

# Knitting Clojure snippets

GenerateMe

2020-05-17

## Generating documents with knitr and Clojure

This document is rendered by R `knitr` package with embedded Clojure code. Yes, it's possible. The renderer is configured to use `nRepl` client: `rep`.

### What is knitr in short

Knitr is R package which generates really variety documents out of markdown file with embedded code.

### Let's run something

First let's define data.

```
(def data {:a [1 2 3]
           :b [3 4 5]})
data
```

```
#'user/data
{:a [1 2 3], :b [3 4 5]}
```

Code was executed, `data` is defined and we can run another chunk.

```
(keys data)
```

```
(:a :b)
```

And another one (everything is kept in `user` namespace).

```
(->> data
  vals
  (apply concat)
  (reduce +))
```

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### Generate image

```
(require '[clojure2d.core :refer [save]]
         '[clojure2d.color :as c]
         '[clojure2d.extra.utils :as u])
```

nil

```
(def img (-> :cubehelix
  (c/gradient)
  (u/gradient->image true)
  (save "gradient.png")))
```

```
saving: gradient.png...
...done!
#'user/img
```

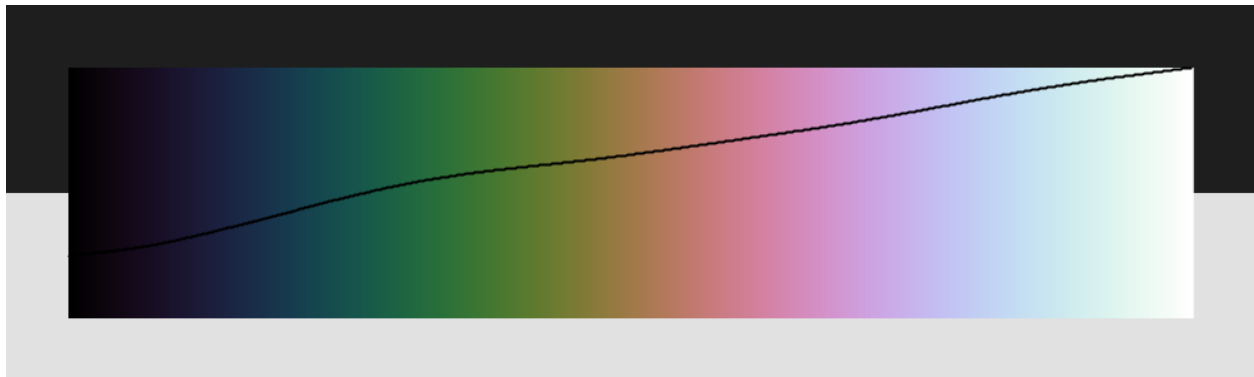


Figure 1: Generated gradient with luma

## Generate markdown

```
(println "
test/data/stocks.csv [5 3]:

| symbol |      date | price |
|-----+-----+-----|
|  MSFT  | 2000-01-01 | 39.81 |
|  MSFT  | 2000-02-01 | 36.35 |
|  MSFT  | 2000-03-01 | 43.22 |
|  MSFT  | 2000-04-01 | 28.37 |
|  MSFT  | 2000-05-01 | 25.45 |
")
```

test/data/stocks.csv [5 3]:

symbol	date	price
MSFT	2000-01-01	39.81
MSFT	2000-02-01	36.35
MSFT	2000-03-01	43.22
MSFT	2000-04-01	28.37
MSFT	2000-05-01	25.45

## How to setup

I'm using Emacs with CIDER here.

- Clojure
- Download and install `rep`
  - Be able to run `nRepl`
- R
  - Install R with `knitr` and `rmarkdown` packages (and all needed deps, like `pandoc`)
- Emacs
  - Install ESS, `poly-R` package which enables REPL inside Markdown file.

Run `nRepl`, create `.Rmd` file and add below chunk at the beginning of it. As you can see, there is a place to define `nrepl_port`. Find your port and change this value. I haven't been able to find an easy way to setup it automatically (yet).

```
```{r setup, include=FALSE}
find_nrepl_port_up <- function() {
  wd <- getwd()
  while(wd != dirname(wd)) {
    f <- paste0(wd, "/.nrepl-port")
    if(file.exists(f)) return(paste0("@", f))
    wd <- dirname(wd)
    f <- NULL
  }
}
port_file <- find_nrepl_port_up()
if(is.null(port_file)) stop("nREPL port not found")
library(knitr)
knitr_one_string <- knitr::one_string
nrepl_cmd <- "rep"
opts_chunk$set(comment=NA, highlight=TRUE)
knit_engines$set(clojure = function(options) {
  rep_params <- if(options$results=="asis") {
    "--print 'out,1,{out}' --print 'value,1,' -p"
  } else {
    "-p"
  }
  code <- paste(rep_params, port_file, shQuote(knitr_one_string(options$code)))
  out <- if (options$eval) {
    if (options$message) message('running: ', nrepl_cmd, ' ', code)
    tryCatch(
      system2(nrepl_cmd, code, stdout = TRUE, stderr = TRUE, env = options$engine.env),
      error = function(e) {
        if (!options$error) stop(e)
        paste('Error in running command', nrepl_cmd)
      }
    )
  } else ''
  if (!options$error && !is.null(attr(out, 'status'))) stop(knitr_one_string(out))
  engine_output(options, options$code, out)}
...`
```

When it's done you can generate documents (html, pdf, whatever) within ESS or from external R session.

```
library(rmarkdown)
render("README.Rmd", "all")
```

## Emacs view

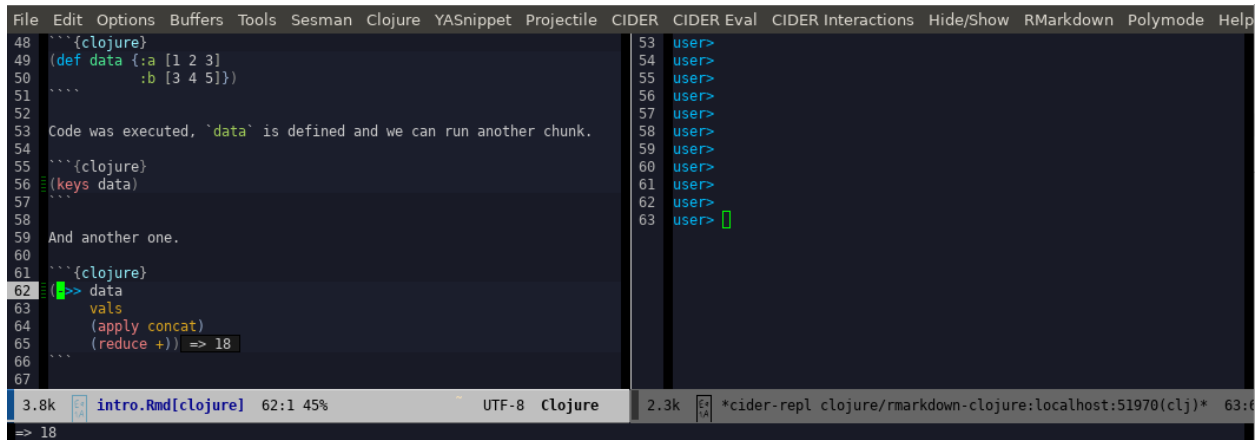


Figure 2: Emacs in action

## Rendered documents

- HTML
- PDF
- WORD

## What's odd

There are couple of problems:

- manual renderer setup
- no pretty printing results by default

## RMarkdown references

- <https://bookdown.org/yihui/rmarkdown/>
- <https://bookdown.org/yihui/rmarkdown-cookbook/>