Introduction to Pluto

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Tasks in week 1
- Everything in this course will be done using a computer
  - ‣ Practical exercises,
  - ‣ Mock tests/exams
  - ‣ Formal evaluation moments: tests/exams

Tasks in week 1
- We have to install two programs on your computer:
  - ‣ Julia programming language
  - ‣ Pluto.jl (one package developed for Julia)
- Week 1 deals only with the introduction to Pluto notebooks
- No macroeconomics will be taught during this week
- Do not worry: this is a macroeconomics course, not a computational one

1. Installing Julia
The following slides are a short version of more detailed information available **here**

Installing Julia on Windows
- Download the correct executable for the Windows OS, by clicking here: ***Windows installer Julia v1.11.3***
- Save the downloaded executable somewhere on your computer, or keep it in the ***Downloads*** folder.
- Click on top of the executable to install Julia
- Allow the installation to be done in the default directory
- Click on: Title of the document <mark>Add Julia to PATH</mark>
- Click on: <mark>Finish</mark>
- Installation completed

Installing Julia on a Mac

1. Choose the correct Apple executable according to the processor (*Intel/Rosetta* or *Apple Silicon*) on your Mac: this means that you have to choose either (2) or (3) below.
2. If your Mac has an Intel or Rosetta processor, you can download the correct executable from here: ***macOS x86 (Intel or Rosetta) Julia v1.11.3***
3. If your Mac has an Apple Silicon processor, you can download the correct executable from here: ***macOS (Apple Silicon) Julia v1.11.3***
4. Check the **Downloads** folder and drag the executable to the **Applications** folder. Installation completed.

Installing Julia on Linux

See detailed information available **here**
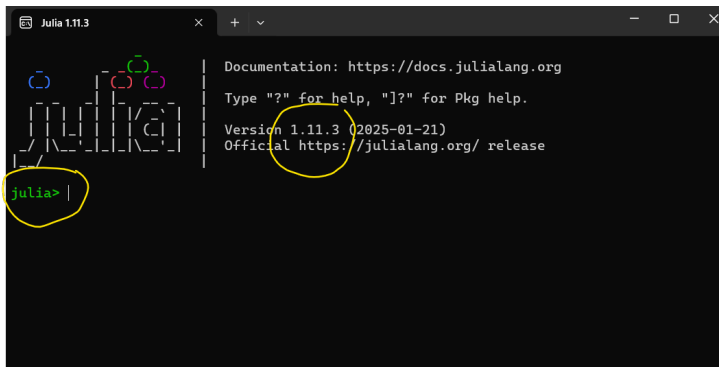
2. Running Julia

Starting Julia

- To start Julia, click on its icon on the desktop:
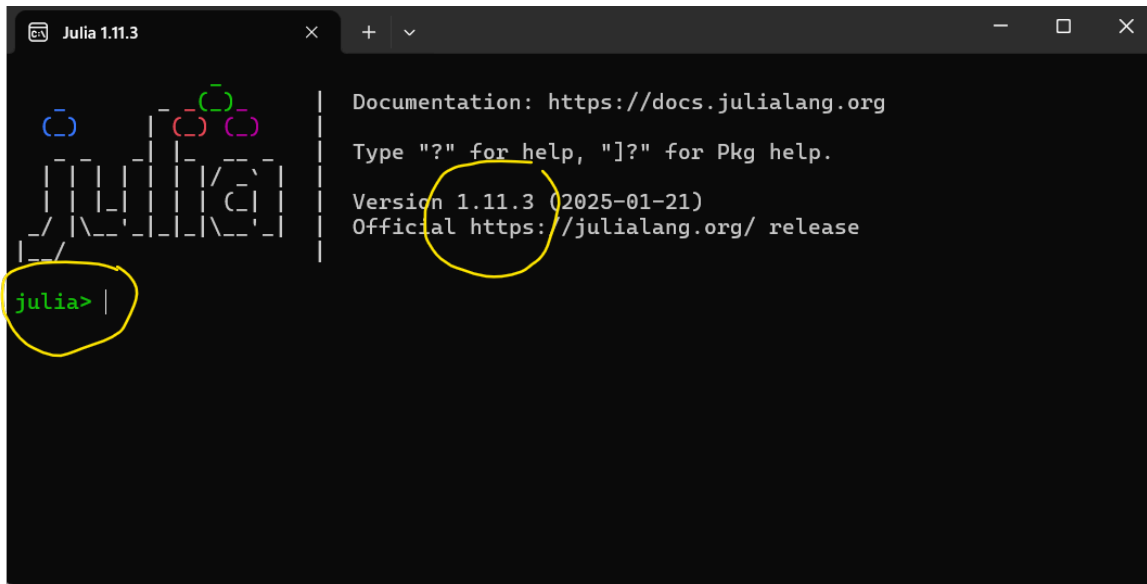

Starting Julia

- The following black window will appear on your monitor:

- Julia runs in Two modes: ***Julia mode*** and ***Pkg mode***

- what are these modes for? Next slides

Julia mode

- When we start Julia, by default it runs in Julia mode. In the image below, $\color{red}{\text{julia>}}$ indicates that we are in this mode:
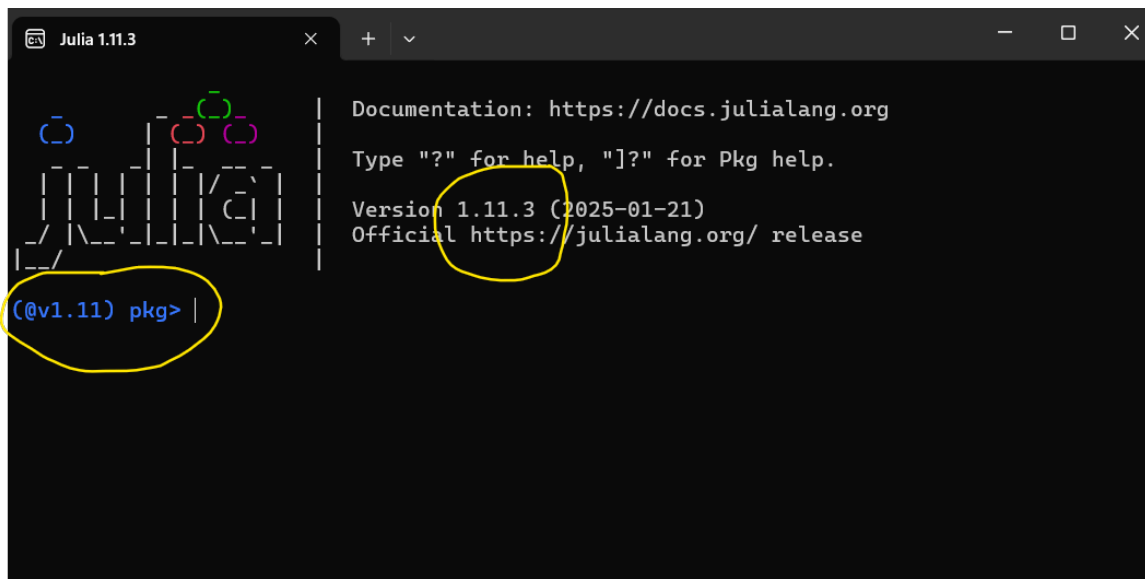

Julia mode

- If you type after $\color{red}{\text{julia>}}$ $4 + 4$, followed by clicking on <mark>Enter</mark>, you will get 8 as the output.

- Julia is installed and running well.

- Julia mode is for doing computation, but its window is ugly and not very handy

- So for computation, we will use **Pluto** instead.

Pkg mode

- To move from Julia mode to Pkg mode, in mode $\color{red}{\text{julia>}}$ type the following character: $\color{red}{\text{]}}$
- Different keyboards have different ways of typing $\color{red}{\text{]}}$
  ‣ <mark>Alt Gr</mark> and <mark>9</mark> (usually do it on Windows)
  ‣ <mark>Option</mark> and <mark>9</mark> (usually do it on Mac)

Pkg mode

- Now, we see $\color{blue}{\text{(@v1.11) pkg>}}$ in the black window indicating that we are in Pkg mode:

- To go back to Julia mode, click on backspace: ←

3. Installing Pluto

Installing Pluto
- Start Julia, if it is not already running
- Go to Pkg mode: $\color{blue}{\text{(@v1.11) pkg>}}$
- Once in Pkg mode, type:
  ‣ add Pluto followed by clicking on Enter
- Let the computer do the installation: no further intervention by you is required
- When the installation is finished, go back to mode $\color{red}{\text{julia>}}$ by clicking on backspace: ←
- That is it: Pluto is installed on your computer.

4. Updating your installation

Updating Pluto
- From time to time, new versions of Pluto come out
- We recommend you to update your Pluto installation every two weeks
- It is very simple and takes around 1 minute

Updating Pluto
- Start Julia and go to mode: $\color{blue}{\text{(@v1.11) pkg>}}$
- Once in Pkg mode, type:
  ‣ Update followed by clicking on Enter

- Let the computer update your system (you do not need to intervene during this process)
- When the updating is finished, go back to mode $\color{red}{\text{julia>}}$ by clicking on back-space: ←.
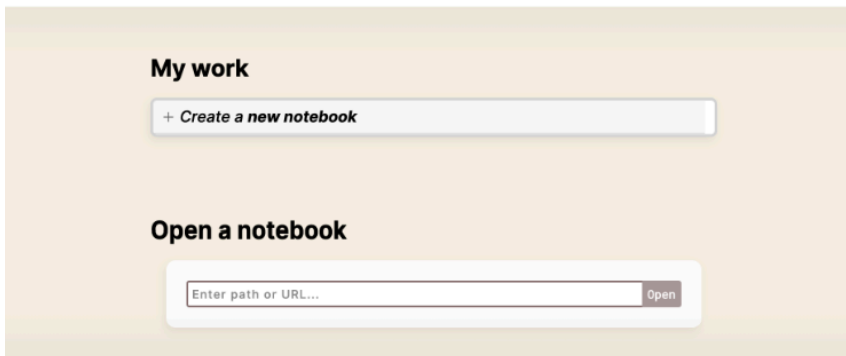- It is done.

5. Using Pluto

See more detailed information available **here**

Starting Pluto

- Start Julia and keep it in mode $\color{red}{\text{julia>}}$
- Type in its black window: <mark>import Pluto ; Pluto.run()</mark>
- Click on <mark>Enter</mark> and Julia will open Pluto in your browser:

welcome to **Pluto**.jl

My work

+ Create a new notebook

Open a notebook

Enter path or URL...   Open

Opening a Pluto notebook

- To open a Pluto notebook, the double-click on top of the file ***does not work***
- Neither do the usual drag-and-drop in Mac
- Even if the drag-and-drop seems to work, do not do it ... you will loose your work

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Opening a Pluto notebook

You have to tell Pluto where your notebook is located. For this, you have to:

- Put the Pluto notebook in a folder on your computer.
- So your notebook has an address (Path) on your computer
- You have to copy that address and paste it into Pluto's <mark>Open a notebook</mark> window
- How to get the address (Path) of your notebook?
- See next slide

Copy your notebook's path: Windows

Put the cursor on top of your file

- Mouse right-click on your file
- Choose: Properties
- Copy the path in *Location*:
- The Path will looke like this: G:\Macro\Week01
- Once you have copied the path of your notebook, you canp aste it into the Open a notebook box in the Pluto window
- See next slide

Copy your notebook's path: Mac

Put the cursor on top of your file

- Mouse right-click on your file
- Choose: Get info
- Copy the path in *Where*:
- The Path will looke like this: G:/Macro/Week01
- Once you have copied the path of your notebook, you can paste it into the Open a notebook box in the Pluto window
- See next slide

Paste the Path of your notebook into Pluto

1. Suppose the Path of my notebook is:
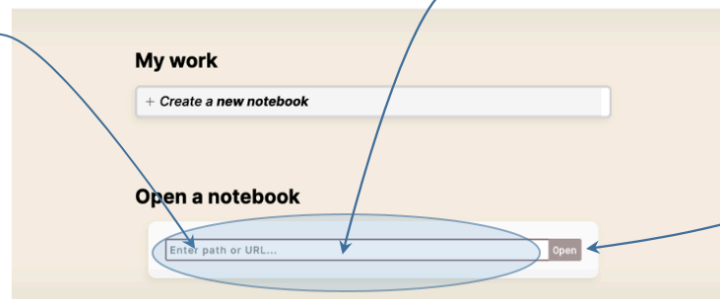   G:\Macro\Week01   (on Windows)
   G:/Macro/Week01   (on Mac)

3. End the Path with a slash:
   \   (on Windows)
   /   (on Mac)

welcome to **Pluto**.jl

My work

+ *Create a new notebook*

2. Paste the Path of your notebook into this box

Open a notebook

Enter path or URL...   Open

4. Click on **Open**

5. Click on **Enter**

6. Your Pluto notebook will be opened and running in your browser

End

Bibliography