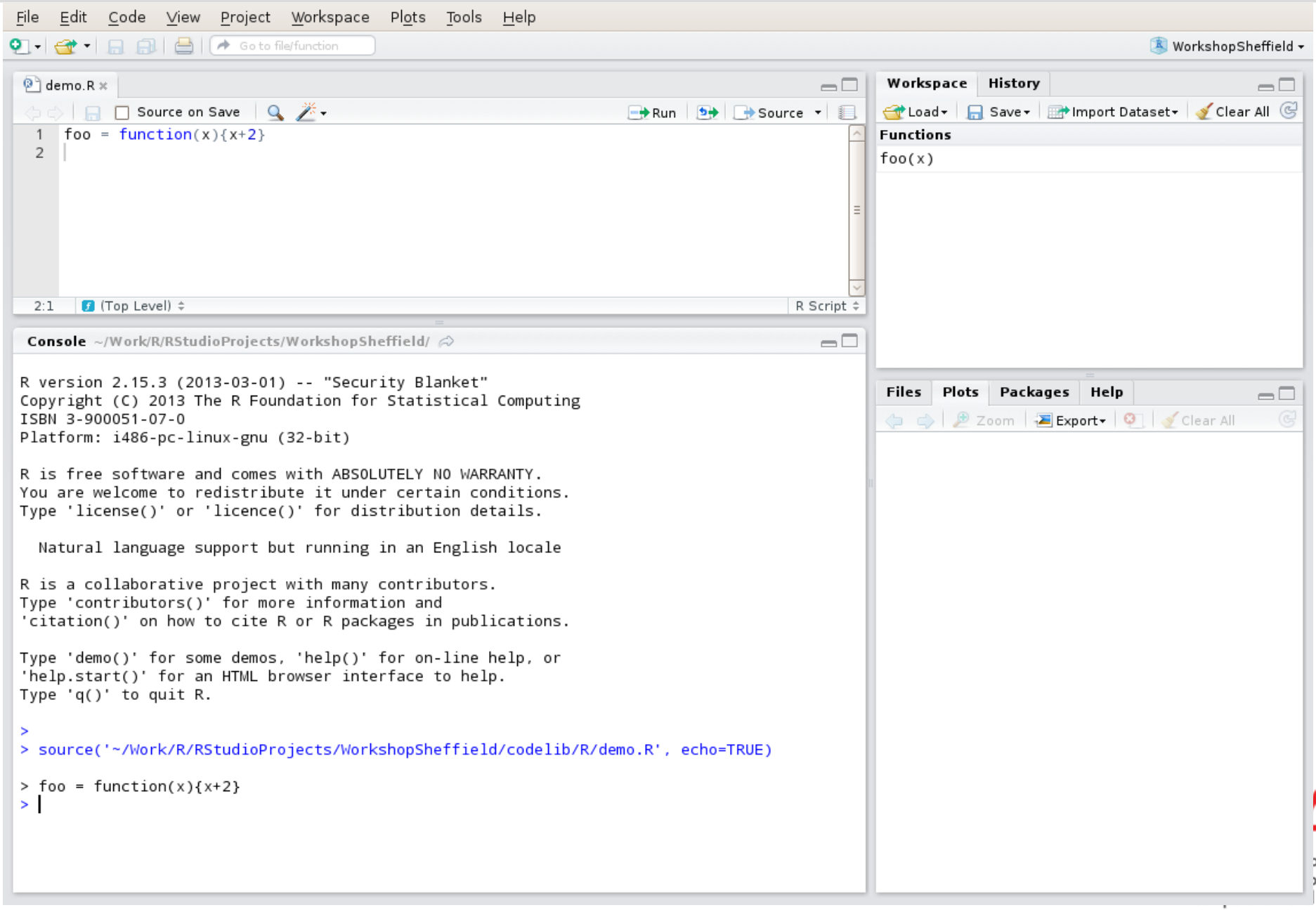

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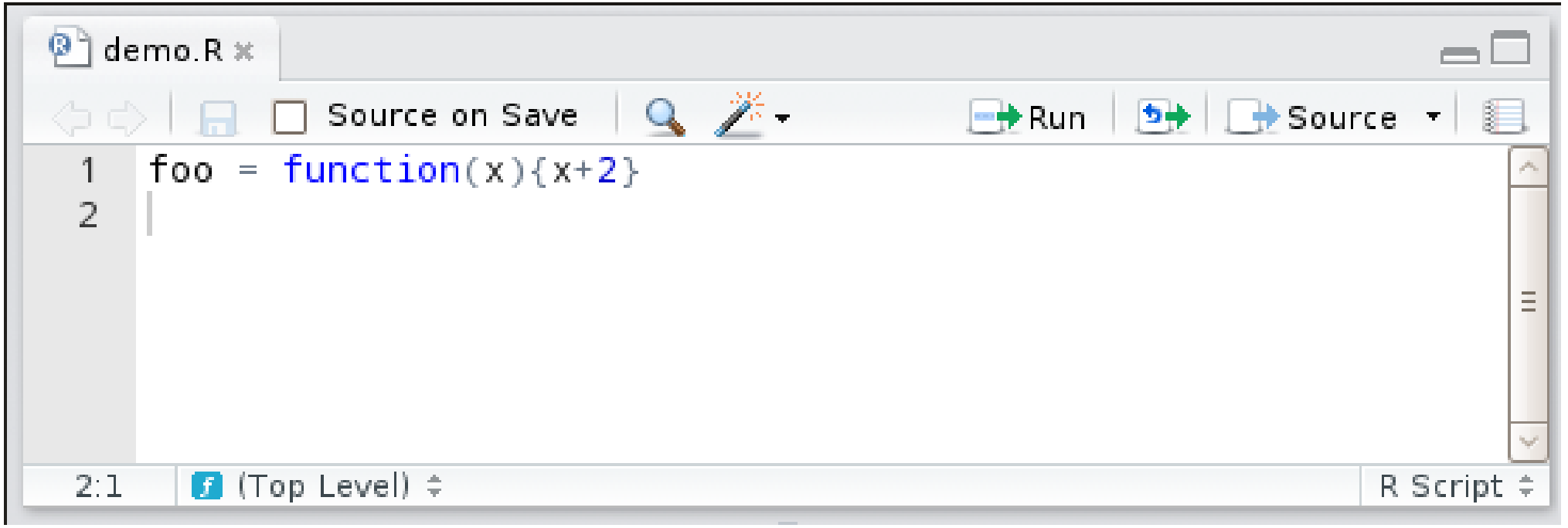
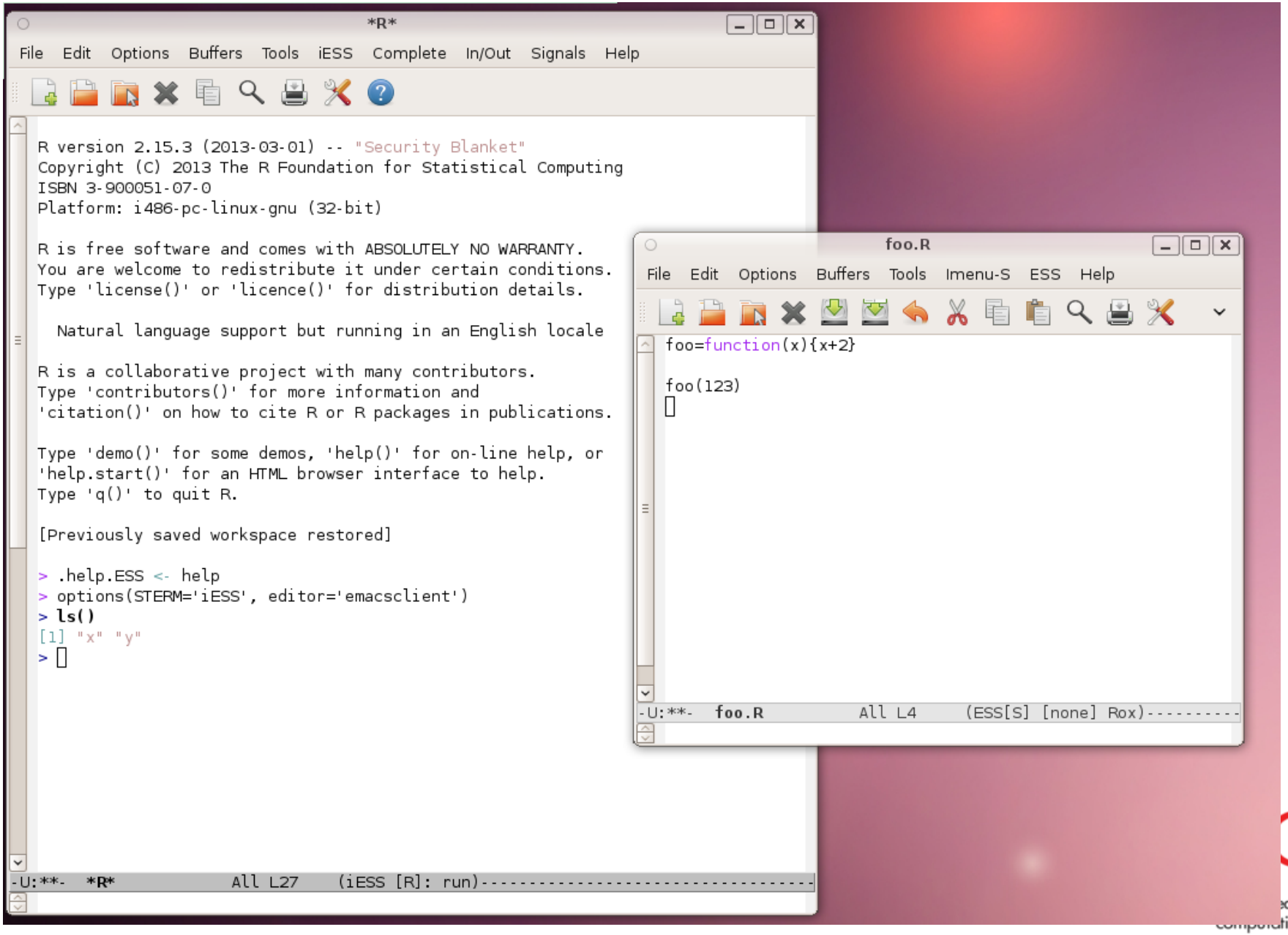
RStudio


demo.R
Source on Save
Run
Source
1 foo = function(x){x+2}
2
2:1
(Top Level)
R Script

Emacs/ESS



Source problem

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- Everything is in **`ls()`**
- Need to **`save`** everything
- Or **`source`** everything
- Stuff copied everywhere
- Solution: ***organise things nicely***

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Package devtools

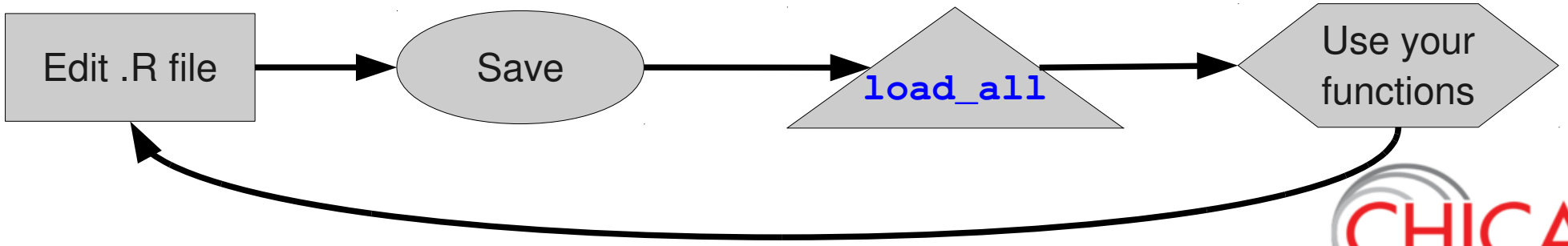
Be functional.

Write functions not scripts

```
> require(devtools)
> create('Code/mycode')
```

Now edit files in **Code/mycode/R/whatever.R**

```
> load_all('Code/mycode')
```



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Why bother?

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```
> load_all("Code/mycode")
Loading mycode
Adding files missing in collate: test.R

> z = foo(1,2,3)

> ls()
[1] 'z'

> search()
 [1] ".GlobalEnv"        "package:mycode"    "package:roxygen2"
 [4] "package:digest"    "package:devtools"  "package:stats"
 [7] "package:graph"     "package:grDevices" "package:utils"
[10] "package:data"      "package:methods"   "Autoloads"
[13] "package:base"

> ls(pos=2)
[1] "foo"
```

Load my code

Here's my new function

Where's foo?

There it is

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Package devtools

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You've just written an R package

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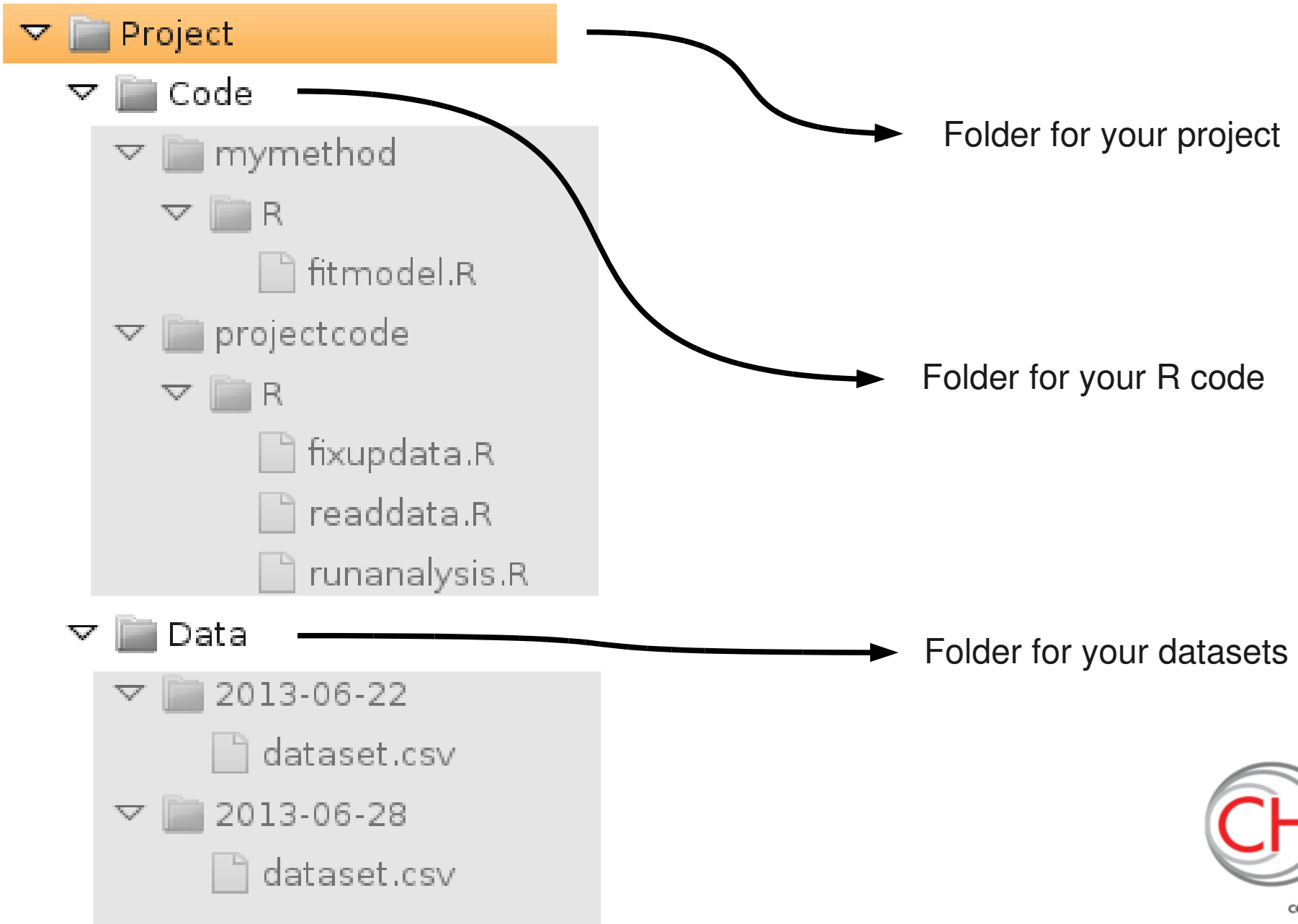
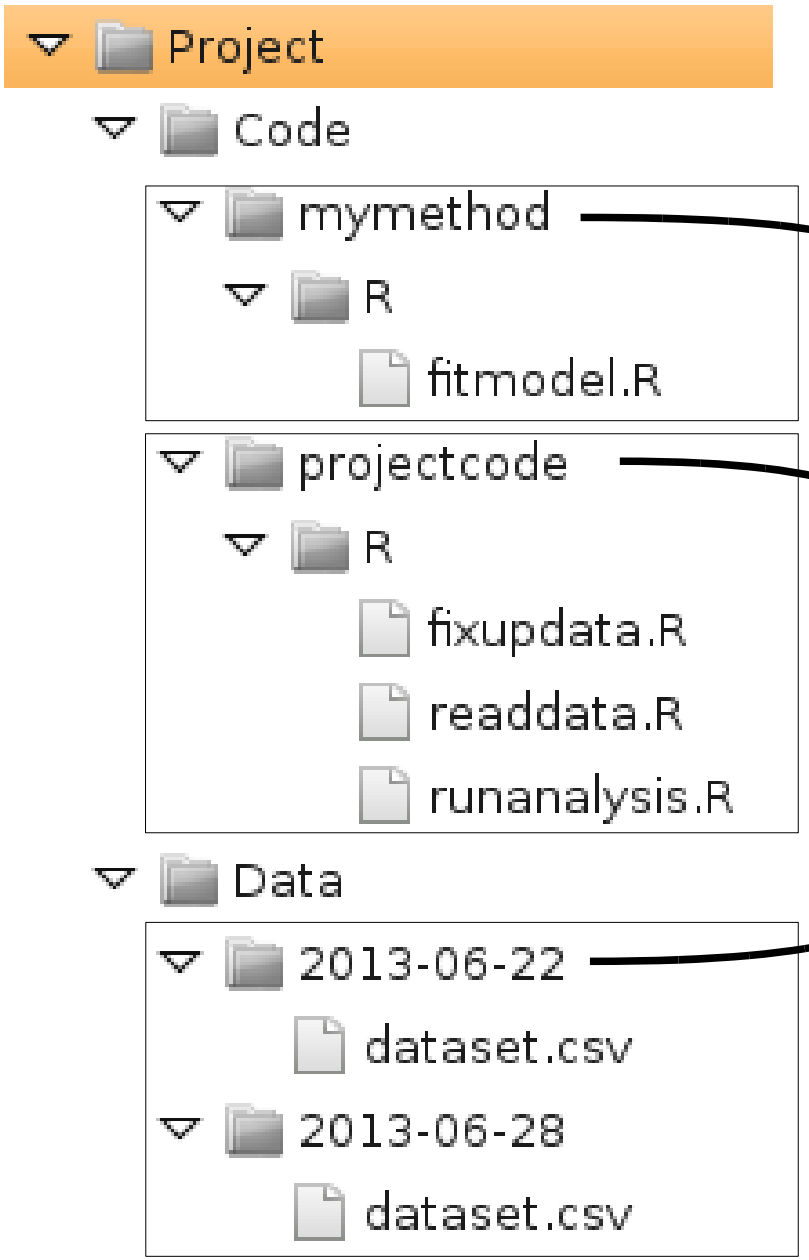
Handy conventions



Handy conventions



Code that might have wide use

Code only useful in this project

Create a new folder when you get updated datasets. Keep 'readme' files

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software carpentry

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Spin your scripts

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```
#'
#' This is my project
#'
#' First I create some data

#+ create
d = data.frame(x=runif(10),y=runif(10))

#' now we do something else

#+ testsum
sum(d$x) # this is a number

#+
plot(d$x,d$y)

#' we can now look at this plot
```

```
> source('makeplot.R')
> require(knitr); spin('makeplot.R')
```

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Gmail | R Output | Home Page

file:///home/me/output/project.html

Search

This is my project

First I create some data

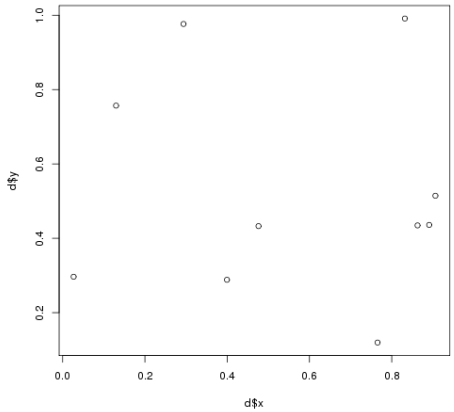
```
d = data.frame(x = runif(10), y = runif(10))
```

now we do something else

```
sum(d$x)  # this is a number
```

```
## [1] 5.583
```

```
plot(d$x, d$y)
```



we can now look at this plot

The `knitr` package

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- You put R code in a document
- Knitr processes the document
- Knitr embeds results and graphics in the output
- Can produce HTML, LaTeX, PDF, Markdown, OpenOffice, MS Word
- Works with other languages
- Great for routine reporting, data-driven documents
- Reproducible Research

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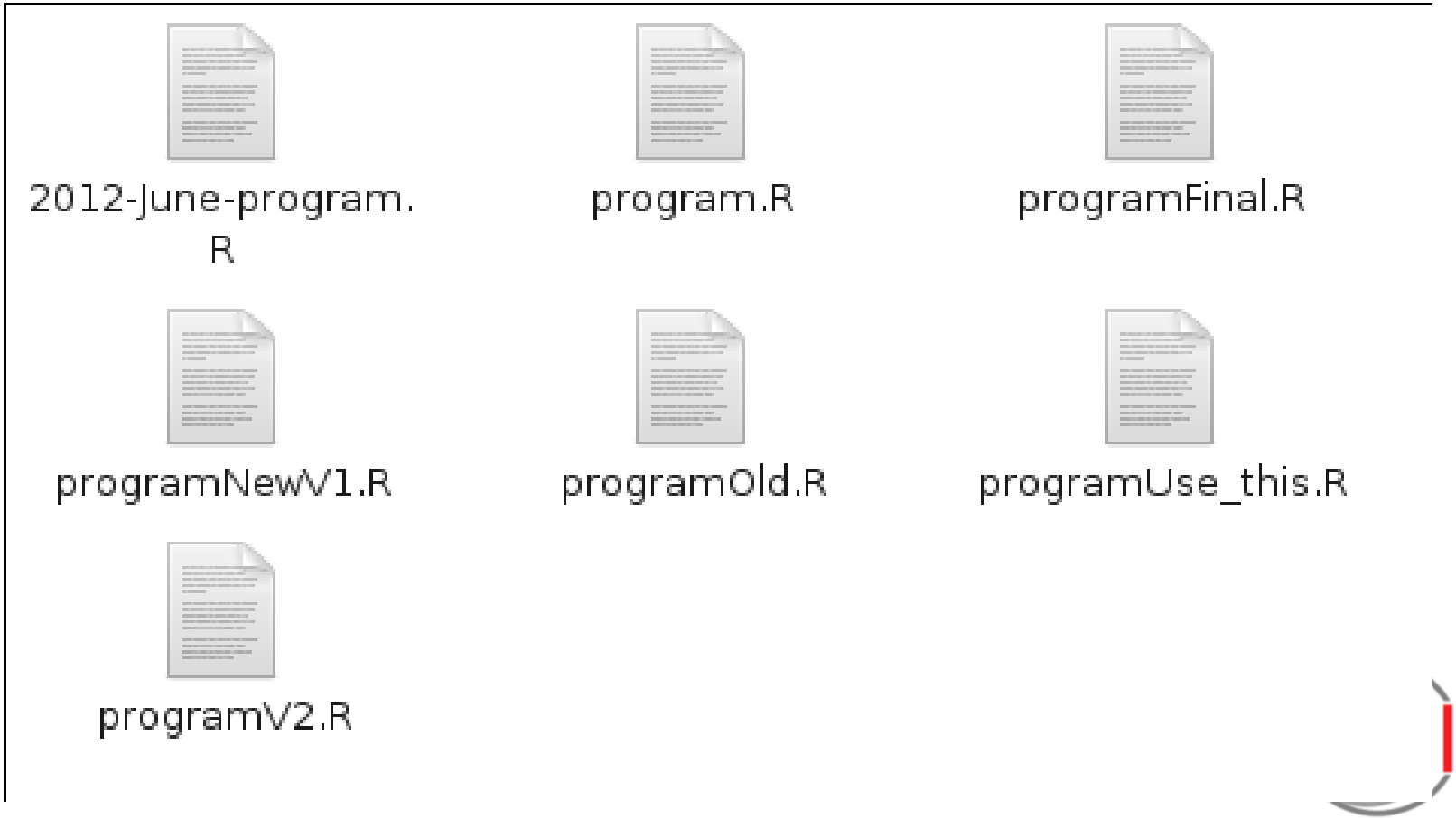
Revision control

- Disk space is now cheap
- Why delete when you can keep?



What you really want...

- What did this file look like
  - Last Week?
  - Last Year?
  - When I did the analysis for the paper?
- What's changed today?
- I want to try something, but it might not work out...
  - How can I go back?

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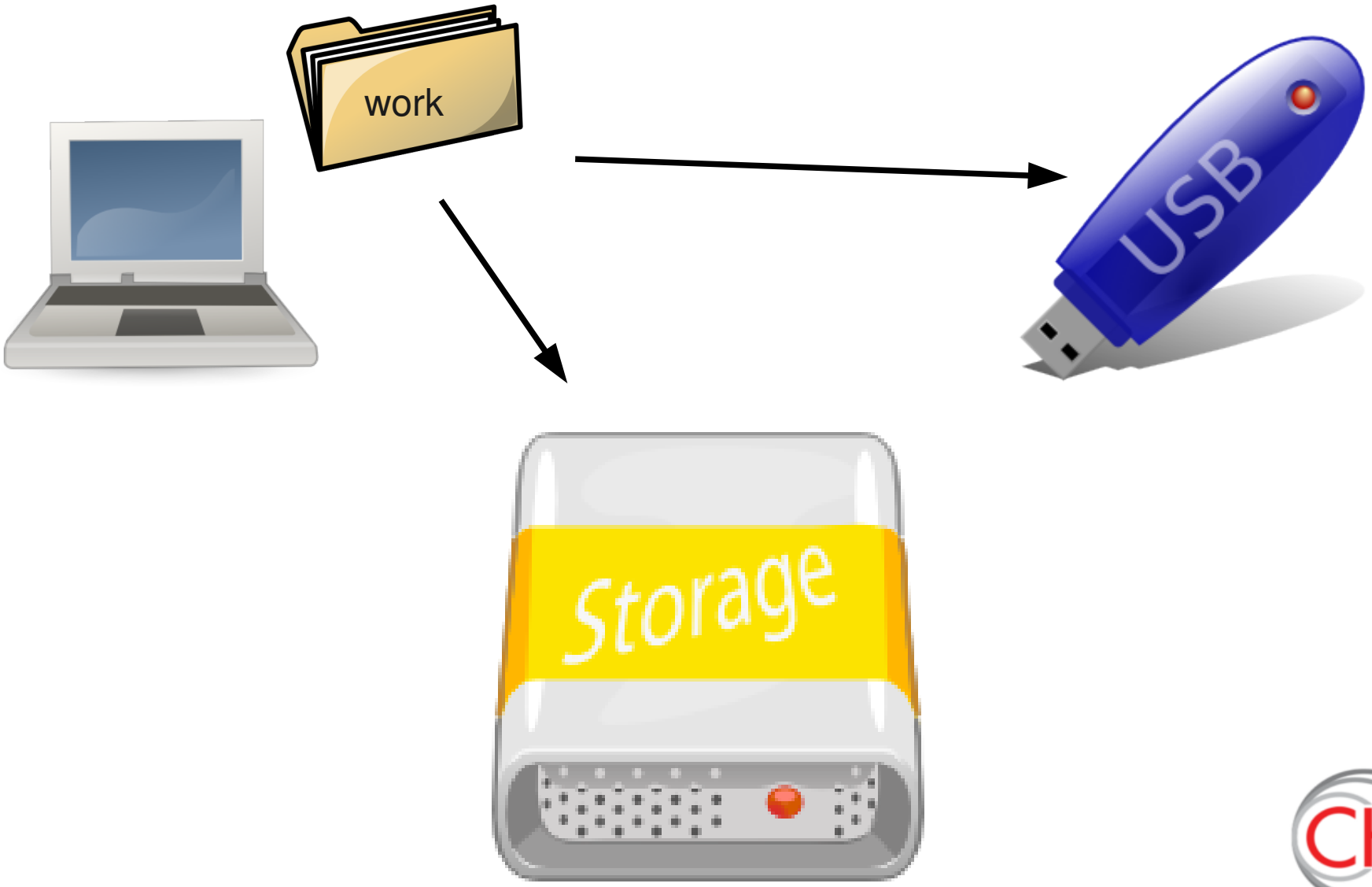
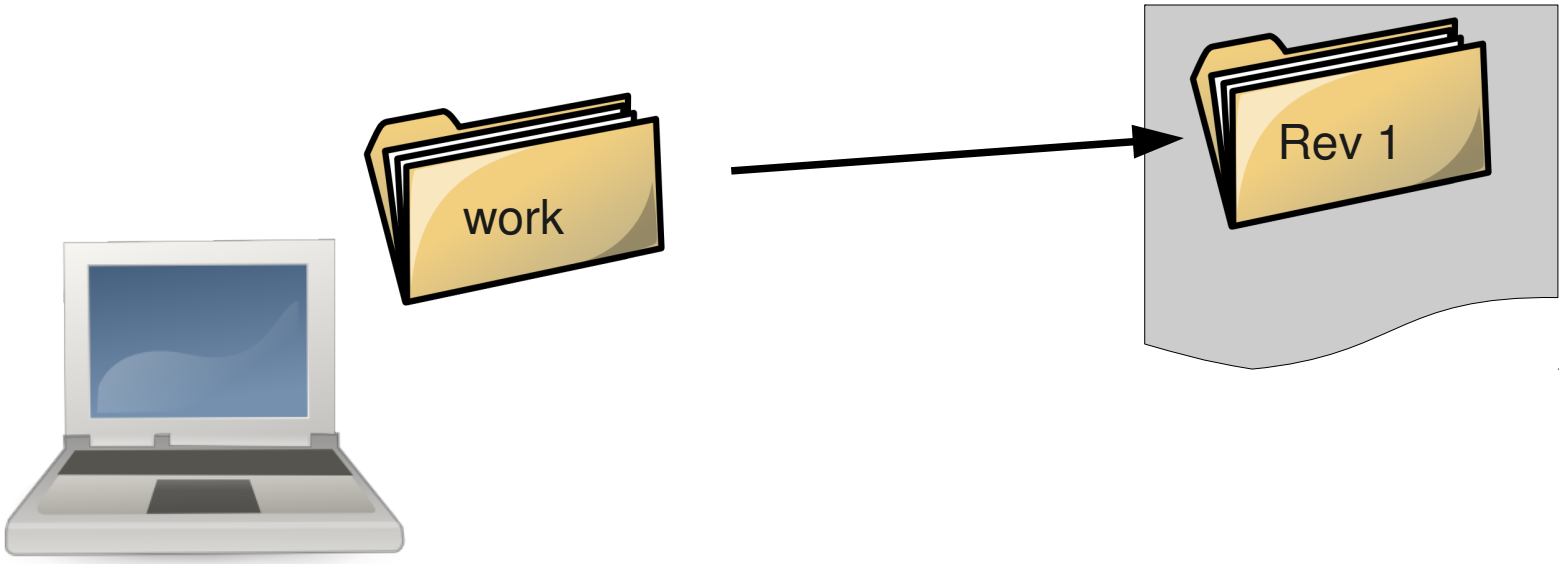
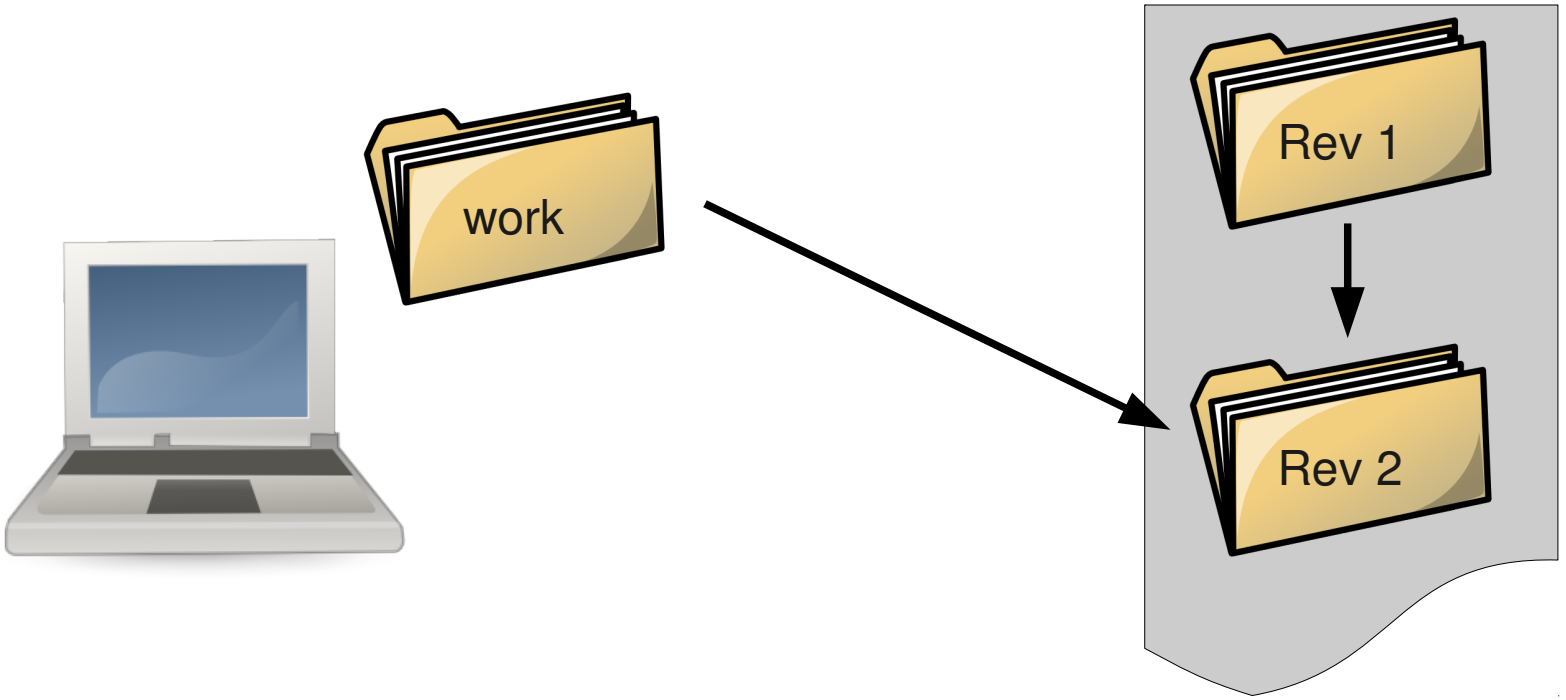
Is This Just Backup?



initialise



commit



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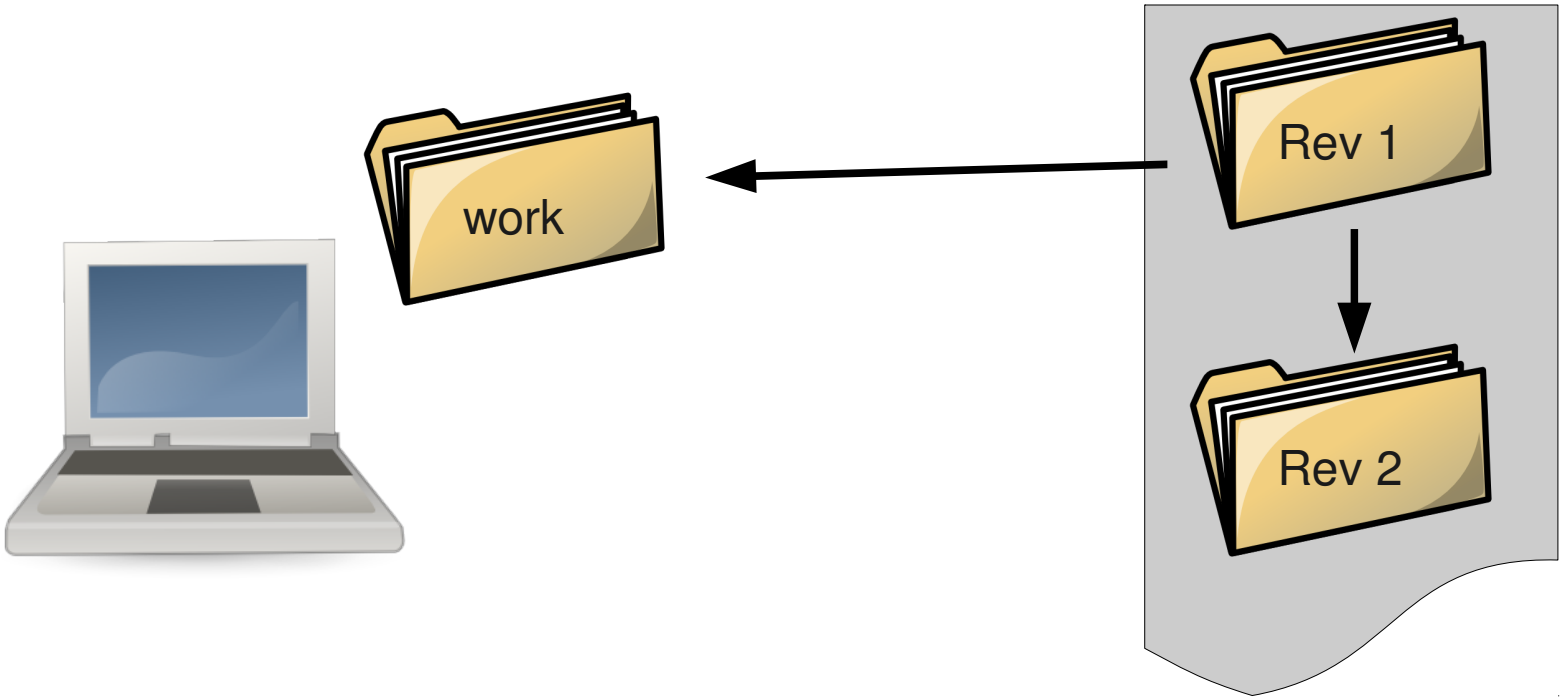
pull



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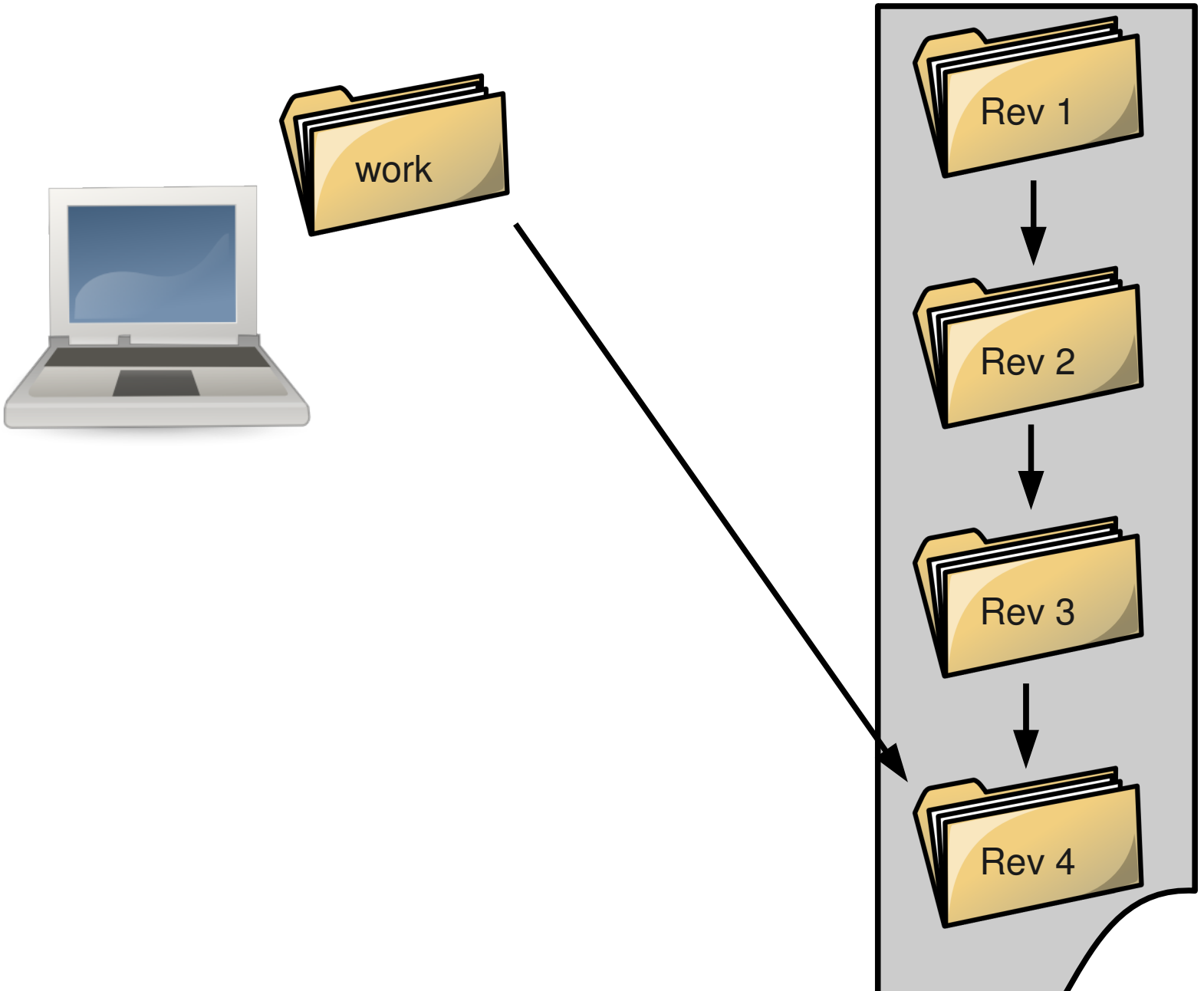
And so on...



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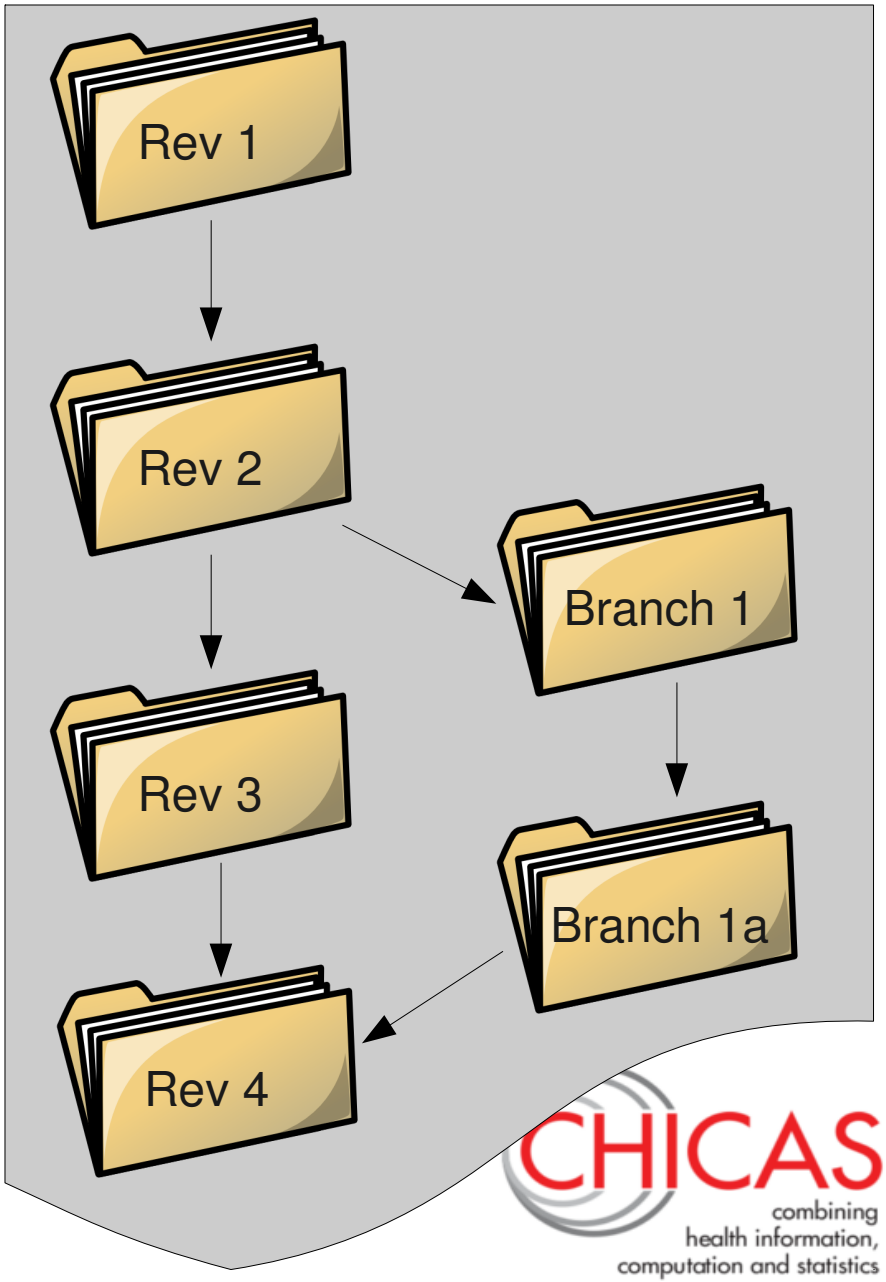
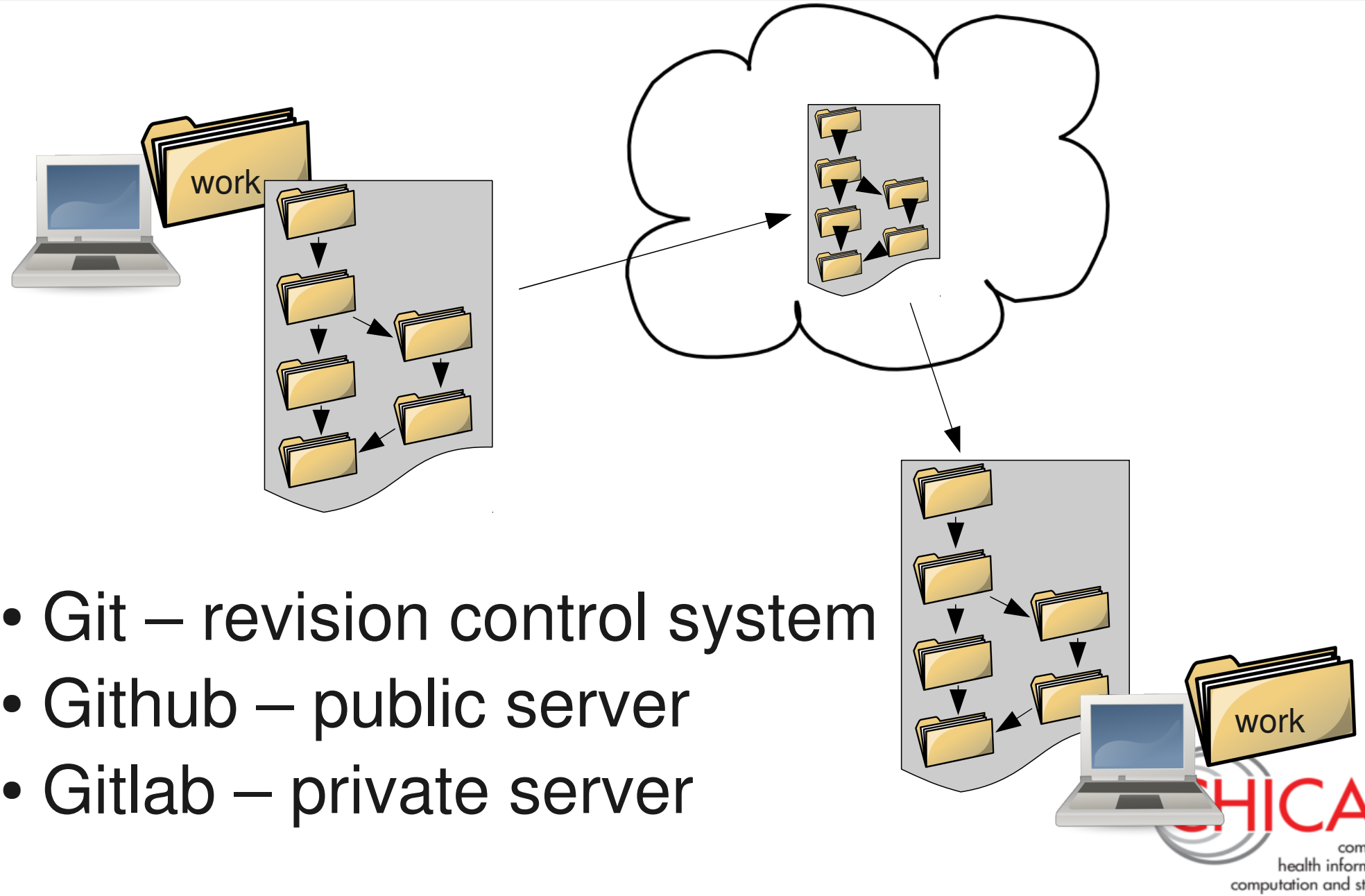
branching/merging



collaborating



- Git – revision control system
- Github – public server
- Gitlab – private server

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Time to move on

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