

# 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 (-> :cubelix
            (c/gradient)
            (u/gradient->image true)
            (save "gradient.png")))
```

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

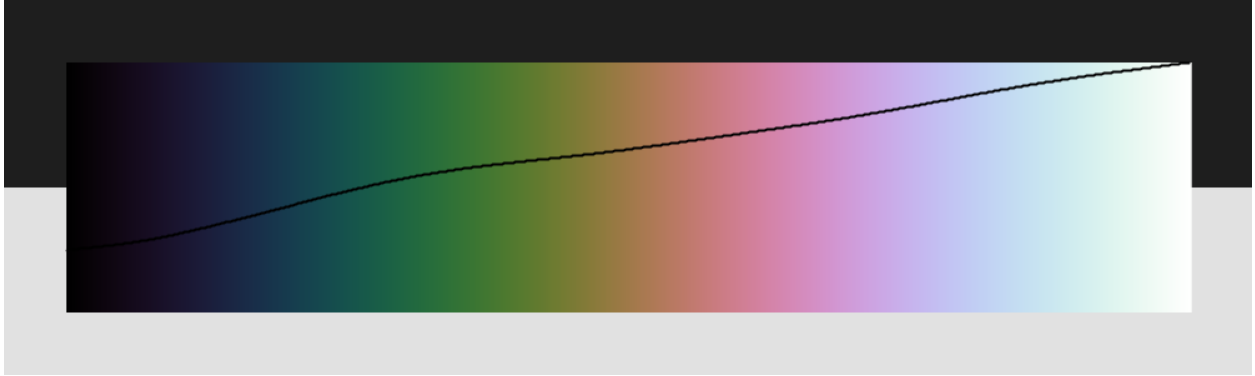


Figure 1: Generated gradient with luma

## 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) {
  code <- paste("-", nrepl_port, 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

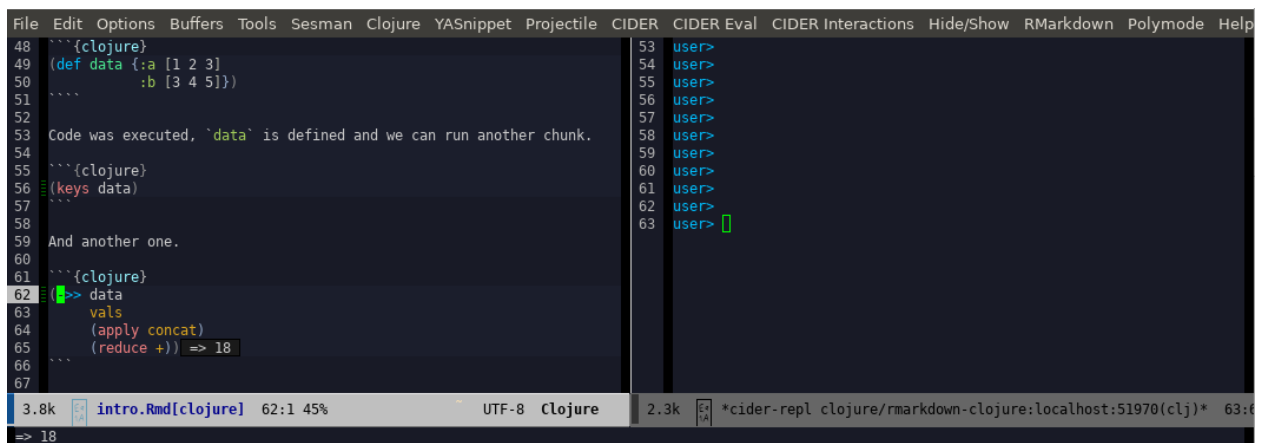


Figure 2: Emacs in action

## Rendered documents

- HTML
- PDF
- WORD

## What's odd

There are couple of problems:

- manual renderer setup
- no pretty printing results by default

## RMarkdown reference

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