

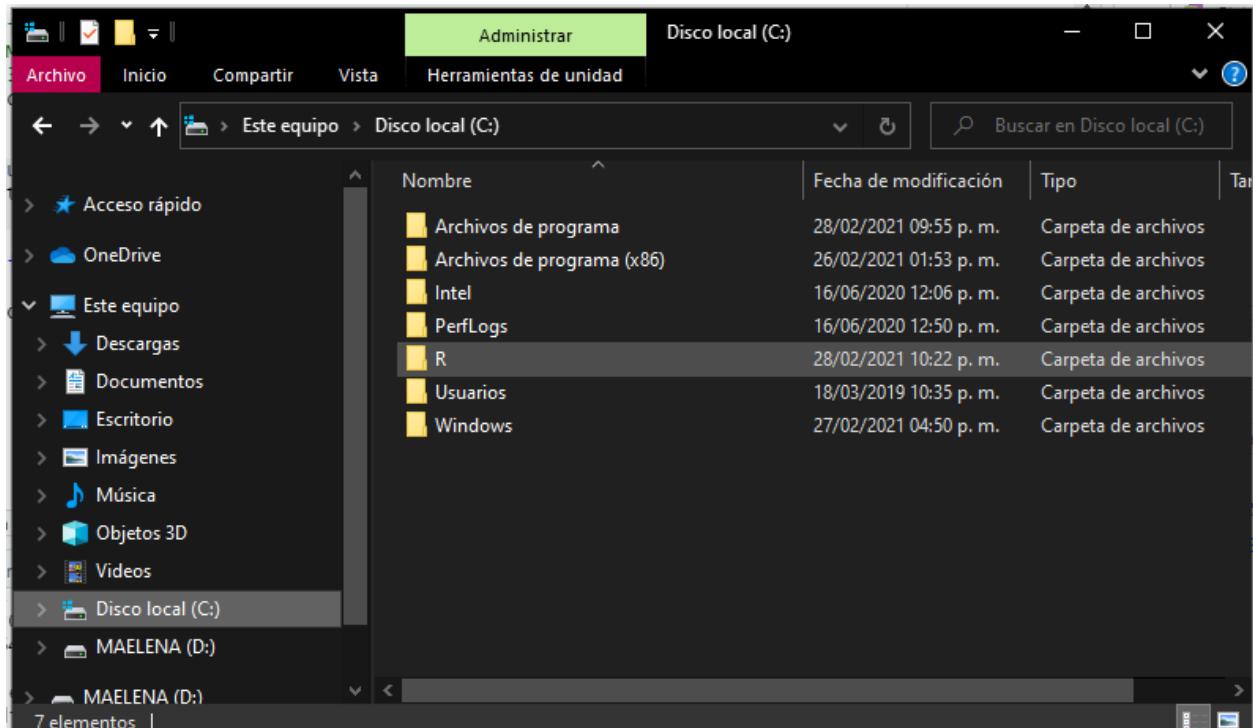
First Steps in RStudio

María Elena Valerio Ortiz

3/3/2021

Creating a folder on local disk C

We have to be ordered to download R and RStudio, due to RStudio requires Rtools to compile packages on Windows. We are going to create a folder called **R**. In this folder we are going to save R, RStudio and Rtools.



1.- R, Rstudio and Rtools download

We can save the following files in other folder on the desktop.

We are going to download R 4.0.4 for windows from this link <https://cran.r-project.org/bin/windows/base/>.

← → C (https://cran.r-project.org/bin/windows/base/)

R-4.0.4 para Windows (32/64 bits)

[Descargar R 4.0.4 para Windows \(85 megabytes, 32/64 bits\)](#)

[Instalación y otras instrucciones](#)

[Nuevas funciones en esta versión](#)

Si desea volver a verificar que el paquete que ha descargado coincide con el paquete distribuido por CRAN, puede comparar el `md5sum` del .exe con la [huella digital](#) en el servidor maestro. Necesitará una versión de `md5sum` para Windows: tanto la versión [gráfica](#) como la de [línea de comandos](#) están disponibles.

Preguntas frecuentes

- [¿R se ejecuta en mi versión de Windows?](#)
- [¿Cómo actualizo los paquetes en mi versión anterior de R?](#)
- [¿Debo ejecutar R de 32 bits o de 64 bits?](#)

Consulte las [Preguntas frecuentes de R](#) para obtener información general sobre R y las [Preguntas frecuentes de Windows de R](#) para obtener información específica de Windows.

Otras construcciones

- Los parches de esta versión se incorporan en la [compilación de instantáneas con parches r](#).
- Una compilación de la versión de desarrollo (que eventualmente se convertirá en la próxima versión principal de R) está disponible en la [compilación de instantáneas de r-devel](#).
- [Lanzamientos Anteriores](#)

Nota para los webmasters: un enlace estable que redirigirá a la versión binaria actual de Windows es
<CRAN MIRROR> /bin/windows/base/release.html.

Último cambio: 2021-02-15

https://cran.r-project.org/bin/windows/base/md5sum.bt

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After that, from the next link we are going to download RStudio for windows <https://rstudio.com/products/rstudio/download/>.

← → C (https://rstudio.com/products/rstudio/download/)

RStudio Desktop 1.4.1106 - [Notas de la versión](#)

1. Instale R. RStudio requiere R 3.0.1+.
2. Descarga RStudio Desktop. Recomendado para su sistema:

 DESCARGA RSTUDIO PARA WINDOWS
1.4.1106 | 155,97 MB

Requiere Windows 10/8/7 (64 bits)



Todos los instaladores

Los usuarios de Linux pueden necesitar importar la clave pública de firma de código de RStudio antes de la instalación, dependiendo de la política de seguridad del sistema operativo.

RStudio requiere un sistema operativo de 64 bits. Si está en un sistema de 32 bits, puede usar una versión anterior de RStudio.

<https://download1.rstudio.org/desktop/windows/RStudio-1.4.1106.exe>

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Finally, we are going to download Rtools40 for windows from the next link <https://cran.r-project.org/bin/windows/Rtools/>. Rtools is from Cran the same as R. We are going to choose the 64-bit version.

cran.r-project.org/bin/windows/Rtools/

Usando Rtools40 en Windows

A partir de R 4.0.0 (lanzado en abril de 2020), R para Windows utiliza un nuevo paquete de cadena de herramientas llamado **rtools40**.

Esta versión de Rtools actualiza las cadenas de herramientas mingw-w64 gcc a la versión 8.3.0 e introduce un nuevo sistema de compilación basado en [msys2](#), que facilita la compilación y el mantenimiento de R y las bibliotecas del sistema que necesitan los paquetes de R en Windows. Para obtener más información sobre este último, siga los enlaces al final de este documento.

Esta documentación trata sobre rtools40, la versión actual utilizada para R 4.0.0 y posteriores. Para obtener información sobre versiones anteriores de Rtools que se pueden usar con R 3.6.3 o anterior, visite [esta página](#).

Instalación de Rtools40

Tenga en cuenta que rtools40 solo es necesario para compilar paquetes R con código C / C ++ / Fortran de la fuente. De forma predeterminada, R para Windows instala los "paquetes binarios" precompilados de CRAN, para los cuales no necesita herramientas.

Para usar rtools40, descargue el instalador de CRAN:

- En Windows de 64 bits: [rtools40-x86_64.exe](#) (recomendado: incluye compiladores i386 y x64)
- En Windows de 32 bits: [rtools40-i386.exe](#) (solo compiladores i386)

Nota para los usuarios de RStudio: compruebe que está utilizando la última versión de RStudio (al menos 1.2.5042) para trabajar con rtools40.

2.- R installation

Execute R as an administrator

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First Steps in RStudio - RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

First Steps in RStudio.Rmd RendimientoDelPortafolio.Rmd

Archivo Inicio Compartir Vista Herramientas de aplicación

Administrador

R

Este equipo Escritorio R

Nombre Fecha de modificación Tipo

R-4.0.4-wi Abrir Ejecutar como administrador Solucionar problemas de compatibilidad Anclar a Inicio Mover a OneDrive Analizar los elementos seleccionados Compartir Dar acceso a Añadir al archivo... Añadir a "R-4.0.4-win.rar" Añadir y enviar por email... Añadir a "R-4.0.4-win.rar" y enviar por email Añadir a la barra de tareas Restaurar versiones anteriores Enviar a Cortar Copiar Crear acceso directo Eliminar Cambiar nombre Propiedades

Environment History Connections Git Tutorial

Environment is empty

Packages Help Viewer

First_Steps_in_RStudio.Rproj 218 B Mar 3, 2021, 9:53 PM

First_Steps_in_RStudio.Rmd 893 B Mar 3, 2021, 9:55 PM

First_Steps_in_RStudio.Rmd.png 41.1 KB Mar 3, 2021, 10:12 PM

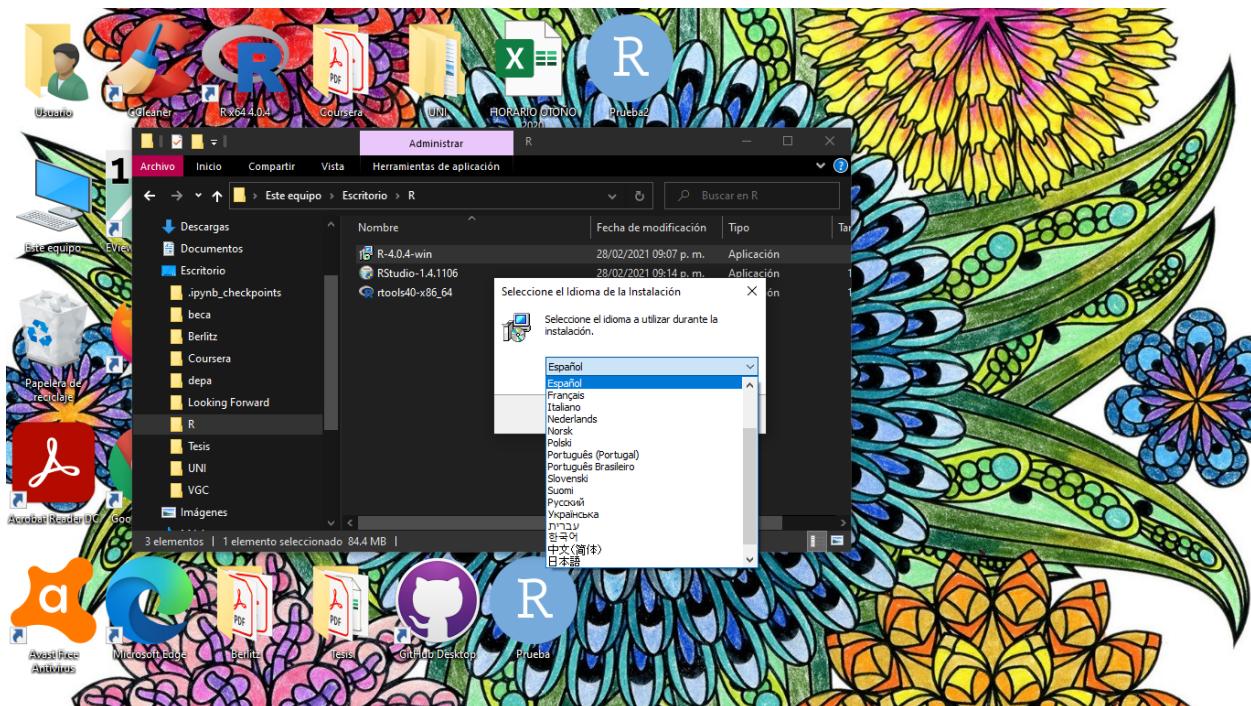
First_Steps_in_RStudio.Rmd.ipynb 56.6 KB Mar 3, 2021, 10:13 PM

First_Steps_in_RStudio.Rmd.ipynb.png 138.3 KB Mar 3, 2021, 10:18 PM

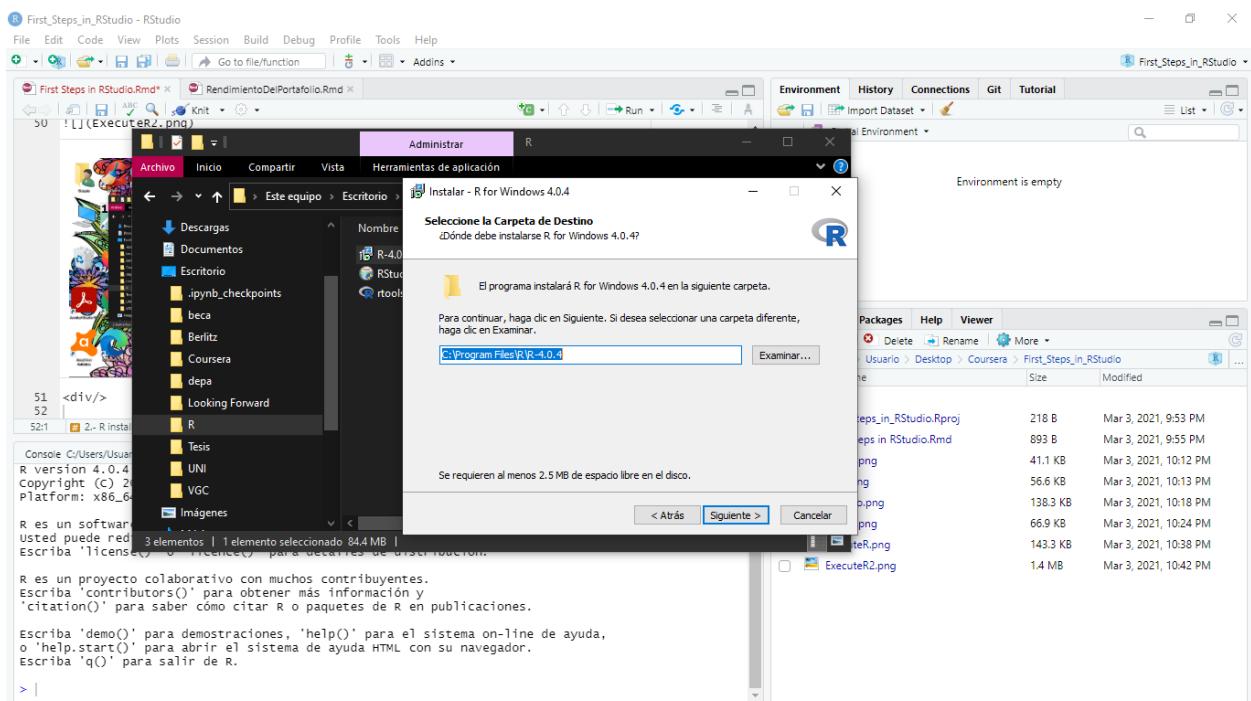
First_Steps_in_RStudio.Rmd.ipynb.png 66.9 KB Mar 3, 2021, 10:24 PM

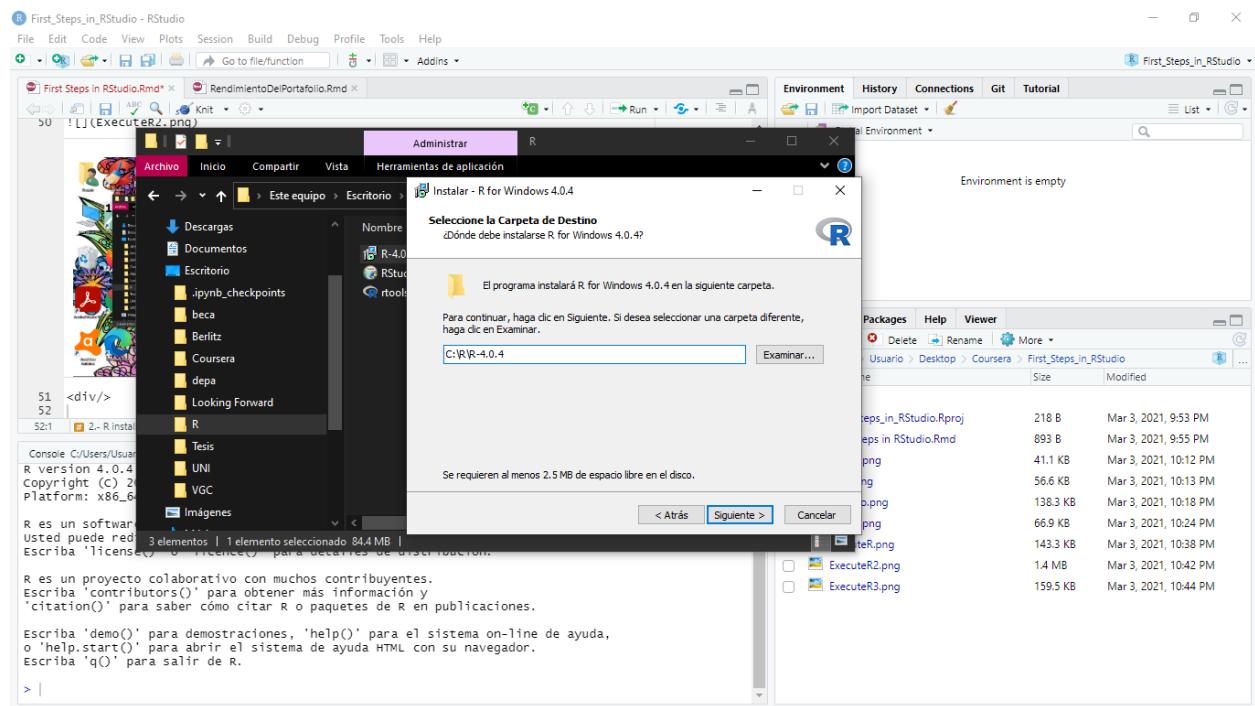
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Choose a language



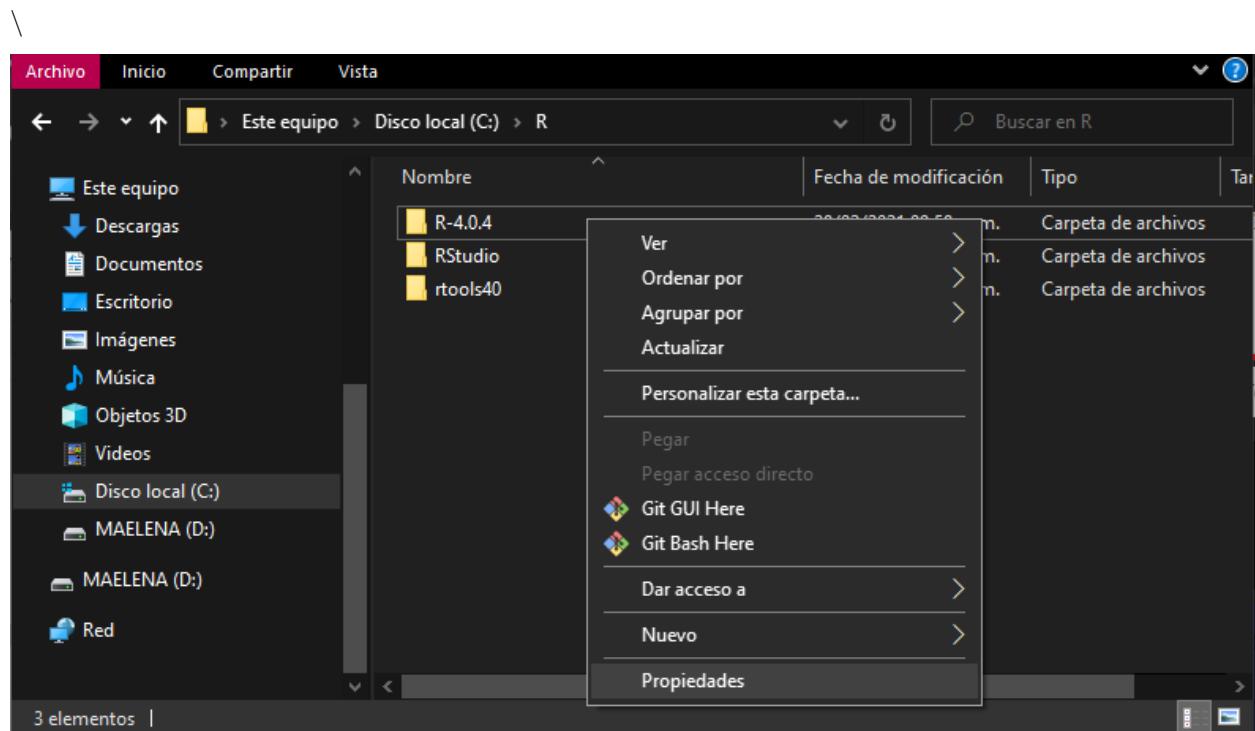
When we arrive at the following screen we have to change the default address by the R folder on local disk. Then, we are going to do the same thing for the other two, RStudio and Rtools.



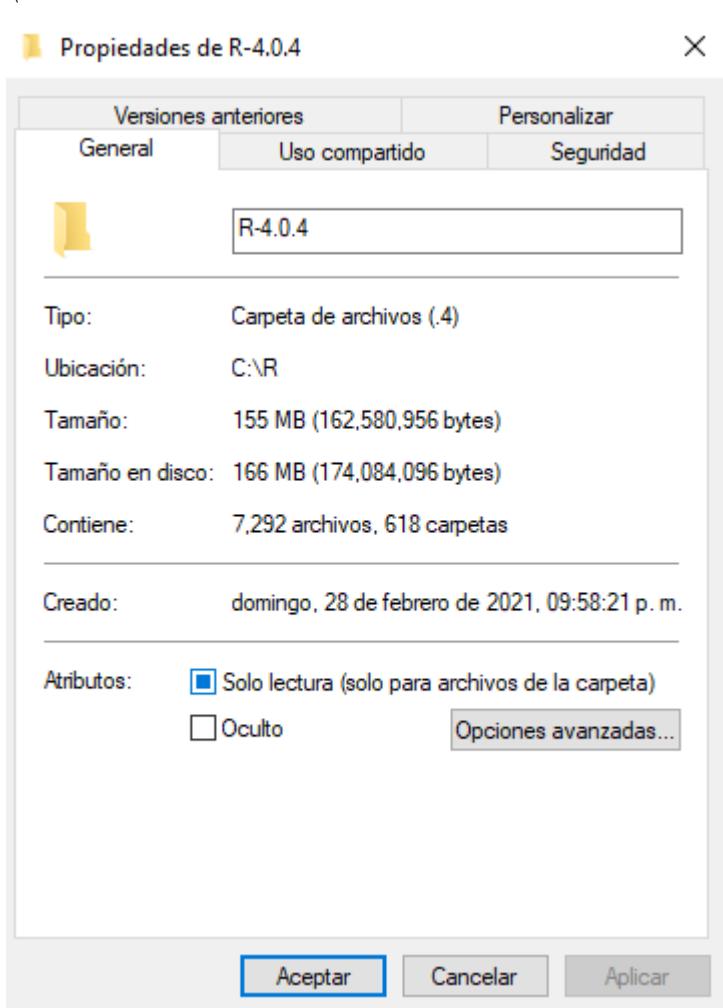


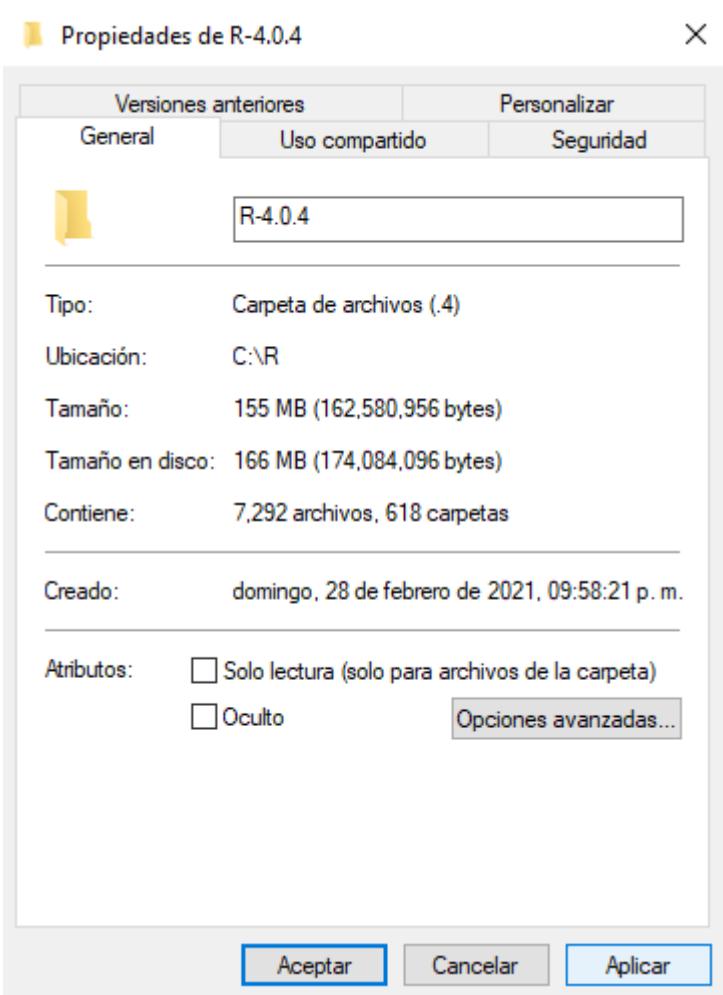
At the end we press the “Finish” button.

Before to continue with the other installations, we have to go to properties on the R-4.0.4 folder located in R folder on local disk C.



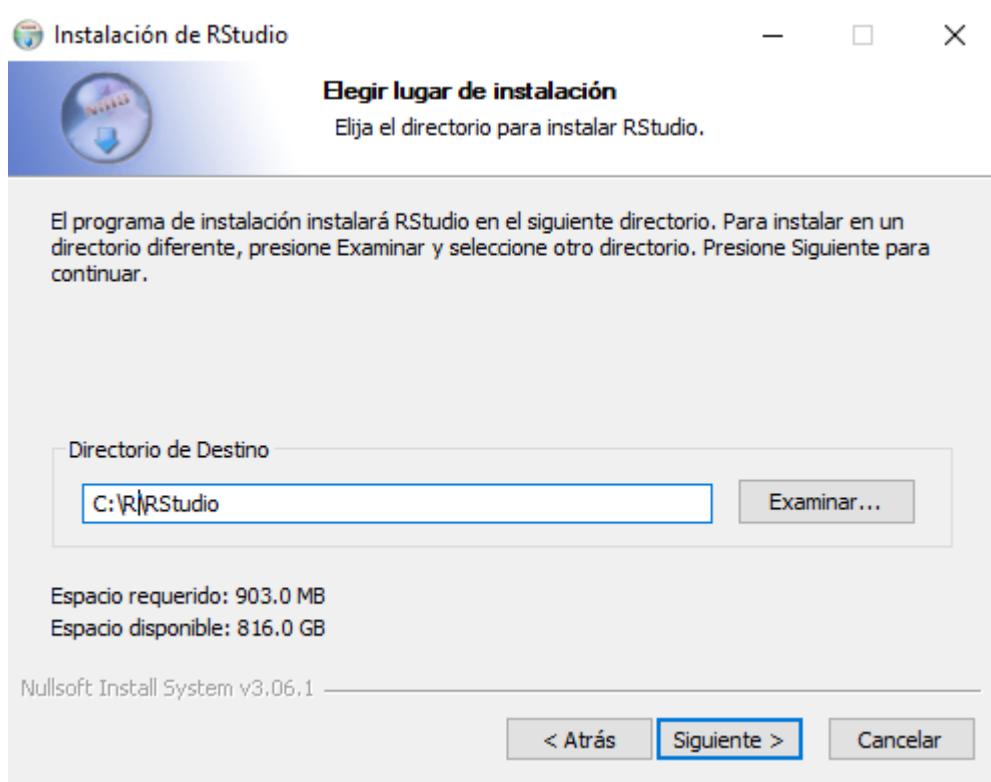
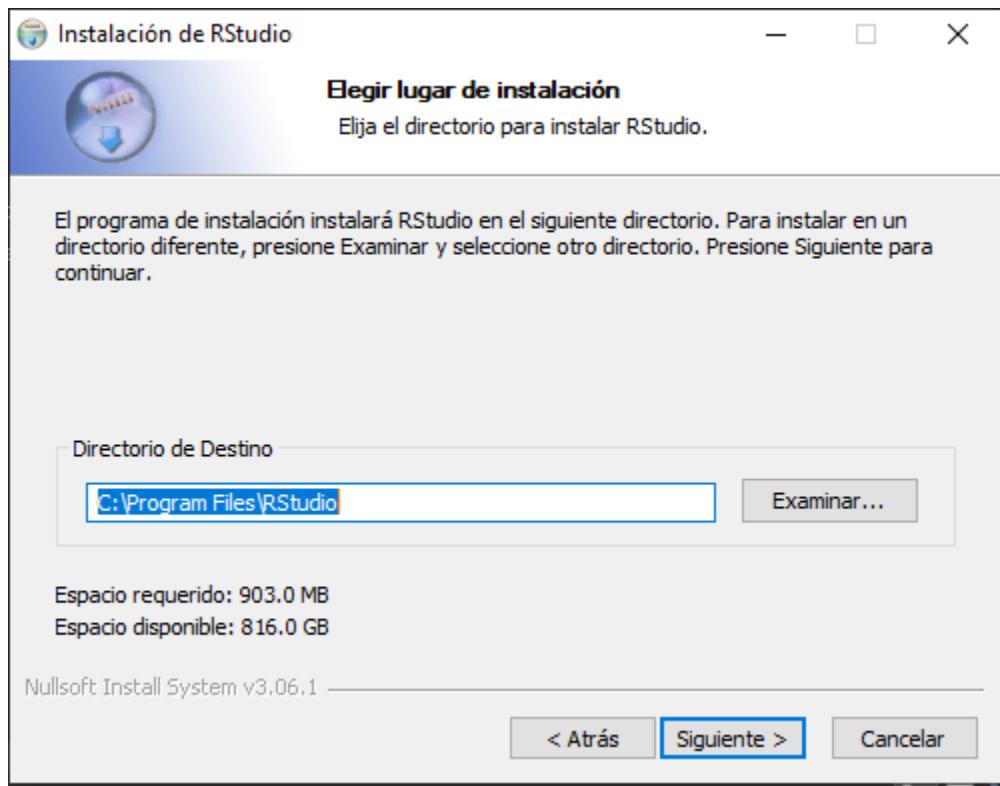
After the above, we uncheck read only option, click apply then OK.

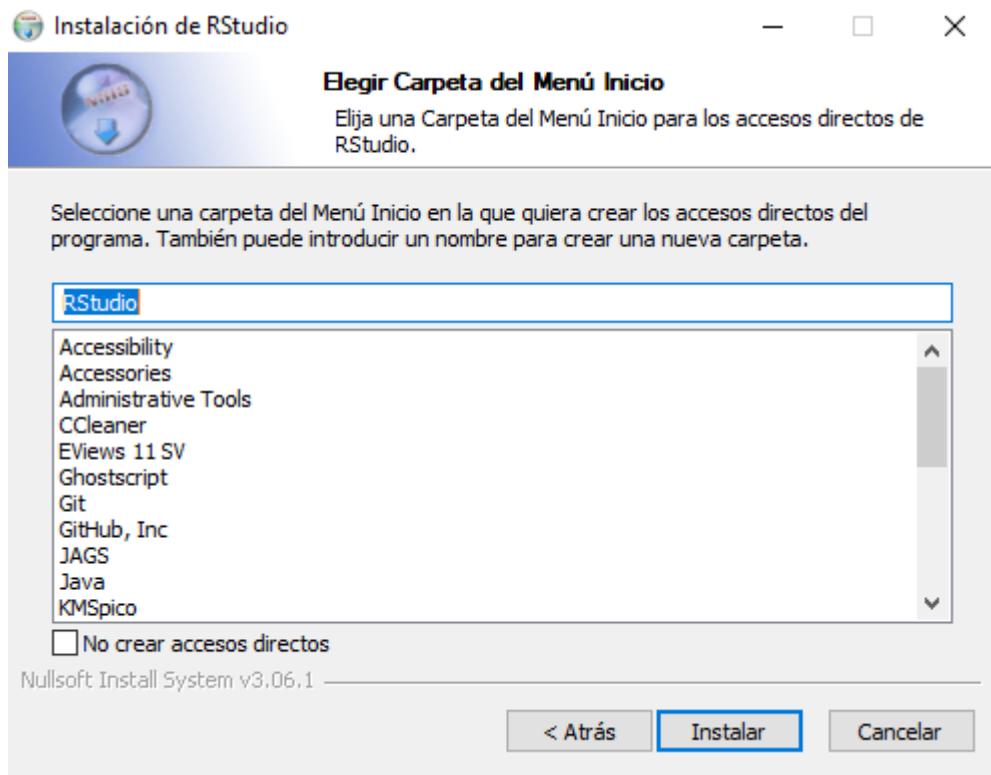




3.- RStudio installation

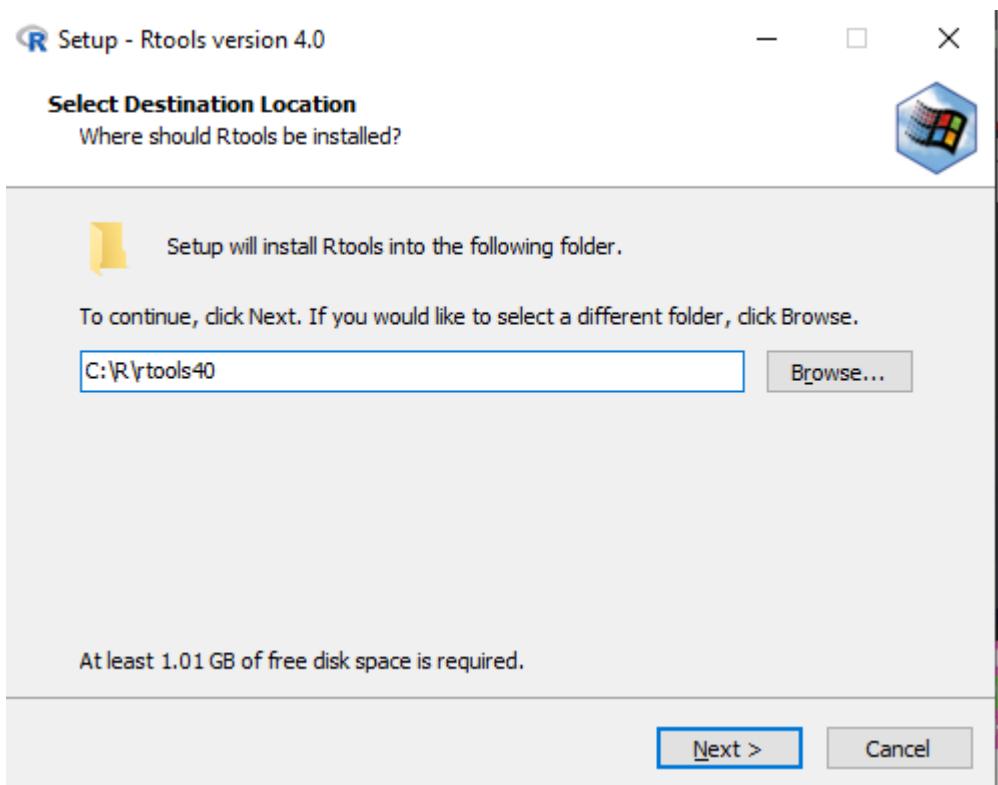
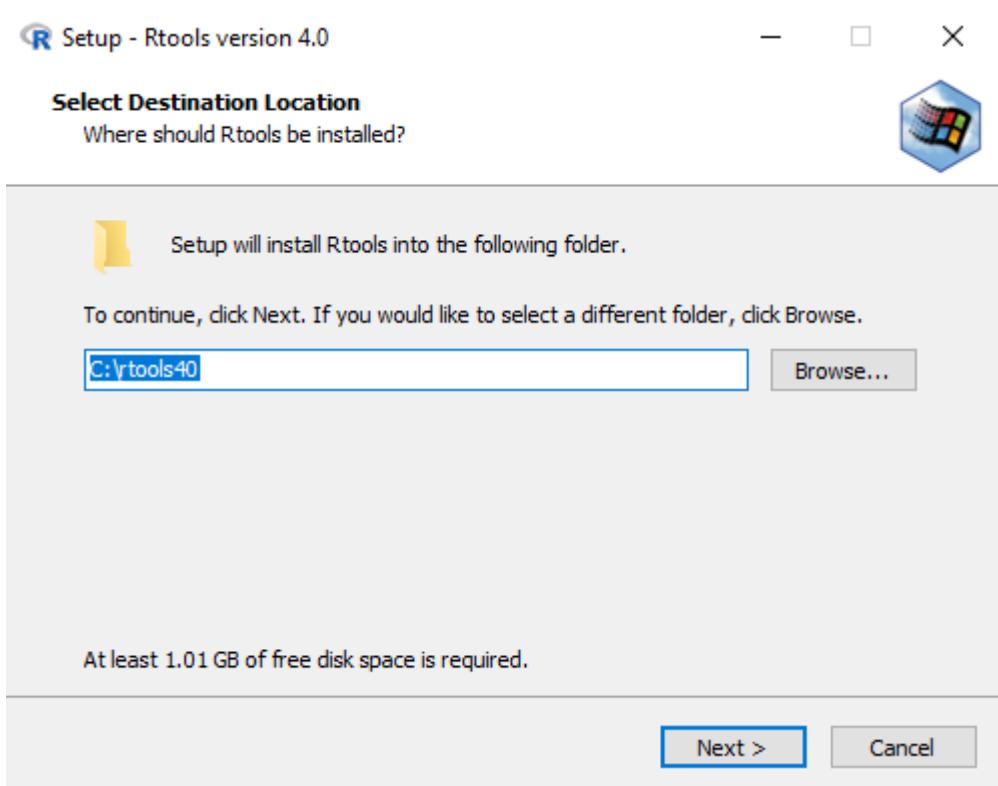
Analogously we execute RStudio as an administrador and change the default address. Finally, we install RStudio.





4.- Rtools installation

Execute Rtools as an administrator, change the default address and install.



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The last steps to compile R packages

We need to perform one more step to be able to compile R packages. In the link before we downloaded Rtools40 (<https://cran.r-project.org/bin/windows/Rtools/>) we have an instructions that we going to copy and paste an R Script.

Putting Rtools on the PATH

After installation is complete, you need to perform **one more step** to be able to compile R packages: you need to put the location of the Rtools *make utilities* (bash, make, etc) on the **PATH**. The easiest way to do so is create a text file `.Renviron` in your Documents folder which contains the following line:

```
PATH="${RTOOLS40_HOME}\usr\bin;${PATH}"
```

You can do this with a text editor, or you can even do it from R like so:

```
writeLines("PATH=\"${RTOOLS40_HOME}\\usr\\bin;${PATH}\"", con = " ~/.Renviron")
```

Now restart R, and verify that `make` can be found, which should show the path to your Rtools installation.

```
sys.which("make")
## "C:\rtools40\usr\bin\make.exe"
```

If this works, you can try to install an R package from source:

```
install.packages("jsonlite", type = "source")
```

If this succeeds, you're good to go! See the links below to learn more about rtools40 and the Windows build infrastructure.

Further Documentation

More documentation about using rtools40 for R users and package authors:

- [Using pacman](#): the new rtools package manager to build and install C/C++ system libraries.
- [Installing R packages](#): Some older R packages that need extra help to compile.
- [FAQ](#): Common questions about Rtools40 and R on Windows.

Advanced information about building R base and building system libraries:

R First_Steps_in_RStudio - RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Console

```
First Steps in RStudio.Rmd* Untitled1* RendimientoDelPortfolio.Rmd
1 writeLines("PATH=\"${RTOOLS40_HOME}\\usr\\bin;${PATH}\"", con = " ~/.Renviron")
2
3 sys.which("make")
4
5 install.packages("jsonlite", type = "source")|
```

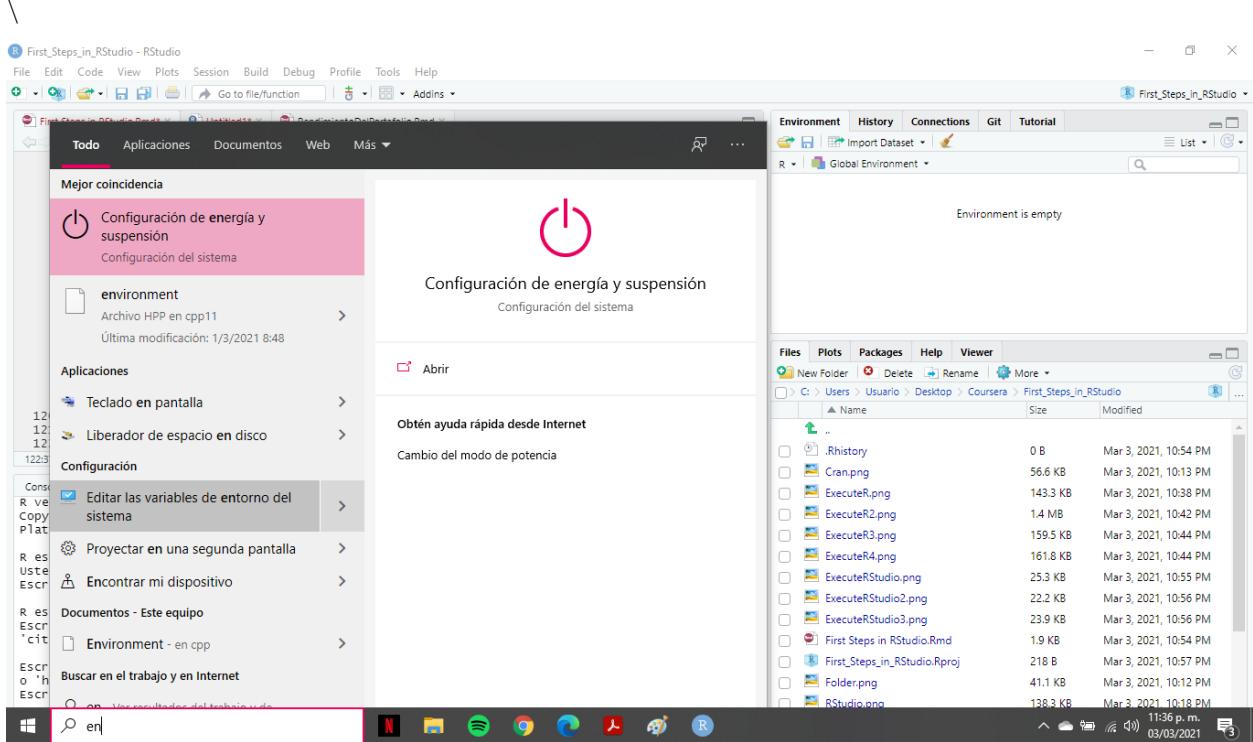
Environment

Environment is empty

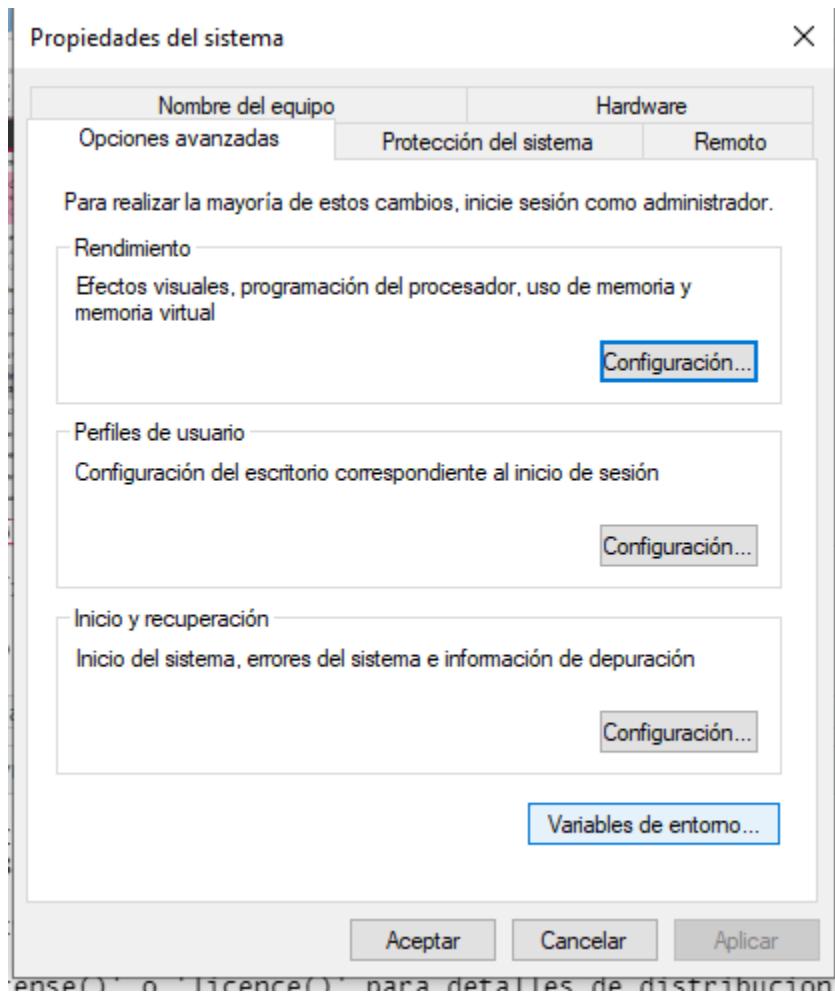
Files

Name	Size	Modified
Rhistory	0 B	Mar 3, 2021, 10:54 PM
Cran.png	56.6 KB	Mar 3, 2021, 10:13 PM
ExecuteR.png	143.3 KB	Mar 3, 2021, 10:38 PM
ExecuteR2.png	1.4 MB	Mar 3, 2021, 10:42 PM
ExecuteR3.png	159.5 KB	Mar 3, 2021, 10:44 PM
ExecuteR4.png	161.8 KB	Mar 3, 2021, 10:44 PM
ExecuteRStudio.png	25.3 KB	Mar 3, 2021, 10:55 PM
ExecuteRStudio2.png	22.2 KB	Mar 3, 2021, 10:56 PM
ExecuteRStudio3.png	23.9 KB	Mar 3, 2021, 10:56 PM
First Steps in RStudio.Rmd	1.9 KB	Mar 3, 2021, 10:54 PM
First_Steps_in_RStudio.Rproj	218 B	Mar 3, 2021, 10:57 PM
Folder.png	41.1 KB	Mar 3, 2021, 10:12 PM
RStudio.png	138.3 KB	Mar 3, 2021, 10:18 PM
Rtools.png	66.9 KB	Mar 3, 2021, 10:24 PM

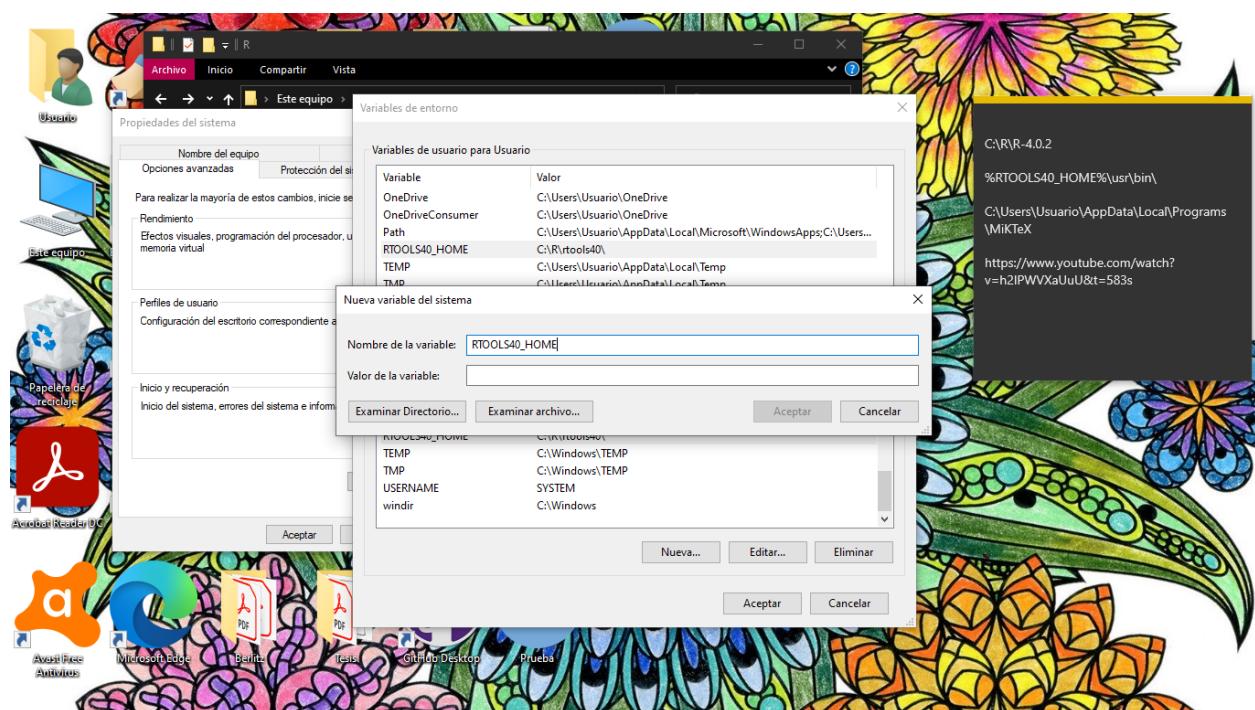
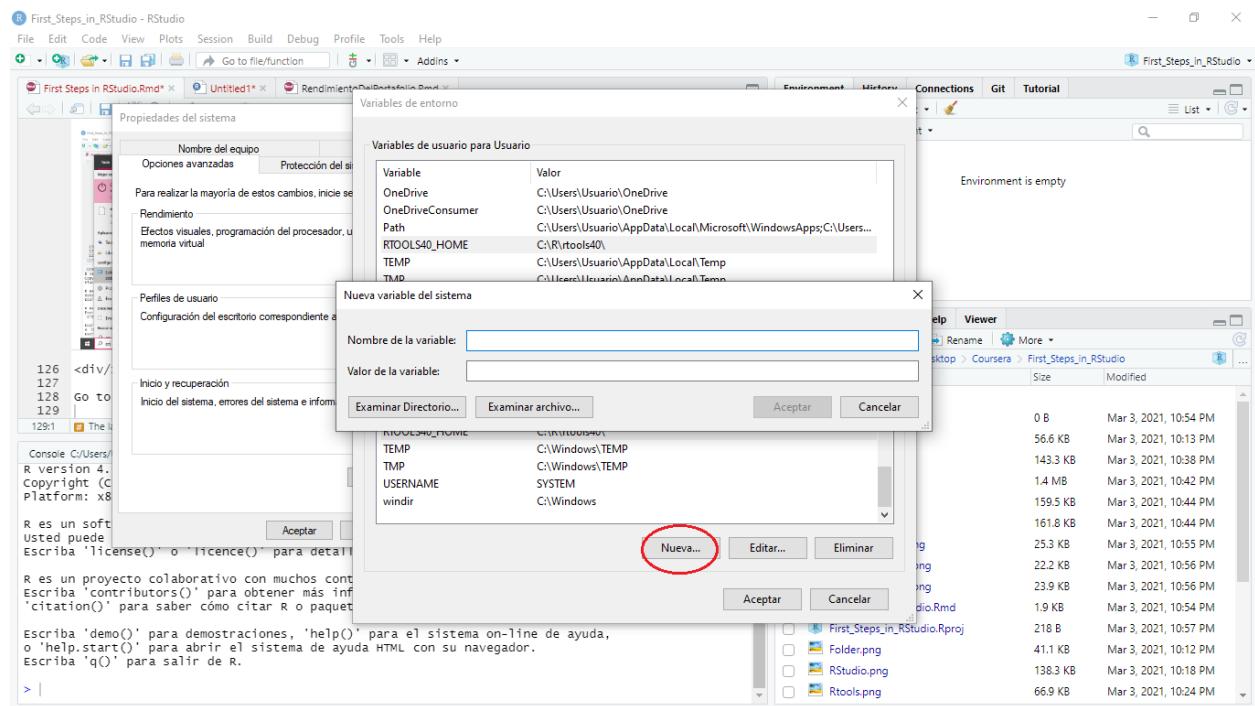
By the other hand, we have to go to “Edit the system environment variables”.



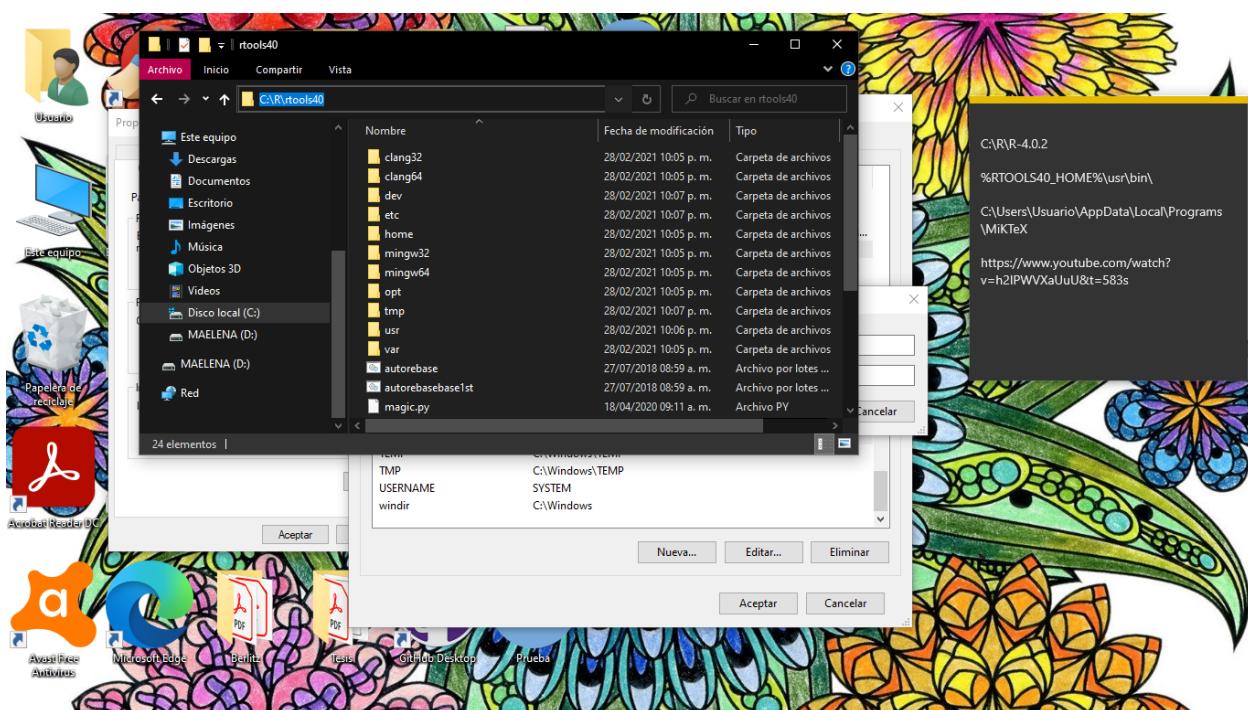
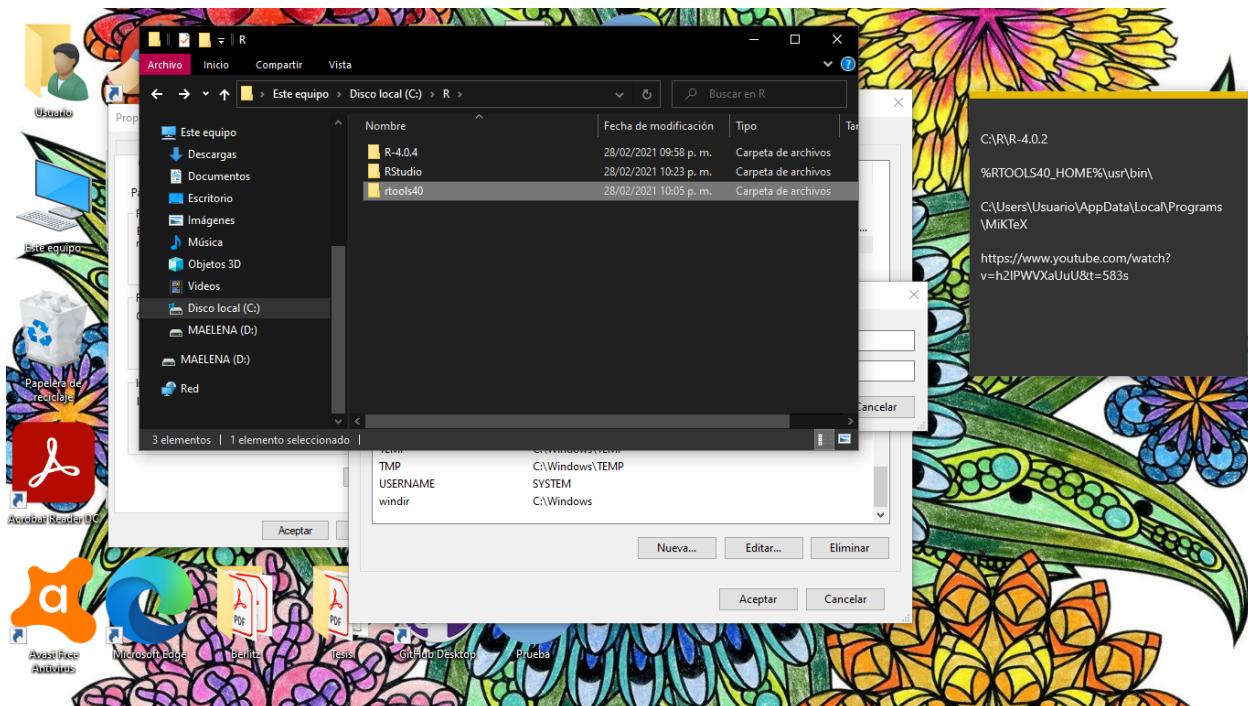
Go to Environment Variables.

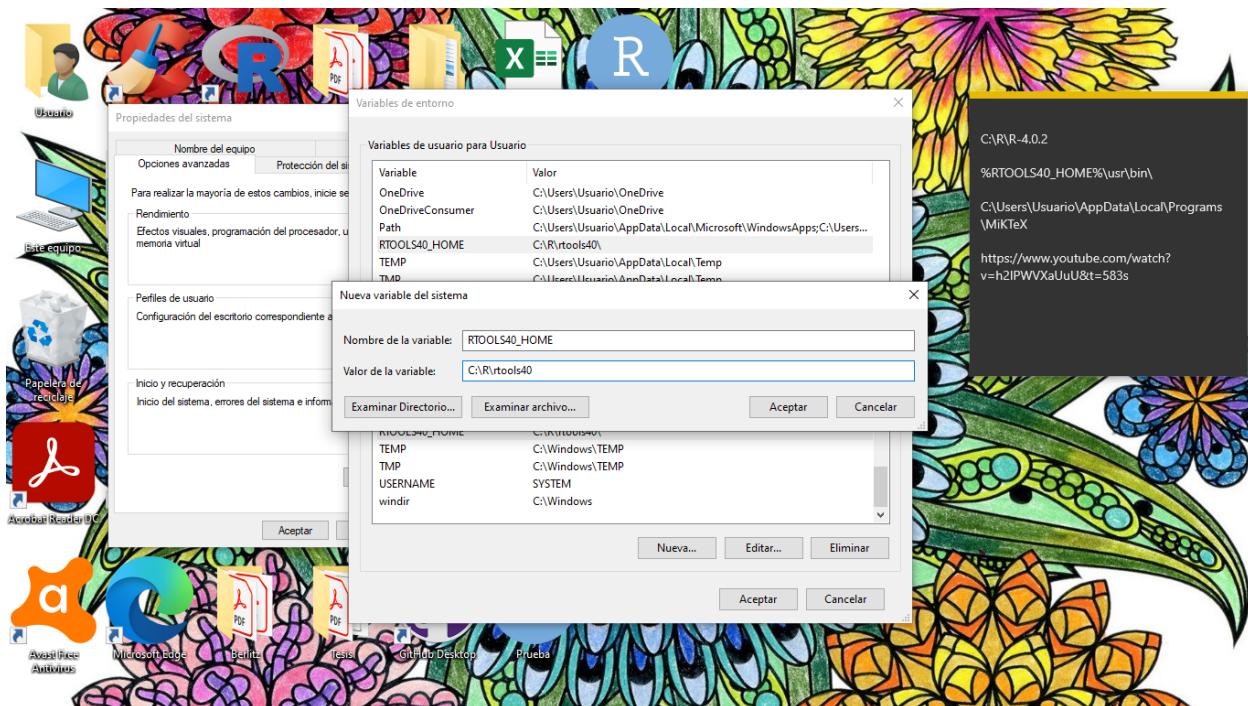


In the next screen click on New and at the name of variable write “RTOOLS40_HOME”

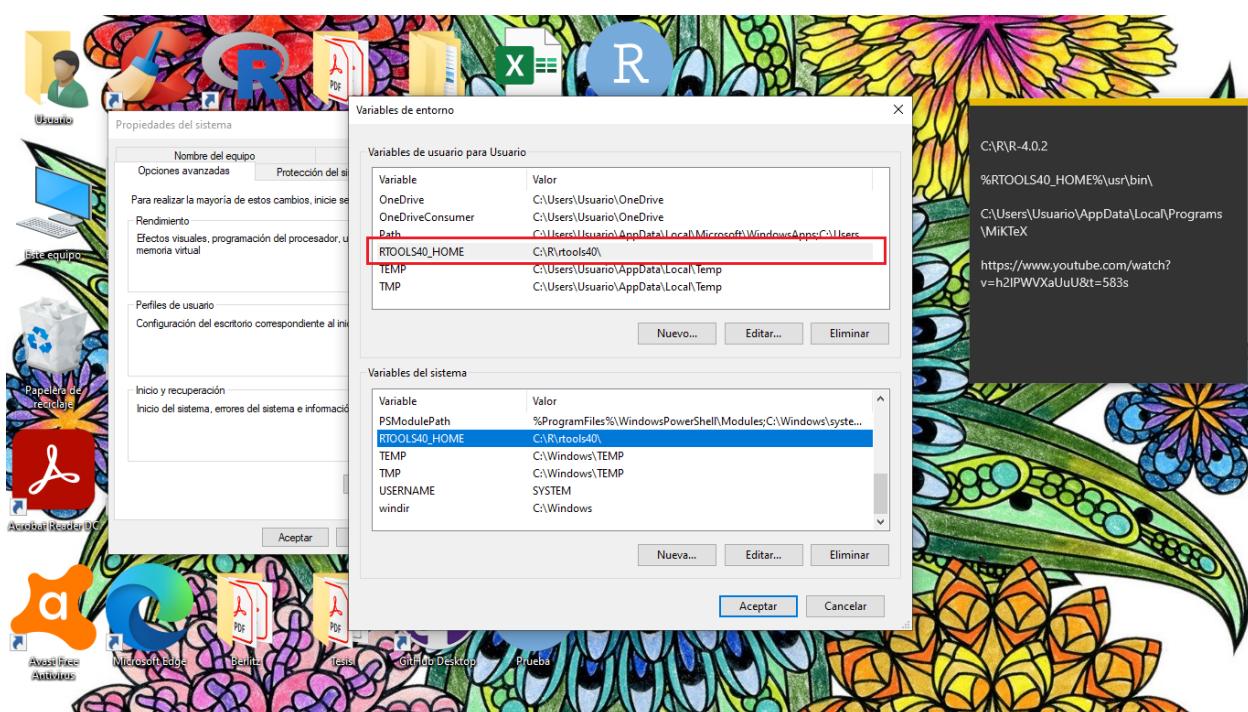


Now in the Rtools40 folder located in the R folder on the local disk C, we have to copy the path of the folder and paste it in the variable value, we add a slash.





Click Ok and we repeat the steps for the quadrant above.



In the first quadrant select the “Path”, click Edit then New and write %RTOOLS40_HOME% usr bin

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Variables de entorno

X

Variables de usuario para Usuario

Variable	Valor
OneDrive	C:\Users\Usuario\OneDrive
OneDriveConsumer	C:\Users\Usuario\OneDrive
Path	C:\Users\Usuario\AppData\Local\Microsoft\WindowsApps;C:\Users...
RTOOLS40_HOME	C:\R\rtools40\
TEMP	C:\Users\Usuario\AppData\Local\Temp
TMP	C:\Users\Usuario\AppData\Local\Temp

Nuevo...

Editar...

Eliminar

Variables del sistema

Variable	Valor
PSModulePath	%ProgramFiles%\WindowsPowerShell\Modules;C:\Windows\system...
RTOOLS40_HOME	C:\R\rtools40\
TEMP	C:\Windows\TEMP
TMP	C:\Windows\TEMP
USERNAME	SYSTEM
windir	C:\Windows

Nueva...

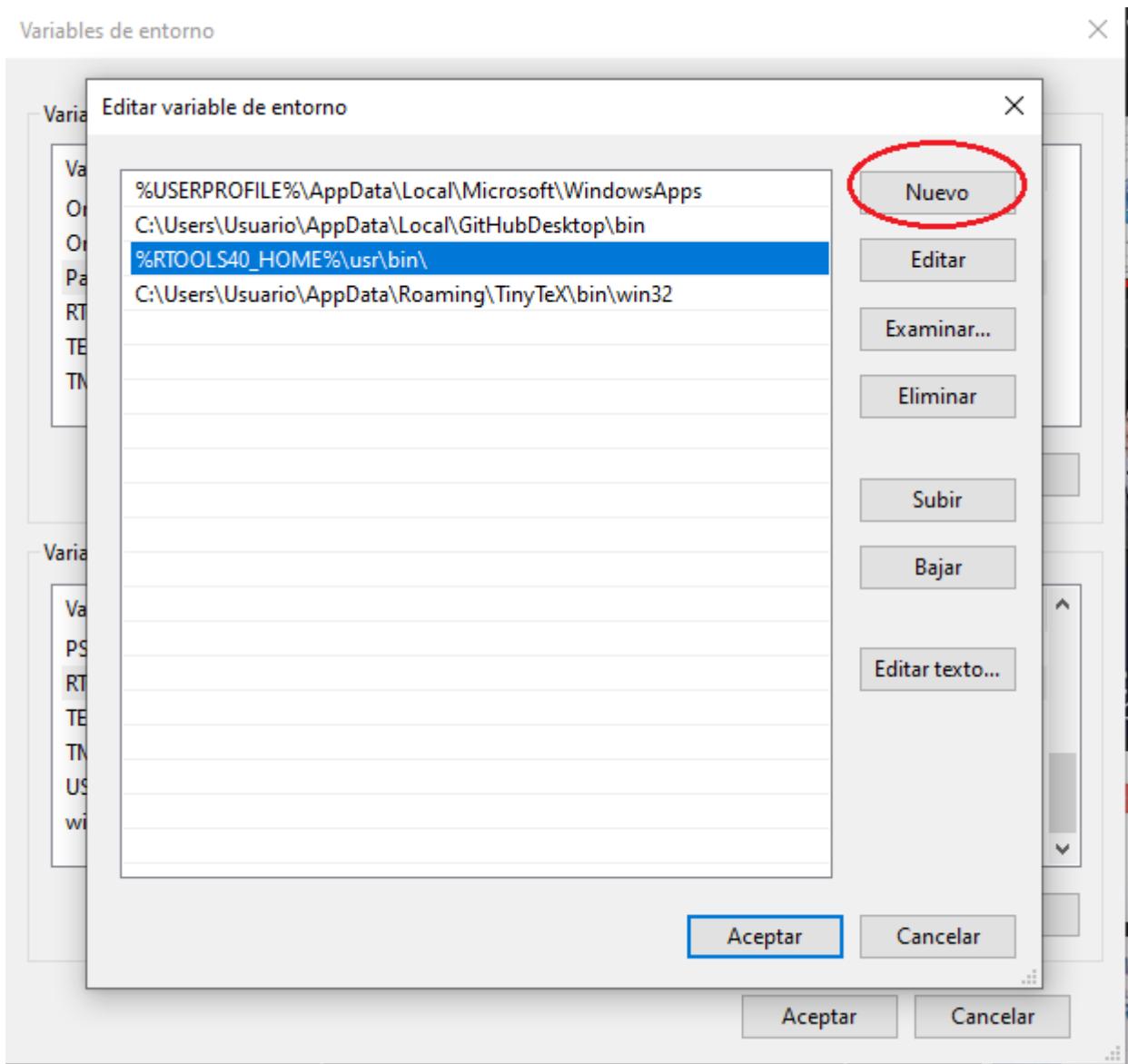
Editar...

Eliminar

Aceptar

Cancelar

Variables de entorno



We have repeat the steps for the “Path” in the lower quadrant. At the end click OK.

Variables de entorno

Variables de usuario para Usuario	
Variable	Valor
OneDrive	C:\Users\Usuario\OneDrive
OneDriveConsumer	C:\Users\Usuario\OneDrive
Path	C:\Users\Usuario\AppData\Local\Microsoft\WindowsApps;C:\Users...
RTOOLS40_HOME	C:\R\rtools40\
TEMP	C:\Users\Usuario\AppData\Local\Temp
TMP	C:\Users\Usuario\AppData\Local\Temp

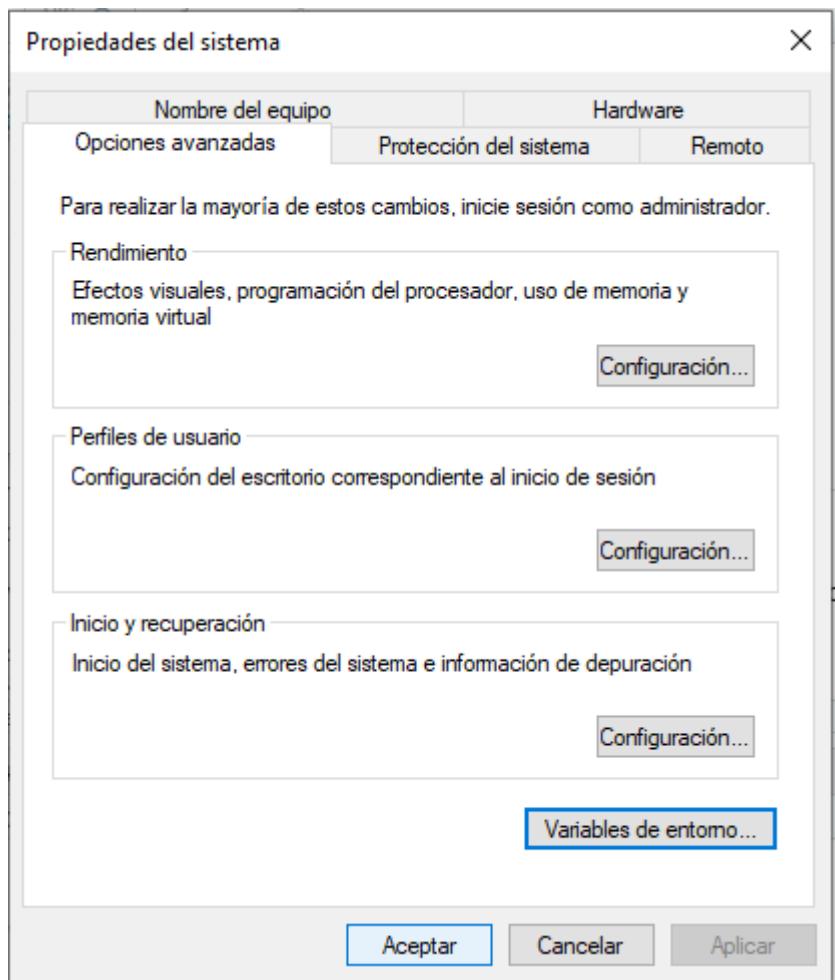
Nuevo... Editar... Eliminar

Variables del sistema	
Variable	Valor
ComSpec	C:\Windows\system32\cmd.exe
DriverData	C:\Windows\System32\Drivers\DriverData
NUMBER_OF_PROCESSORS	4
OS	Windows_NT
Path	C:\Program Files (x86)\Common Files\Oracle\Java\javapath;C:\Win...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE	AMD64

Nueva... Editar... Eliminar

Aceptar Cancelar

For finishing click OK.



We created a new R Script and copy functions from Cran page for Rtools40. We are going to execute `Sys.which("make")`.

The screenshot shows the RStudio interface. In the top-left pane, there are two tabs: "First Steps in RStudio.Rmd" and "Untitled1". The code editor contains the following R script:

```

1 Sys.which("make")
2
3 writeLines("PATH=\"${RTOOLS40_HOME}\\usr\\bin;${PATH}\"", con = "~/.Renviron")
4
5 install.packages("jsonlite", type = "source")

```

In the bottom-left pane, the console output shows:

```

> Sys.which("make")
make
"C:\R\rtools40\usr\bin\make.exe"
>

```

The top-right pane shows the "Environment" tab with the message "Environment is empty". The bottom-right pane shows the "Files" browser with a list of files in the directory C:/Users/Usuario/Desktop/Coursera/First_Steps_in_RStudio/:

Name	Size	Modified
Rhistory	0 B	Mar 3, 2021, 10:54 PM
Cran.png	56.6 KB	Mar 3, 2021, 10:13 PM
ExecuteR.png	143.3 KB	Mar 3, 2021, 10:38 PM
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ExecuteRStudio3.png	23.9 KB	Mar 3, 2021, 10:56 PM
First Steps in RStudio.Rmd	4.2 KB	Mar 3, 2021, 11:58 PM
First_Steps_in_RStudio.Rproj	218 B	Mar 3, 2021, 10:57 PM
Folder.png	41.1 KB	Mar 3, 2021, 10:12 PM
RStudio.png	138.3 KB	Mar 3, 2021, 10:18 PM
Rtools.png	66.9 KB	Mar 3, 2021, 10:24 PM

We execute **writeLines()** function.

The screenshot shows the RStudio interface. The code editor and console output remain the same as the previous screenshot. The top-right pane shows the "Environment" tab with the message "Environment is empty". The bottom-right pane shows the "Files" browser with the same list of files as before.

Finally, we install an R package from source to check if the above works.

The screenshot shows the RStudio interface with the following components:

- Top Bar:** File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, Help.
- Left Sidebar:** A tree view showing "First Steps in RStudio.Rmd" and "Untitled1.R".
- Code Editor:** Contains R code for setting up the environment and installing the jsonlite package.
- Console:** Displays the output of the R code, showing the installation of the jsonlite package to C:/users/Usuario/documents/R/win-library/4.0/00LOCK-jsonlite/00new/jsonlite/libs/x64.
- Environment:** Shows the Global Environment tab with the message "Environment is empty".
- File Browser:** A file browser window showing files in the directory C:/Users/Usuario/Desktop/Coursera/First_Steps_in_RStudio/. The files listed are:

Name	Size	Modified
Rhistory	0 B	Mar 3, 2021, 10:54 PM
Cran.png	56.6 KB	Mar 3, 2021, 10:13 PM
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Now we are ready to continue learning!