R & Python

Manuel Levicoy

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R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

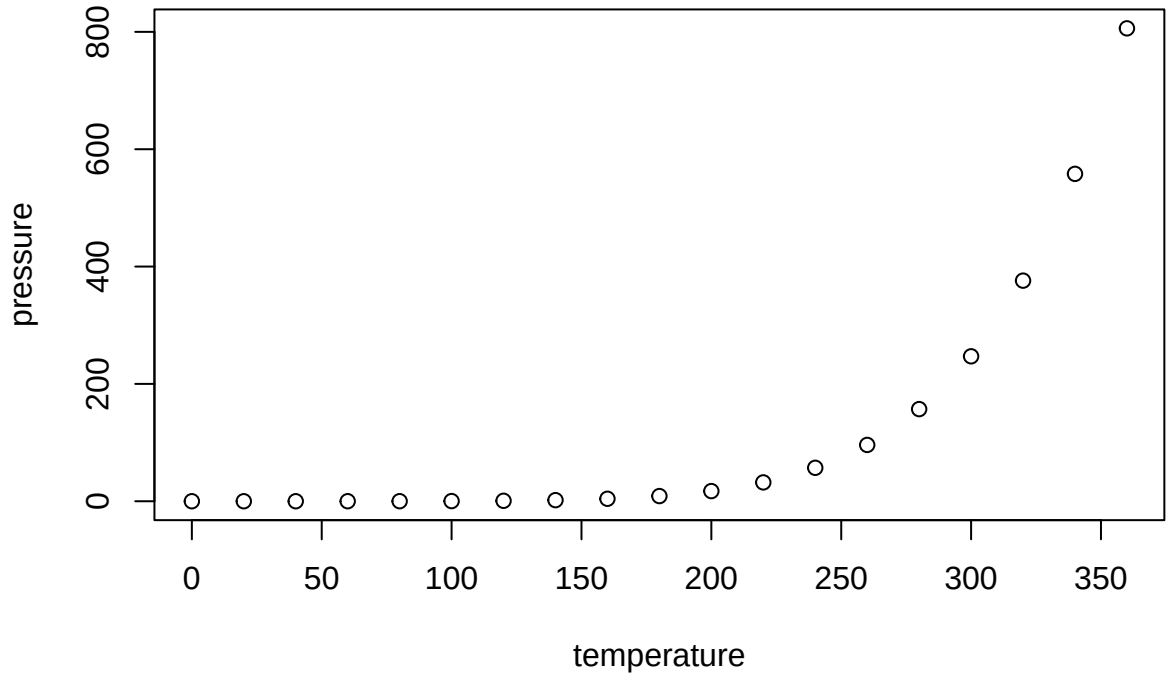
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed           dist       
##  Min.   : 4.0   Min.   :  2.00  
##  1st Qu.:12.0   1st Qu.: 26.00  
##  Median :15.0   Median : 36.00  
##  Mean   :15.4   Mean   : 42.98  
##  3rd Qu.:19.0   3rd Qu.: 56.00  
##  Max.   :25.0   Max.   :120.00
```

Including Plots

You can also embed plots, for example:




```
library(reticulate)
use_python("C:/Users/mlevi/anaconda3") #Ubicación de Python
#py_install("nombre_paquete_instalar") #Forma de instalar un paquete
os <- import("os") #Variable con la librería os de Python

os$listdir(".") #listo los archivos y directorios de mi ubicación actual
```

```
## [1] "01-EjemploRMD.html"    "01-EjemploRMD.pdf"     "01-EjemploRMD.Rmd"
## [4] "02-Documentacion.pdf"  "02-Documentacion.Rmd"  "add.py"
## [7] "prueba1RyPython.pdf"   "prueba1RyPython.Rmd"   "prueba1RyPython_files"
```

```
source_python("add.py") #Llama a un fichero de Python
add(10,2) #Llama a la función dentro del fichero
```

```
## [1] 12
```

```
#py_run_file("fichero.py") #Permite invocar al main de una clase
```

```
#Importar librería numpy y con el convert en FALSE indica que
#no se hagan conversiones automáticas
np <- import("numpy", convert = FALSE)
x <- np$array(c(1:4)) #Convierte un vector de 1 a 4 en array de Python
sum <- x$cumsum()

print(sum) #Imprime el array
```

```
## [ 1  3  6 10]
```

```
py_to_r(sum) #Convierte el array en un vector de R
```

```
## [1]  1  3  6 10
```

```
a <- np_array(c(1:10), dtype = "float16")
a
```

```
## [ 1.  2.  3.  4.  5.  6.  7.  8.  9. 10.]
```

```
b <- np_array(c(1:10), order = "C")
b
```

```
## [ 1  2  3  4  5  6  7  8  9 10]
```

```
datos <- iris #Dataframe de R (comienza en 1)
head(datos) #Mostramos los primeros datos
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 2          4.9         3.0          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 4          4.6         3.1          1.5         0.2  setosa
## 5          5.0         3.6          1.4         0.2  setosa
## 6          5.4         3.9          1.7         0.4  setosa
```

```
datos_py <- r_to_py(datos) #Pasamos el dataframe a Python
```

```
import numpy as np
import pandas as pd

r.datos_py.head() #Mostramos los primeros datos (comienzan en 0)
```

```
##    Sepal.Length  Sepal.Width  Petal.Length  Petal.Width Species
## 0           5.1          3.5           1.4          0.2  setosa
## 1           4.9          3.0           1.4          0.2  setosa
## 2           4.7          3.2           1.3          0.2  setosa
## 3           4.6          3.1           1.5          0.2  setosa
## 4           5.0          3.6           1.4          0.2  setosa
```

```
library(Matrix)
N <- 6
set.seed(123)
sparse_mat <- sparseMatrix(
  i = sample(N, N, replace = F),
  j = sample(N, N, replace = F),
  x = runif(N),
  dims = c(N, N)
)
sparse_mat
```

```
## 6 x 6 sparse Matrix of class "dgCMatrix"
##
## [1,] .         .          0.8895393 .         .        .
## [2,] .         0.04205953 .         .         .        .
## [3,] .         .          .         .         0.899825 .
## [4,] .         .          .         .         .        0.3279207
## [5,] 0.9545036 .          .         .         .        .
## [6,] .         .          .         0.2460877 .        .
```

```
sparse_mat_py <- r_to_py(sparse_mat)
```

```
r.sparse_mat_py
```

```
## <6x6 sparse matrix of type '<class 'numpy.float64'>'
##  with 6 stored elements in Compressed Sparse Column format>
```

```
py_to_r(sparse_mat_py)
```

```
## 6 x 6 sparse Matrix of class "dgCMatrix"
##
## [1,] .         .          0.8895393 .         .        .
## [2,] .         0.04205953 .         .         .        .
## [3,] .         .          .         .         0.899825 .
## [4,] .         .          .         .         .        0.3279207
## [5,] 0.9545036 .          .         .         .        .
## [6,] .         .          .         0.2460877 .        .
```

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.