

# Knitr Package

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## Setting Global Options

This is expected to be at the top

## Notebook vs Rmarkdown

- They can create same outputs
- Use same syntax
- For output in Notebook, you need to run all chunks of codes to appear in the output
- In Rmarkdown, when you knit, automatically it runs all the code and produce the output.

## My First knitr Document

This is some text

Here is a code chunk

```
set.seed(1234)
x = rnorm(100)
mean(x)
```

```
## [1] -0.1567617
```

## More Complicated Way

```
library(knitr)
setwd(getwd())
knit2html("document.Rmd")
browseURL("document.html")
```

## Another Example

### Intro

R objects can be used as macros in the text

```
x = Sys.time()
y = mean(rnorm(100))

format(x, "%Y-%m-%d, %a")
```

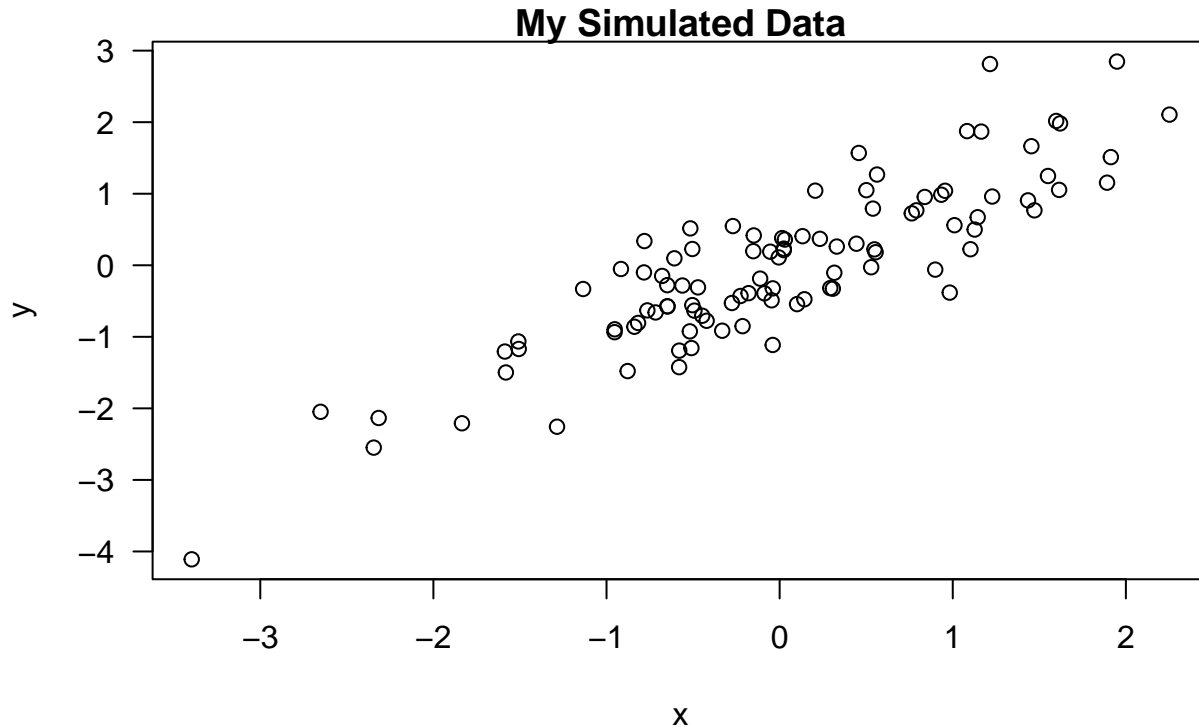
```
## [1] "2021-08-27, Fri"
```

System time is 2021-08-27 22:16:24. My favorite number is 0.1546037.

### incorporate Graphics

```
x = rnorm(100); y = x + rnorm(100, sd = 0.5)

par(mar = c(5, 4, 1, 1), las = 1)
plot(x, y, main = "My Simulated Data")
```



### Making Tables with xtable package

```
data("airquality")

fit = lm(Ozone ~ Wind + Temp + Solar.R, data = airquality)

summary(fit)

##
## Call:
## lm(formula = Ozone ~ Wind + Temp + Solar.R, data = airquality)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -40.485  -14.219   -3.551   10.097   95.619
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -64.34208    23.05472  -2.791  0.00623 **
## Wind           -3.33359     0.65441  -5.094 1.52e-06 ***
```

```
## Temp          1.65209    0.25353    6.516 2.42e-09 ***
## Solar.R       0.05982    0.02319    2.580 0.01124 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 21.18 on 107 degrees of freedom
## (42 observations deleted due to missingness)
## Multiple R-squared:  0.6059, Adjusted R-squared:  0.5948
## F-statistic: 54.83 on 3 and 107 DF,  p-value: < 2.2e-16
```

Making a table of regression coefficients

```
library(xtable)
xt = xtable(summary(fit))
```

For pdf output

```
print(xt, type = "latex")

## % latex table generated in R 4.1.0 by xtable 1.8-4 package
## % Fri Aug 27 22:16:24 2021
## \begin{table}[ht]
## \centering
## \begin{tabular}{rrrrr}
## \hline
## & Estimate & Std. Error & t value & Pr(>|t|) & \\
## \hline
## (Intercept) & -64.3421 & 23.0547 & -2.79 & 0.0062 & \\
## Wind & -3.3336 & 0.6544 & -5.09 & 0.0000 & \\
## Temp & 1.6521 & 0.2535 & 6.52 & 0.0000 & \\
## Solar.R & 0.0598 & 0.0232 & 2.58 & 0.0112 & \\
## \hline
## \end{tabular}
## \end{table}
```

Html format

```
print(xt, type = "html")

## <!-- html table generated in R 4.1.0 by xtable 1.8-4 package -->
## <!-- Fri Aug 27 22:16:24 2021 -->
## <table border=1>
## <tr> <th> </th> <th> Estimate </th> <th> Std. Error </th> <th> t value </th> <th> Pr(>|t|) </th>
## <tr> <td align="right"> (Intercept) </td> <td align="right"> -64.3421 </td> <td align="right"> 23.
## <tr> <td align="right"> Wind </td> <td align="right"> -3.3336 </td> <td align="right"> 0.6544 </td>
## <tr> <td align="right"> Temp </td> <td align="right"> 1.6521 </td> <td align="right"> 0.2535 </td>
## <tr> <td align="right"> Solar.R </td> <td align="right"> 0.0598 </td> <td align="right"> 0.0232 </td>
## </table>
```

results: "asis", "hide" echo: TRUE / FALSE fig.height: numeric fig.width: numeric

### important tip

Some code chunks take forever to run. You do not have to run it every time.

cache=TRUE