Julia Language Short Course

Undergraduate Summer Internship 2022

CEMFI

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1 General Information and Schedule

The short course will take place on Monday, July 4, 15:30 - 17:00 and Tuesday, July 5, 15:30 - 17:00 and will provide an introduction to Julia, a high-level/high-performance programming language. The preliminary schedule for the two sessions is

- Monday
    1. Introduction to Julia and its syntax
    2. Structuring your program
- Tuesday
    1. Some advanced concepts
    2. Applications to basic problems in economics

Example codes for each session are available on Moodle. Below you will find a rough guide on how to install Julia. I recommend that you have everything installed before the first session, so that the sessions are a bit easier to follow. If you have any questions regarding the short course or the installation of Julia, please do not hesitate to contact me at joel.marbet@cemfi.edu.es.

2 Installation of Julia

Installation of the recommended setup from scratch (for more details see: `https://www.julia-vscode.org/docs/dev/gettingstarted/`)

1. Install Julia: `https://julialang.org/downloads/`
2. Install VSCode: `https://code.visualstudio.com`
3. Install Julia for VSCode: Go to View in VSCode, then click on "Extensions" and type "julia" in the search box and hit enter. Install the `julia` extension.
4. Julia packages can then be installed using Julia's package manager if necessary

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Once you have installed everything, execute the script `RequiredPackages.jl`. This should install the required packages for the course.

3 Opening the Lecture Notes

The main lecture notes are contained in a Pluto notebook. To start the Pluto notebook, you need to run the following command in Julia

```
using Pluto; Pluto.run()
```

One you run this line in Julia, a browser window with the Pluto interface should open automatically. From there you can open the Pluto notebook `LectureNotes.jl`.

4 Additional Resources

We will only be able to scratch the surface of how to program in Julia. Here are some great resources to learn more:

- TechyTok!: `https://techytok.com/from-zero-to-julia/`
  - Excellent tutorial that goes into more detail than we will be able to
- QuantEcon: `https://julia.quantecon.org/`
  - Provides great lectures that start from the very basics of Julia
  - Many economic applications
- Julia Documentation: `https://docs.julialang.org/`
  - Very clear and well organized
  - Performance tips:
    `https://docs.julialang.org/en/v1/manual/performance-tips/`
  - Noteworthy Differences from other Languages:
    `https://docs.julialang.org/en/v1/manual/noteworthy-differences/`
    - If you have experience in either Matlab, R, Python or C/C++, it's a good idea to have a look at the respective section
- Plotting with Julia
  - Plots.jl: `http://docs.juliaplots.org/`