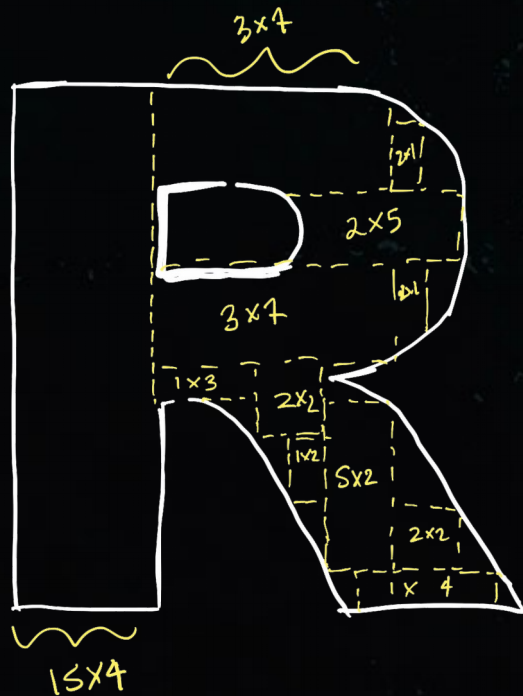
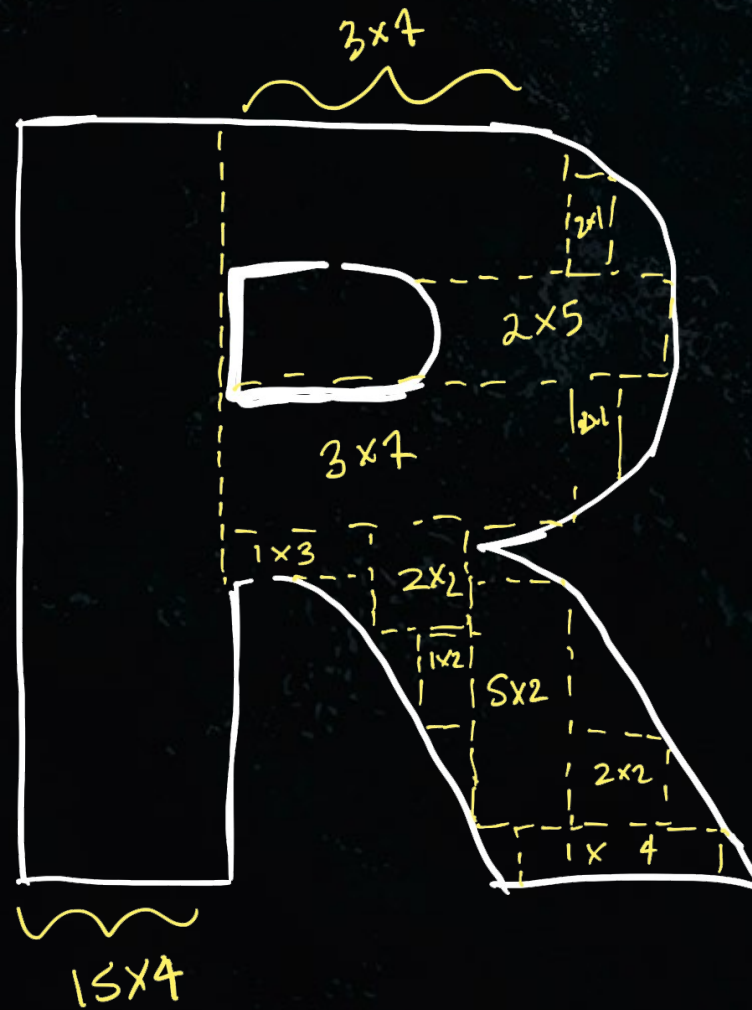


# R y Rstudio

Pepi Amodeo  
Instituto Argentino de Oceanografía  
CONICET-UNS  
CCT Bahía Blanca



# ¿Qué es R?



# ¿Qué es R?

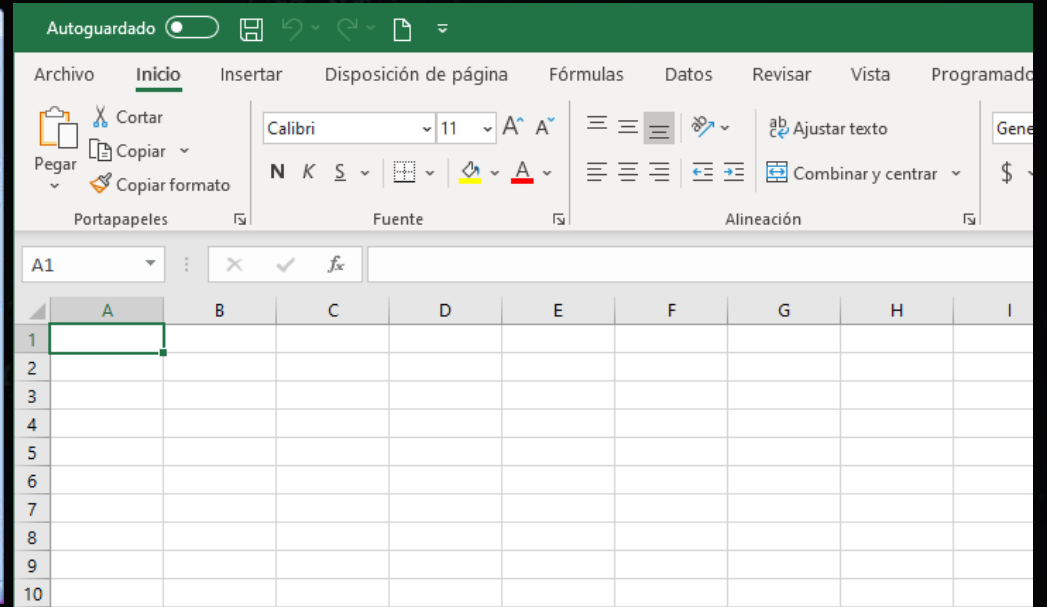
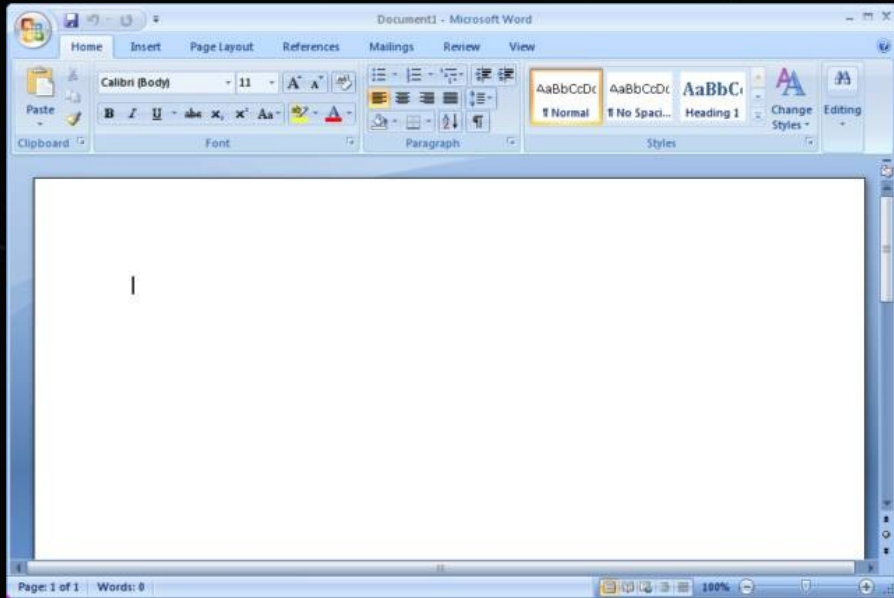
- Software Libre (GNU 1995)
- 1993 (University of Auckland, New Zealand)



- R de Ross y Robert, pero también de Reproducibilidad
- Interfaz de código
- Lenguaje abstracto e interpretado



# Wysiwyg



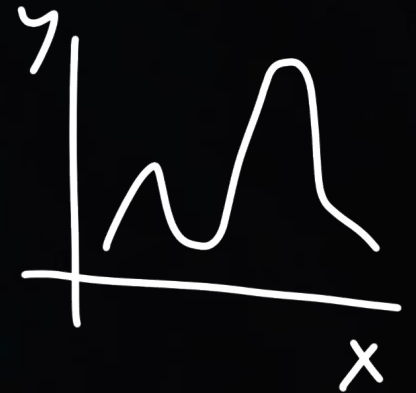
What You See is What You Get

# Flujo de trabajo

$f_X(\cdot)$



$v_1$	$v_2$	$v_3$	$v_4$
$\vdots$	$\vdots$	$\vdots$	$\vdots$
$\vdots$	$\vdots$	$\vdots$	$\vdots$
$\vdots$	$\vdots$	$\vdots$	$\vdots$
$\vdots$	$\vdots$	$\vdots$	$\vdots$

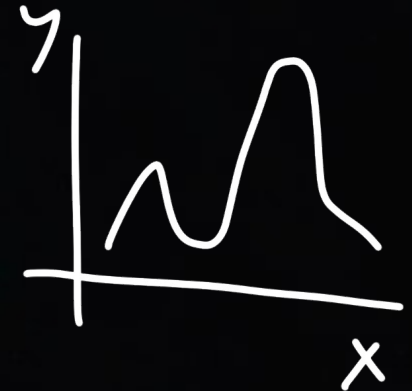
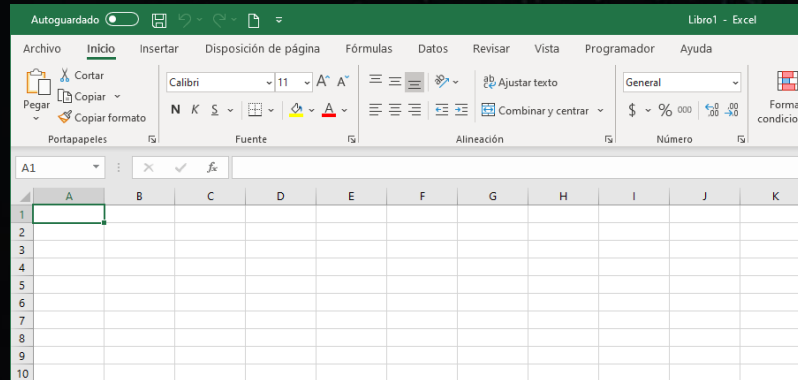




# Flujo de trabajo en wysiwyg

$f_x()$

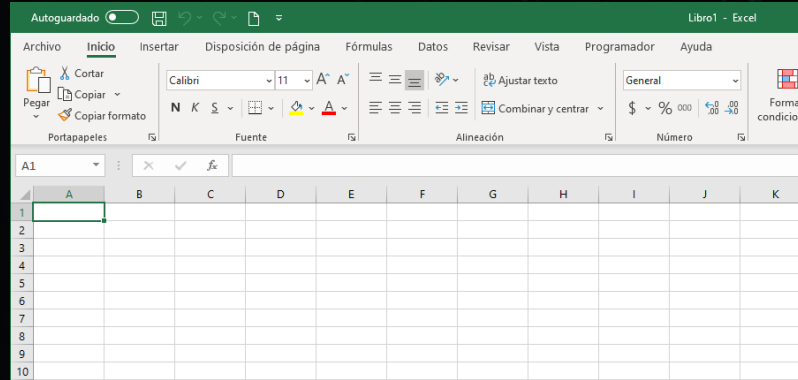
v1	v2	v3	v4
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:



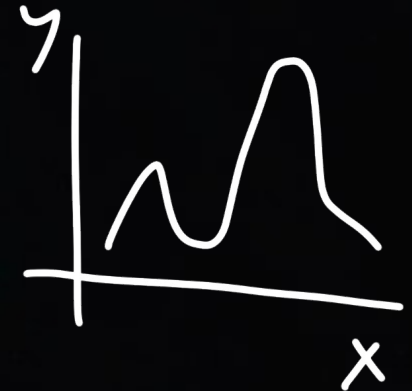
# Flujo de trabajo en wysiwyg



$f_x()$



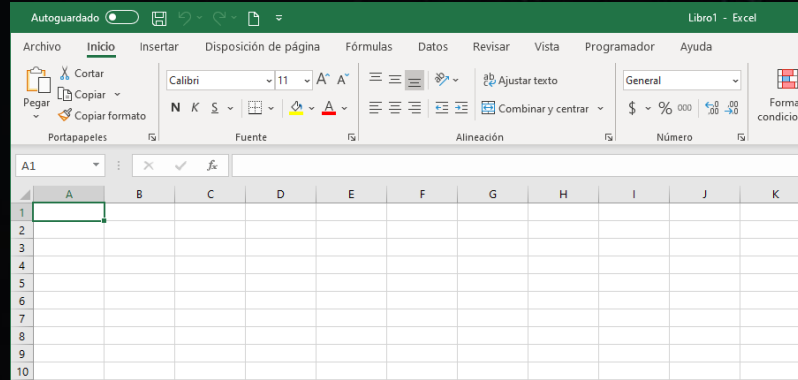
v1	v2	v3	v4
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:



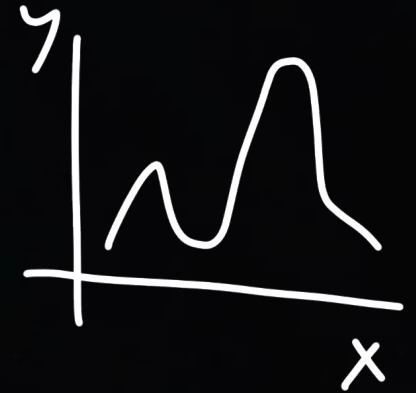
# Flujo de trabajo en wysiwyg



$f(x)$



v1	v2	v3	v4
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮





datos\_paper.xlsx

datos\_analisis\_paper1.xlsx

datos\_analisis\_paper\_posta.xlsx

datos\_analisis\_revisado\_posta1.xlsx

datos\_analisis\_recontrarevisado\_posta\_este\_sí.xlsx

este\_es\_el\_posta.xlsx

este\_es\_el\_posta\_revisado(1).xlsx

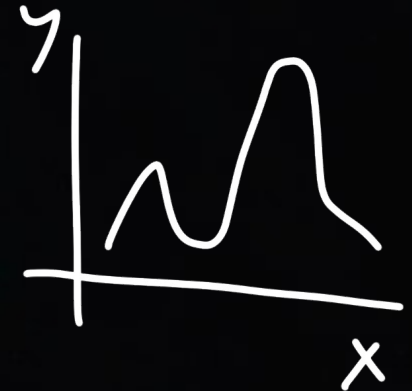
**iNo seas tan wysiwyg!**

# Uso doméstico - Uso profesional

$$f_x()$$



$v_1$	$v_2$	$v_3$	$v_4$
$\vdots$	$\vdots$	$\vdots$	$\vdots$
$\vdots$	$\vdots$	$\vdots$	$\vdots$
$\vdots$	$\vdots$	$\vdots$	$\vdots$
$\vdots$	$\vdots$	$\vdots$	$\vdots$





# Reproducibilidad en la Ciencia



# Detrás de un botón...





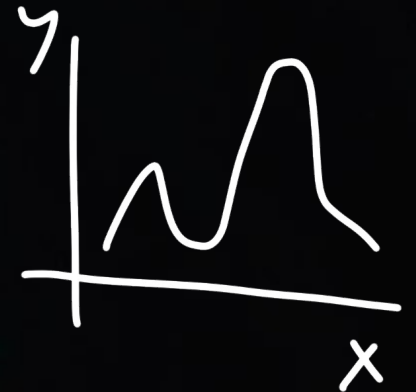
# Flujo de trabajo

$f_X()$

.R



v1	v2	v3	v4
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:
:	:	:	:



txt, csv, xlsx... geotiff...

csv, jpg, png, pdf, tiff



# ¿Qué es Rstudio?



# ¿Qué es Rstudio?

- Otro software que brinda una interfaz organizada y prestaciones
- Software libre (GNU, 2011)
- GUI / IDE

# ¿Qué es Rstudio?

Interfaz

The screenshot displays the RStudio environment with the following components:

- Menu Bar:** File, Edit, Code, View, Plots, Session, Project, Build, Tools, Help.
- Script Editor:** Contains an R script with the following code:

```
1  
2 rm(list = ls())  
3 N <- 1000  
4 u <- rnorm(N)  
5 x1 <- -2 + rnorm(N)  
6 x2 <- 1 + x1 + rnorm(N)  
7 y <- 1 + x1 + x2 + u  
8 r1 <- lm(y ~ x1 + x2)  
9  
10 |
```
- Console:** Shows the execution of the script with the following output:

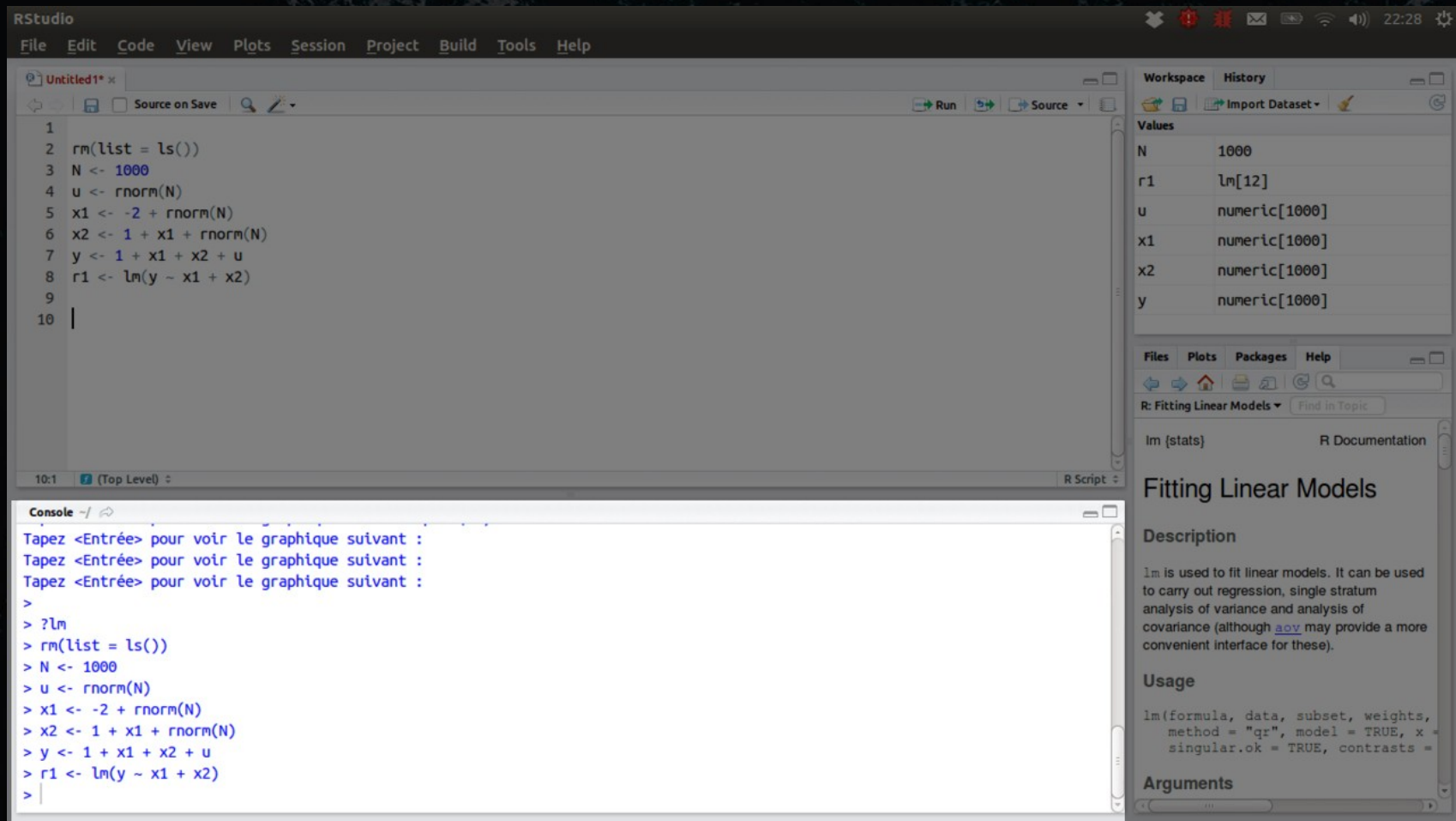
```
Tapez <Entrée> pour voir le graphique suivant :  
Tapez <Entrée> pour voir le graphique suivant :  
Tapez <Entrée> pour voir le graphique suivant :  
>  
> ?lm  
> rm(list = ls())  
> N <- 1000  
> u <- rnorm(N)  
> x1 <- -2 + rnorm(N)  
> x2 <- 1 + x1 + rnorm(N)  
> y <- 1 + x1 + x2 + u  
> r1 <- lm(y ~ x1 + x2)  
>
```
- Workspace:** Displays the current environment with the following variables:

Variable	Value
N	1000
r1	lm[12]
u	numeric[1000]
x1	numeric[1000]
x2	numeric[1000]
y	numeric[1000]
- Help Pane:** Displays the documentation for the `lm` function, titled "Fitting Linear Models". It includes a description of the function's purpose and usage.

# ¿Qué es Rstudio?

4 ventanas

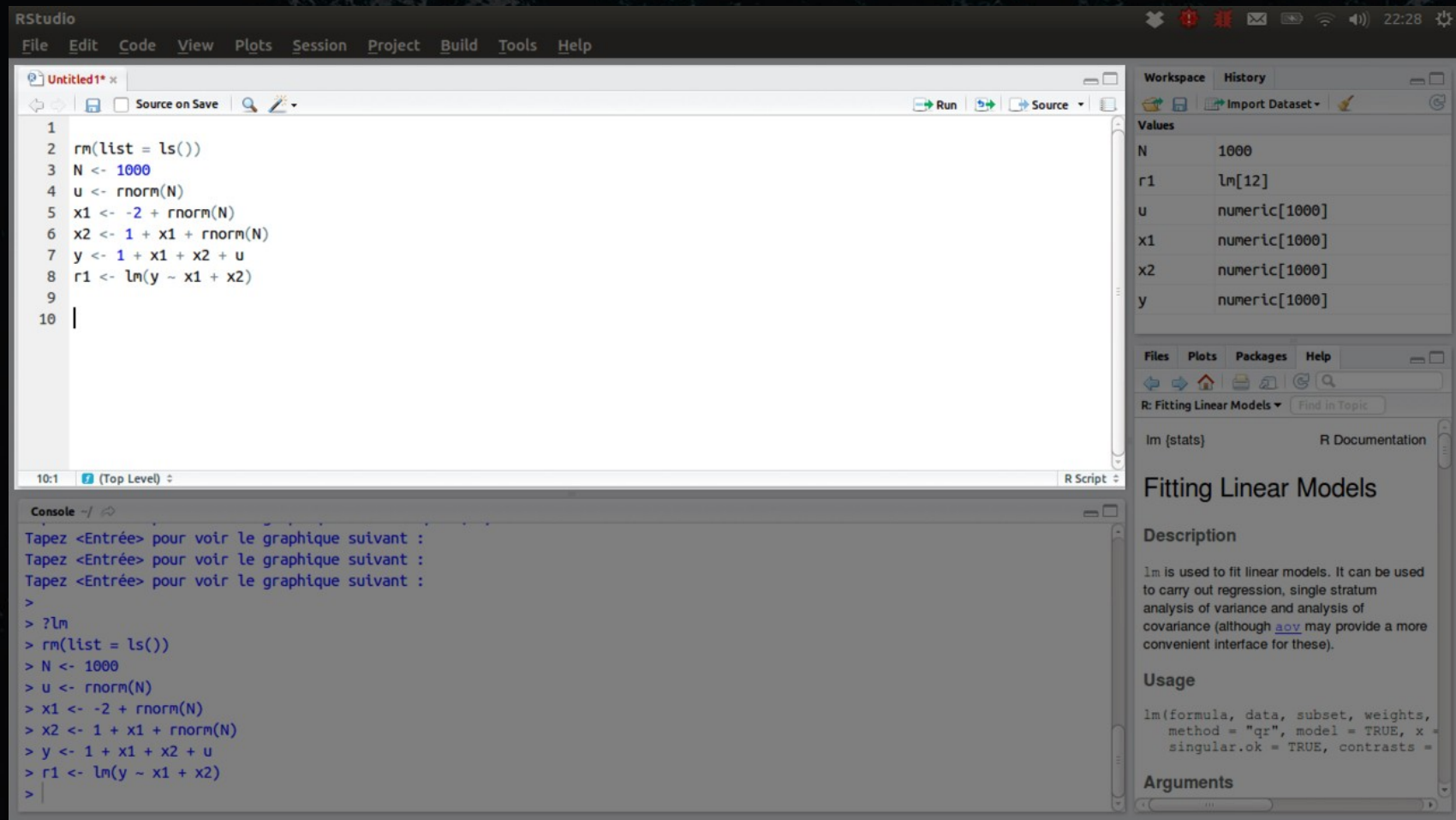




# Consola

Ventanilla de atención del banco





# Editor de scripts

Documento de los procesos

The screenshot displays the RStudio environment. The main editor window contains an R script with the following code:

```
1  
2 rm(list = ls())  
3 N <- 1000  
4 u <- rnorm(N)  
5 x1 <- -2 + rnorm(N)  
6 x2 <- 1 + x1 + rnorm(N)  
7 y <- 1 + x1 + x2 + u  
8 r1 <- lm(y ~ x1 + x2)  
9  
10 |
```

The console window at the bottom shows the execution of these commands, with some French text prompts: "Tapez <Entrée> pour voir le graphique suivant :".

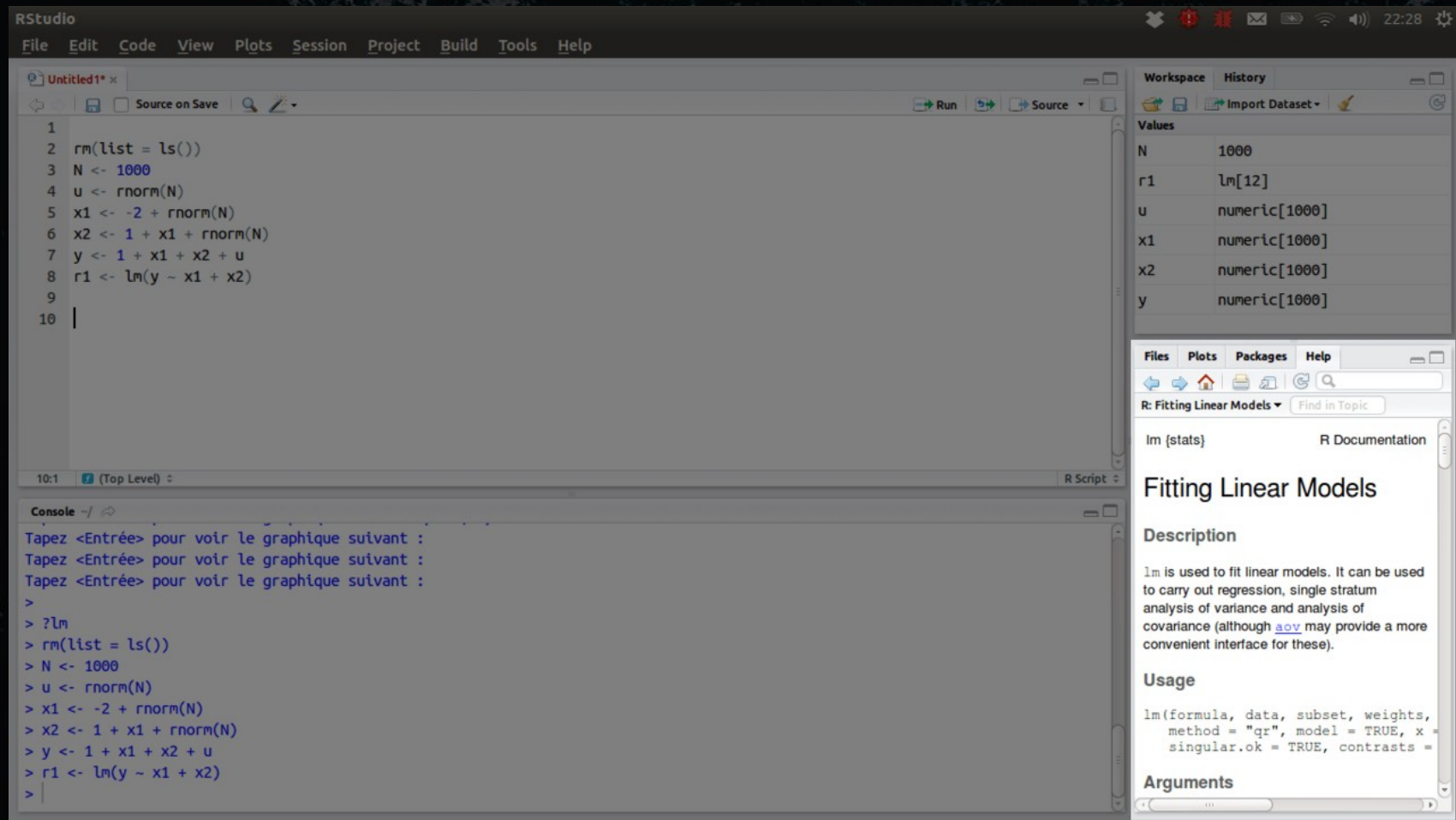
The right-hand pane is divided into two sections. The top section, titled "Workspace", lists the objects currently in memory:

Object	Type
N	1000
r1	lm[12]
u	numeric[1000]
x1	numeric[1000]
x2	numeric[1000]
y	numeric[1000]

The bottom section of the right-hand pane shows the "R Documentation" for the `lm` function, titled "Fitting Linear Models". It includes a description of the function's purpose and its usage.

# Área de trabajo

La memoria de R mientras lo usamos



# Panel

Multiples usos: archivos / paquetes / plots / ayuda

R es el motor, Rstudio la interfaz

