

Reproducibility in R

Sharing interactive environments with Binder

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Hello!

Here I would like to share with you this code I am working on. Let me know if you have any problems.



Issue 1

Absolute path

Issue 2



Package version of `tidyr 0.8.3` does not include `pivot_longer()` and `pivot_wider()` functions added in `tidyr version 1.0.0`

Use `sessionInfo()` to check this

**Would I have reproducible
work only sharing the code
and the data?**

Reproducible environments

There are several tools to capture computational environments

- Package management systems ( `packrat` -  `renv`)
- Binder
- Virtual machines
- Containers

More details in The Turing Way Handbok




Package management systems

renv package



Reproducible
Environments -
RStudio

renv package

1.  `renv::init()` works by creating a new library. A library stores installed packages.
2.  `renv::snapshot()` creates a new file in your project titled `renv.lock`. The file contains all the information you need to communicate your project's dependencies at the moment you call snapshot.
3.  `renv::restore()` recreates the environment!

* Read more about `renv` [here](#)

Binder

Jupyter Notebooks

Shiny

RStudio

Tutorial 1 - Ines Montani

Tutorial 2 - LearnR

Binder

Binder is an open source web service that lets users create sharable, interactive, reproducible environments in the cloud.



Advantages

- Easy to use
- You can access the information with one click
- It is free

Limitations

- Computational power
- Security/privacy (using mybinder.org BinderHub)
- Also no FTP for connecting to some data.



Binder's goal is to lower the barrier to interactivity, and to allow users to utilize code that is hosted in repository providers such as GitHub

Binder 2.0 - Reproducible, interactive,
sharable environments for science at
scale

mybinder.org

A free, public BinderHub. Because it is public, you should not use it if your project requires personal or confidential information (such as passwords).



Turn a Git repo into a collection of interactive notebooks

Have a repository full of Jupyter notebooks? With Binder, open those notebooks in an executable environment, making your code immediately reproducible by anyone, anywhere.

New to Binder? Get started with a Zero-to-Binder tutorial in [Julia](#), [Python](#) or [R](#).

Build and launch a repository

GitHub repository name or URL

GitHub ▾

Git branch, tag, or commit

Path to a notebook file (optional)

File ▾

launch

"Binderizing" your project

1- Specify the computational environment

+  `install.R`

+  `runtime.txt`

2- Upload the project files to a publicly available repository hosting service, such as [GitHub](#) / [GitLab](#)

3- "Binderize" the project (mybinder.org) 

4- Use the correct URL 



Demo

+ install.R

This file should have listed all of the packages to be installed


```
install.packages("ggplot2")  
install.packages("shiny")
```


What is MRAN?

Since September 17th, 2014, the checkpoint server has been taking a daily snapshot  at precisely midnight UTC of the entire CRAN repository and storing it on [Microsoft R Archived Network \(MRAN\)](#)

⚠ Non-CRAN packages, such as those available on GitHub, are not part of the snapshot process.

EXTRA: checkpoint package

 **checkpoint** package allows you to install packages as they existed on CRAN on a specific snapshot date as if you had a CRAN time machine.

```
library(checkpoint)  
checkpoint("YYYY-MM-DD")
```

checkpoint package

+ runtime.txt

| Specify the R and package versions used

For this you must choose a date where the versions of your packages are captured in MRAN.

r-version-<YYYY>--<MM>--<DD>


READ HERE - Important about R versions

+ runtime.txt

r-3.6-2020-08-20 #r-version-<YYYY>--<MM>--<DD>







2. Upload your code to the repository

 flor14 / shiny_reproducibilidad_meetup Unwatch

<> Code Issues Pull requests Actions Projects Wiki Security Insights

master 1 branch 0 tags Go to file Add file Code

 flor14 Update and rename app.R to elipse/app.R aeab97e 5 days ago 4 commits

 elipse	Update and rename app.R to elipse/app.R	5 days ago
 install.R	Create install.R	5 days ago
 runtime.txt	Create runtime.txt	5 days ago

3. "Binderize" your project

- a. Go to <https://mybinder.org>
- b. Paste the repository URL <https://github.com/<your-username>/<your-repository>>
- c. Finally, click the [Launch](#) button.

**Patience! This could take a
while** 

RStudio IDE URL

+ `?urlpath=rstudio`

You should call the binderized project using this template link

<https://mybinder.org/v2/gh/<user>/<repository>/<branch>?urlpath=rstudio>

Example :

http://mybinder.org/v2/gh/flor14/shiny_reproducibilidad_meetup/master?urlpath=rstudio

Ejemplos en el repositorio de Binder

Shiny app URL ✨

+ ?urlpath=shiny/<folder>/

You should call the binderized project using this template link

[https://mybinder.org/v2/gh/<user>/<repository>/<branch>?
urlpath=shiny/<folder>/](https://mybinder.org/v2/gh/<user>/<repository>/<branch>?urlpath=shiny/<folder>/)

Example 📎:

[https://mybinder.org/v2/gh/flor14/shiny_reproducibilidad_meetup/master?
urlpath=shiny/ellipse/](https://mybinder.org/v2/gh/flor14/shiny_reproducibilidad_meetup/master?urlpath=shiny/ellipse/)

Ejemplos en el repositorio de Binder

Tutorials



- Ines Montani framwework uses Binder
- Interactive Tutorial with learnr and Binder - Sang-Yun Oh blog post

Others

✓ Holepunch Package

✓ Faster installation

r-conda

✓ More info about Binder

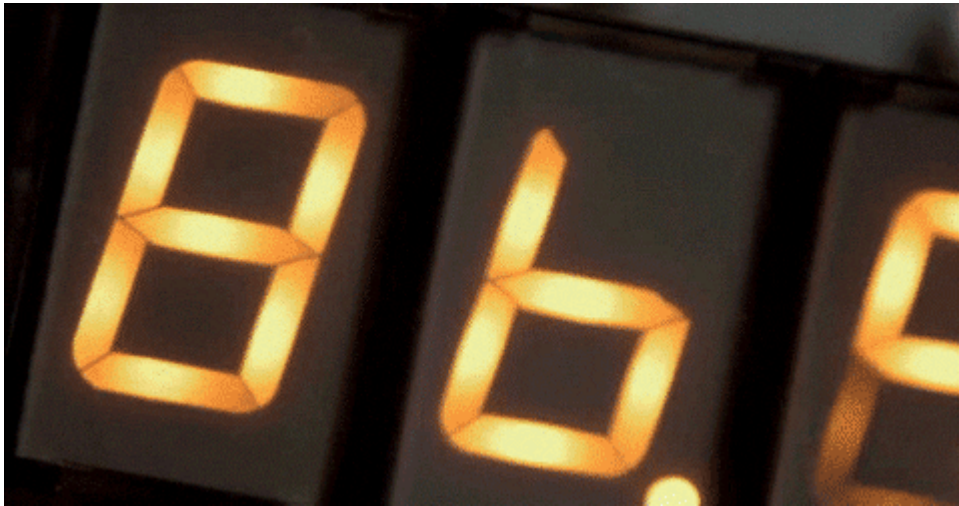
🗨️ Changes to Docker terms of service on November 1. Lack of activity for 6 months could leave links inactive.

? discourse.jupyter.org

Practice

Exercise

Could you modify the code from the first exercise to make it work?



Links



- [Binder 2.0 - Reproducible, interactive, sharable environments for science at scale](#)
- [Reproducibility in Production - Webinar](#)
- [The Turing Way Book](#)
- [Reproducible Environments - RStudio](#)
- [renv: Project Environments with R - RStudio blog](#)
- [Putting the R into Reproducible Research - Anna Krystalli](#)
- [Demo renv package](#)



iThank you!

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