MAGEMin framework

MAGEMin

(Mineral Assemblage Gibbs Energy Minimization)

- MPI-parallel C code
- Point-wise minimization at given P-T-X

- Metapelite (White et al., 2014)
- Metabasite (Green et al., 2016)
- Igneous (Holland et al., 2018)
- Ultramafic (Evans & Forst, 2021)
- Mantle (Stixude & Lithgrow-Bertelloni, 2010)

MAGEMin_C

- Julia wrapper of the C code
- Flexible programming interface
- Database calibration
- Geodynamic coupling

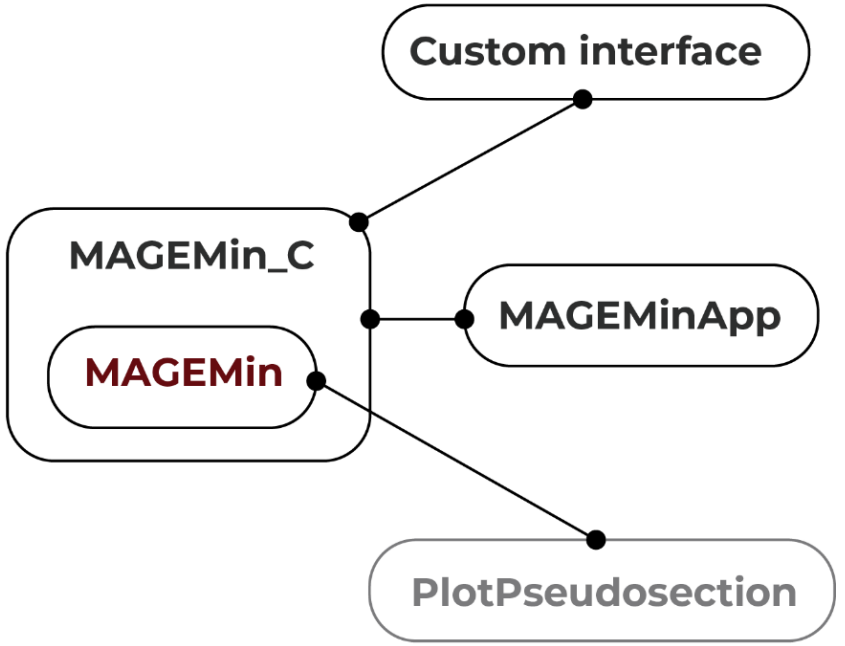
MAGEMinApp

- Web browser app (graphic user interface)
- Parallel point-wise minimization
- PT, PX, TX and PT-X phase diagrams
- Auto labelling, contouring
- Fractional melting/crystallization paths

PlotPseudosection

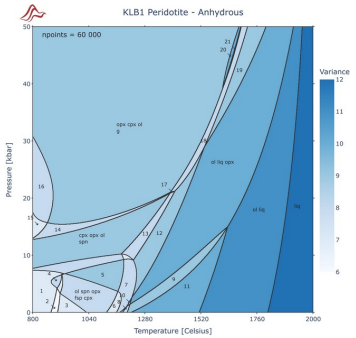
- Matlab app (Graphic user interface)
- Parallel point-wise minimization
- PT, PX, TX diagrams
- Contouring
- PT paths
- Trace element partitioning for mafic to ultramafic systems

E.G., GEODYNAMIC COUPLING



MAGEMin github: ComputationalThermodynamics

MAGEMin



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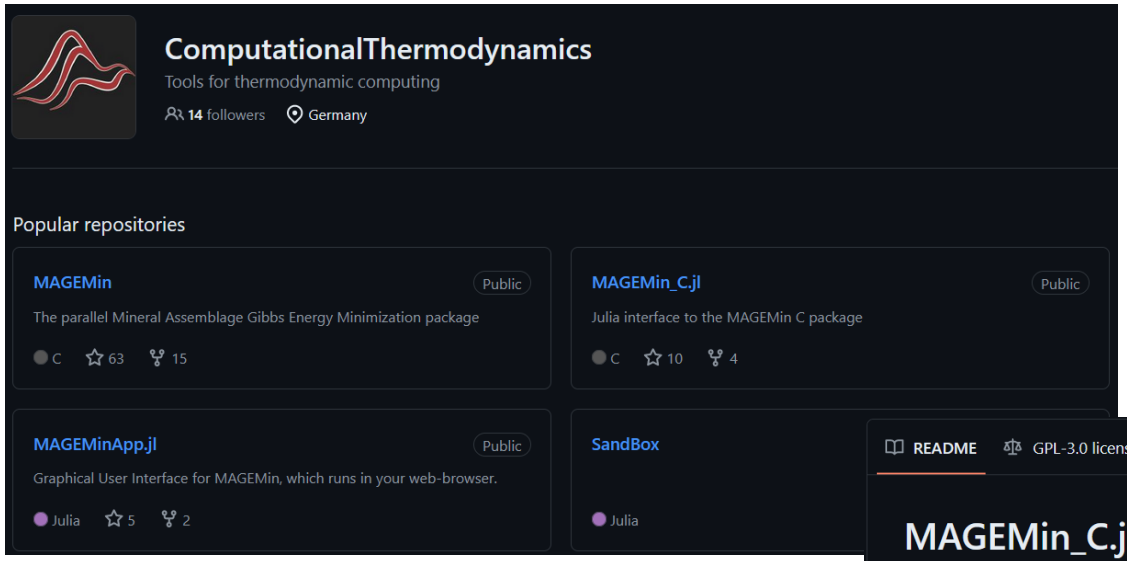
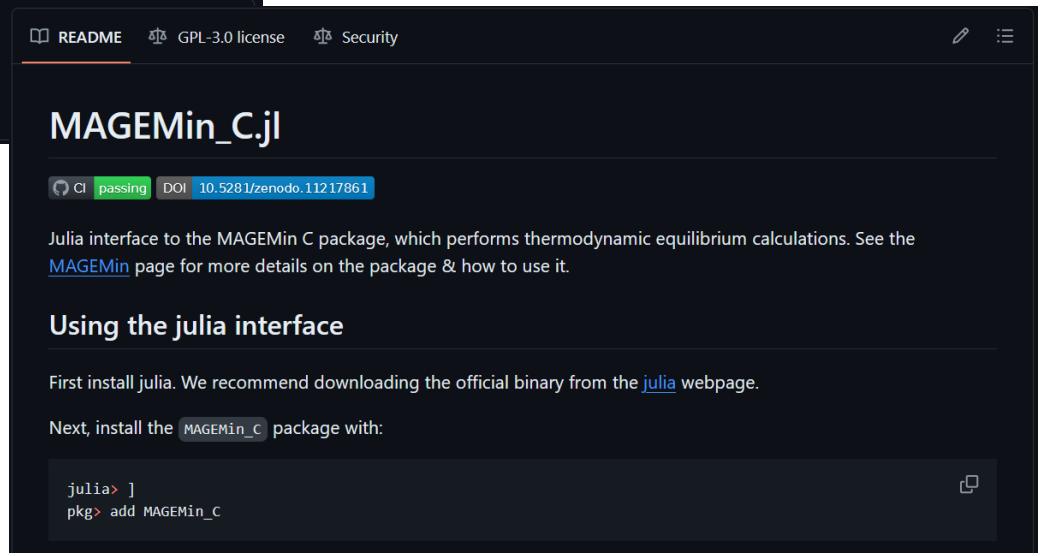
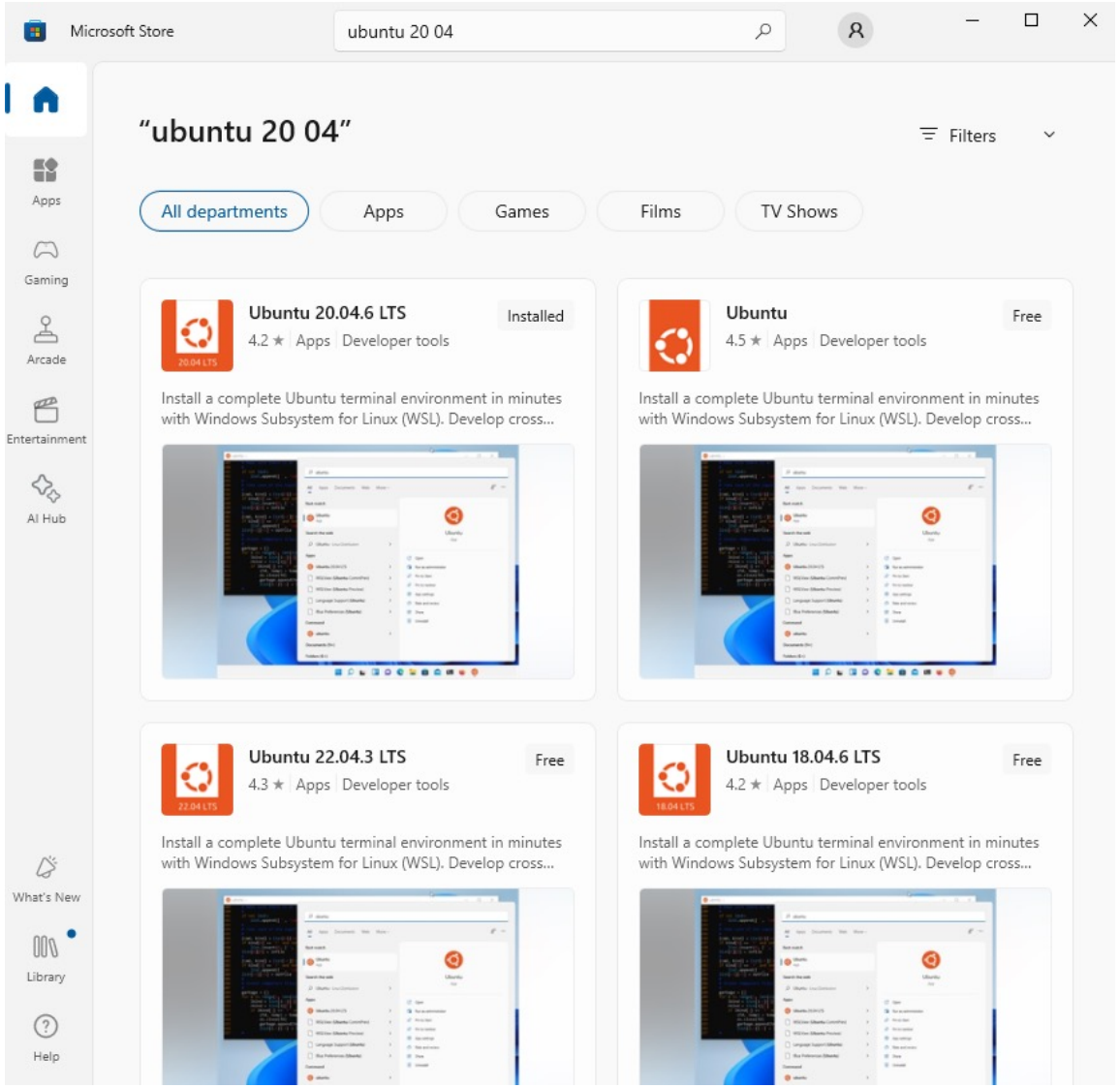




GitHub

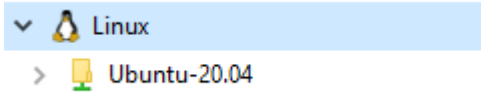
https://github.com/ComputationalThermodynamics
https://github.com/ComputationalThermodynamics/MAGEMin_C
https://github.com/ComputationalThermodynamics/MAGEMinApp

MAGEMinApp installation (Windows with WSL)



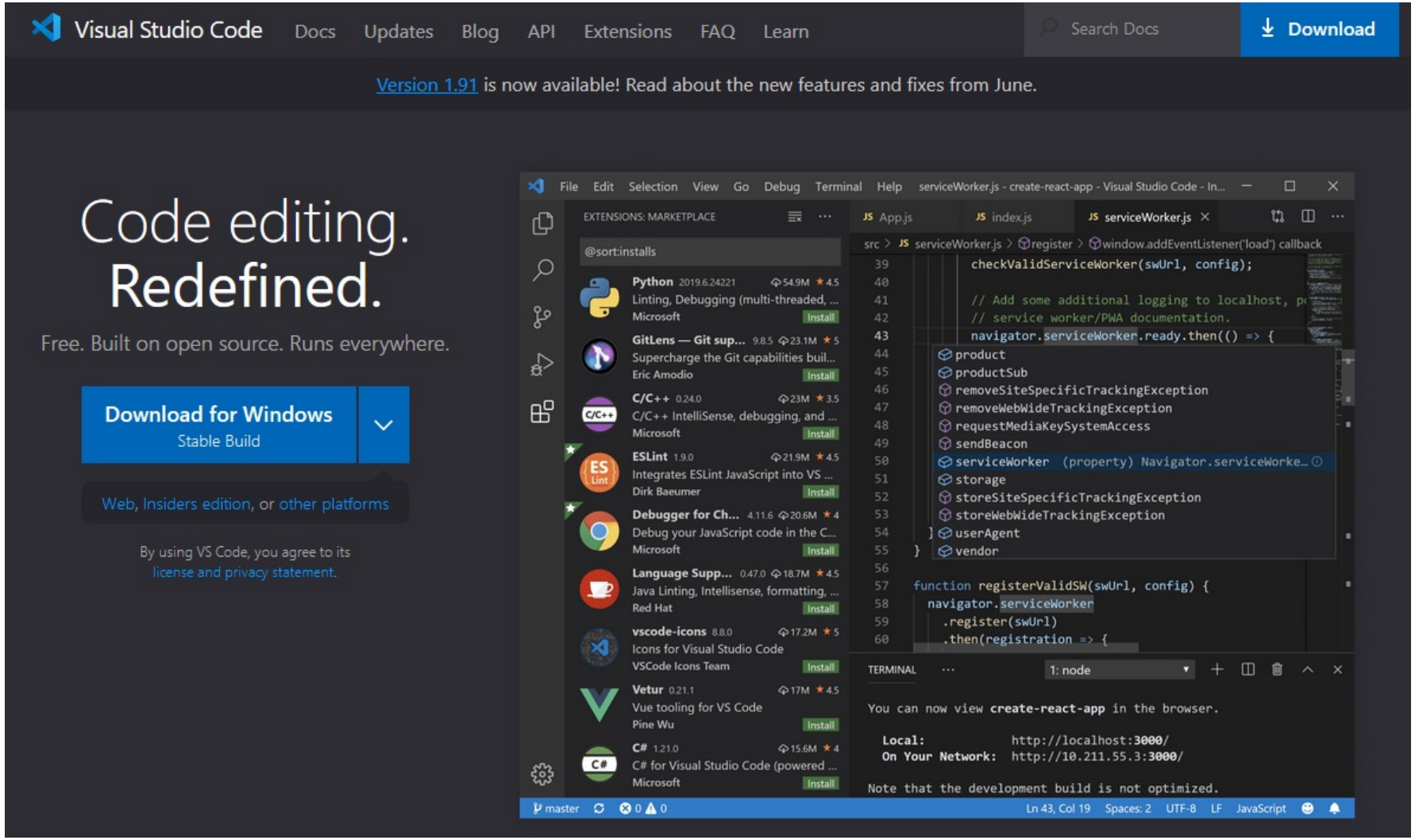
- Open Microsoft store (start-up menu)
- Look for Ubuntu 20 04
- Install Ubuntu 20 04
- Restart computer
- A terminal will open and ask for setting up a Linux username and password to your Ubuntu

- A new folder in the explorer should appear:



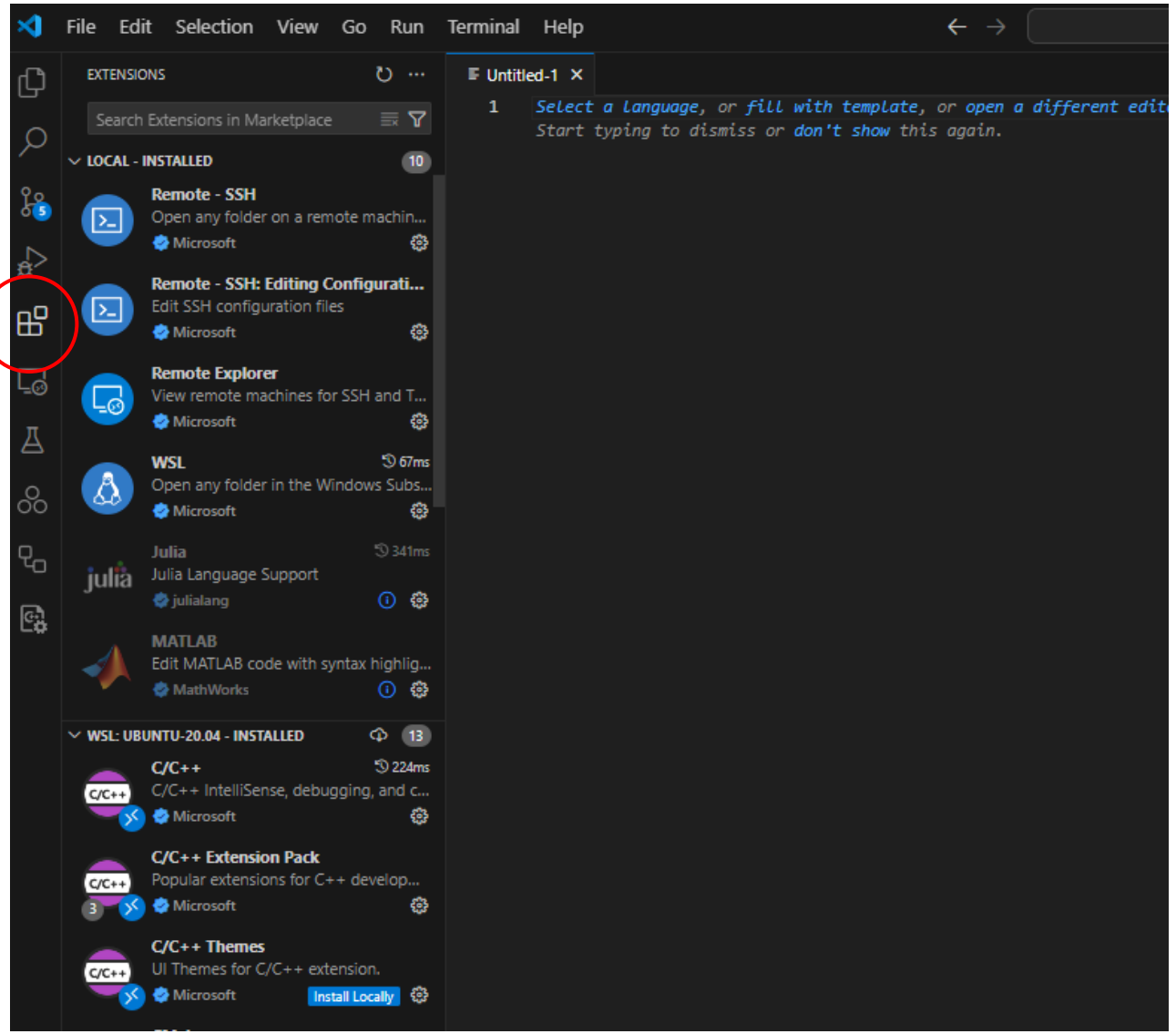
Visual Studio Code installation

- https://code.visualstudio.com/
- Download and install



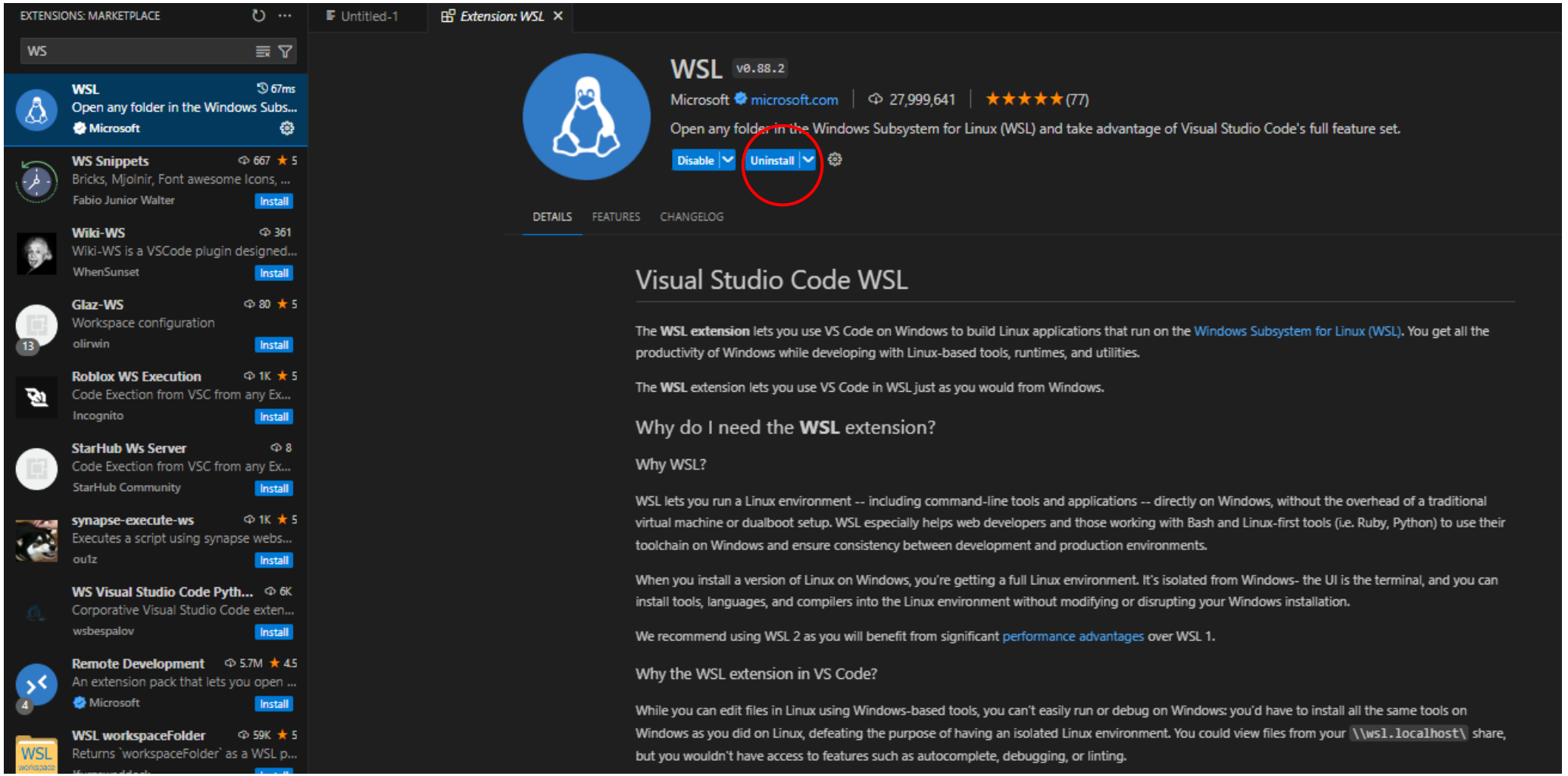
Visual Studio Code installation

- Install WSL plugin



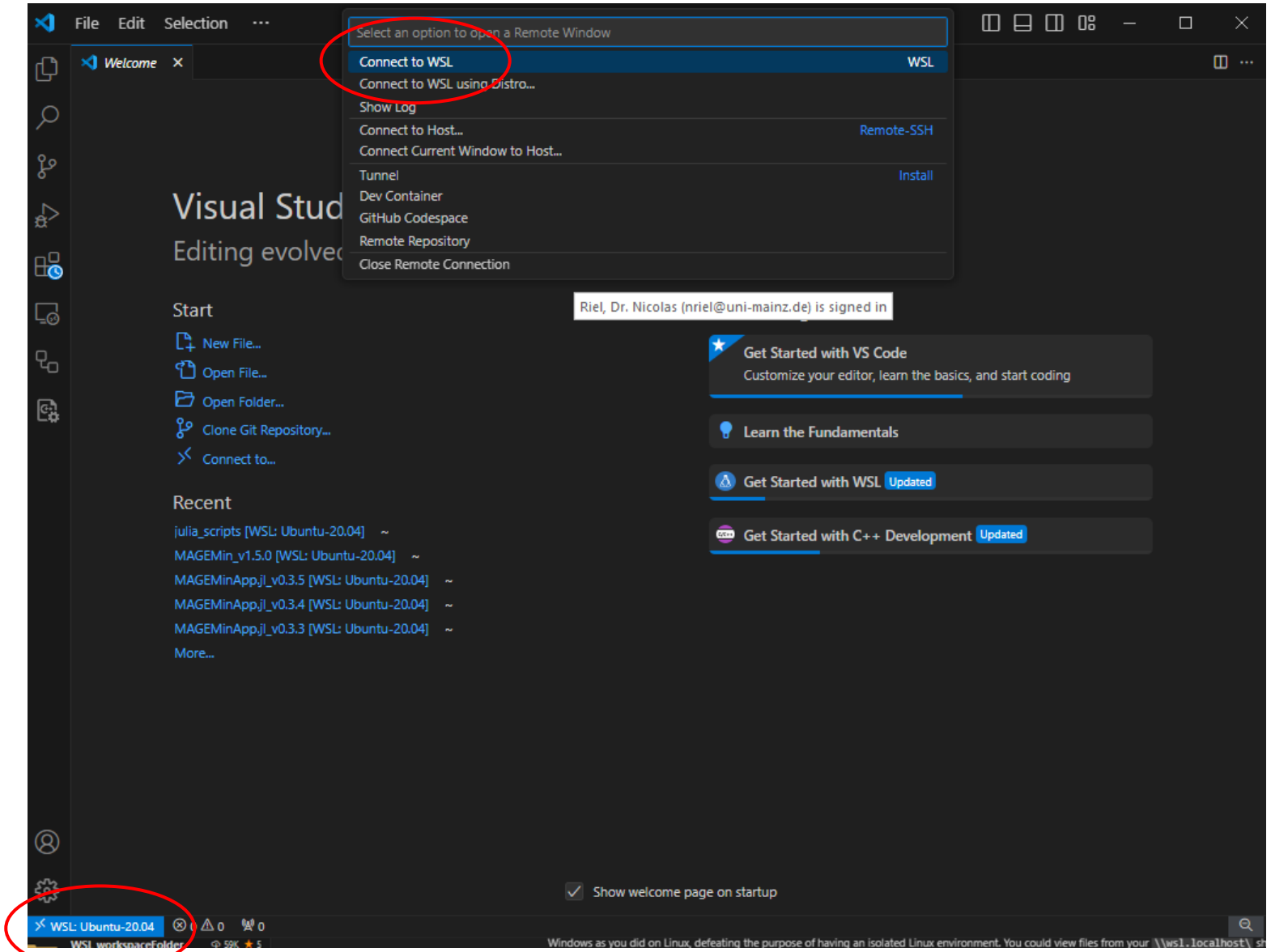
Visual Studio Code installation

- Install WSL plugin



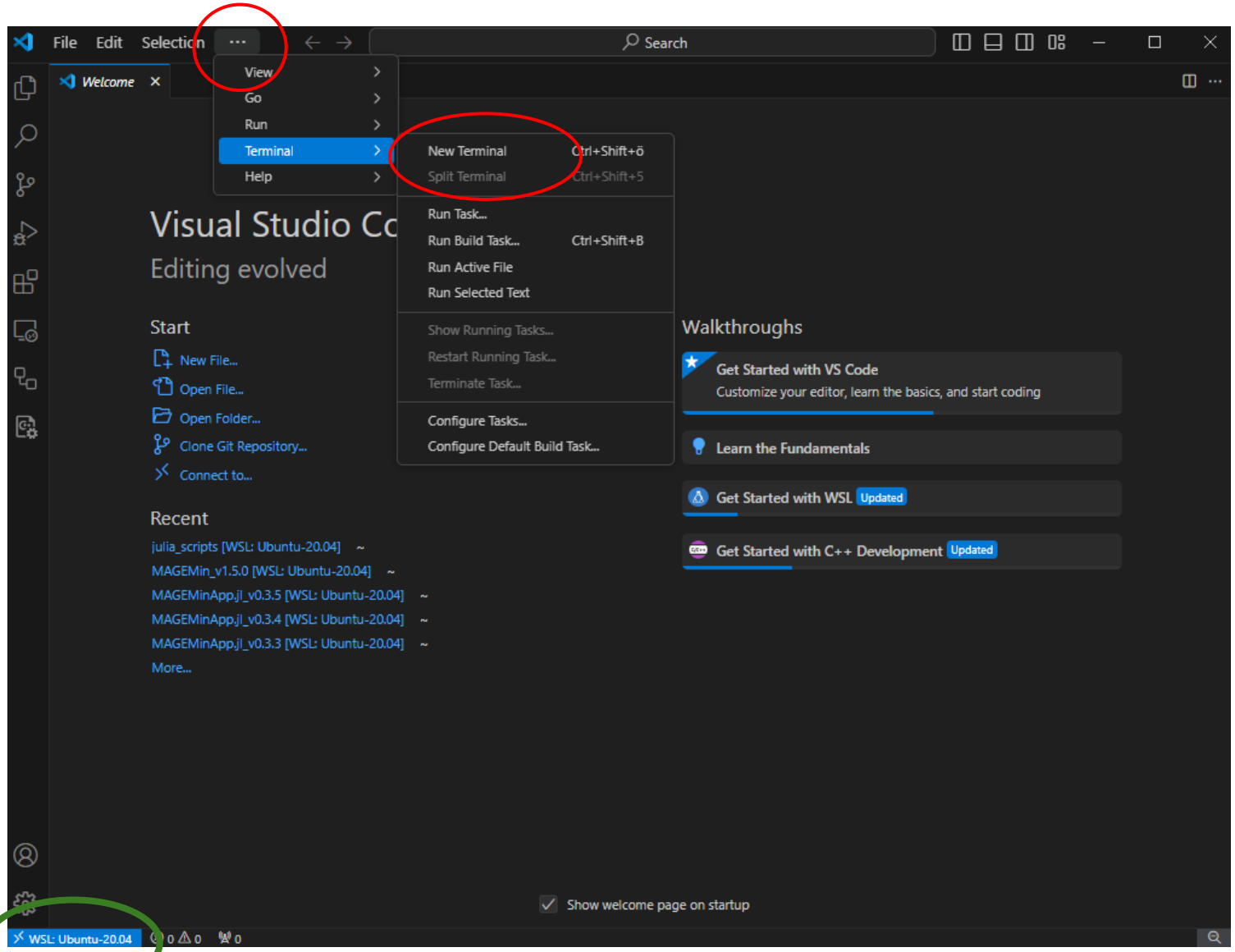
Visual Studio Code installation

- Connect vscode to WSL



Visual Studio Code installation

- Open a new terminal



Julia installation

- Get the command to download Julia:
  curl -fsSL https://install.julialang.org | sh

https://julialang.org/downloads/

julia Download Documentation Learn Blog Community Contribute JSoC

Install julia

Install the latest Julia version (v1.10.4 June 4, 2024) by running this in your terminal:

```
$ curl -fsSL https://install.julialang.org | sh
```

For Windows instructions click here

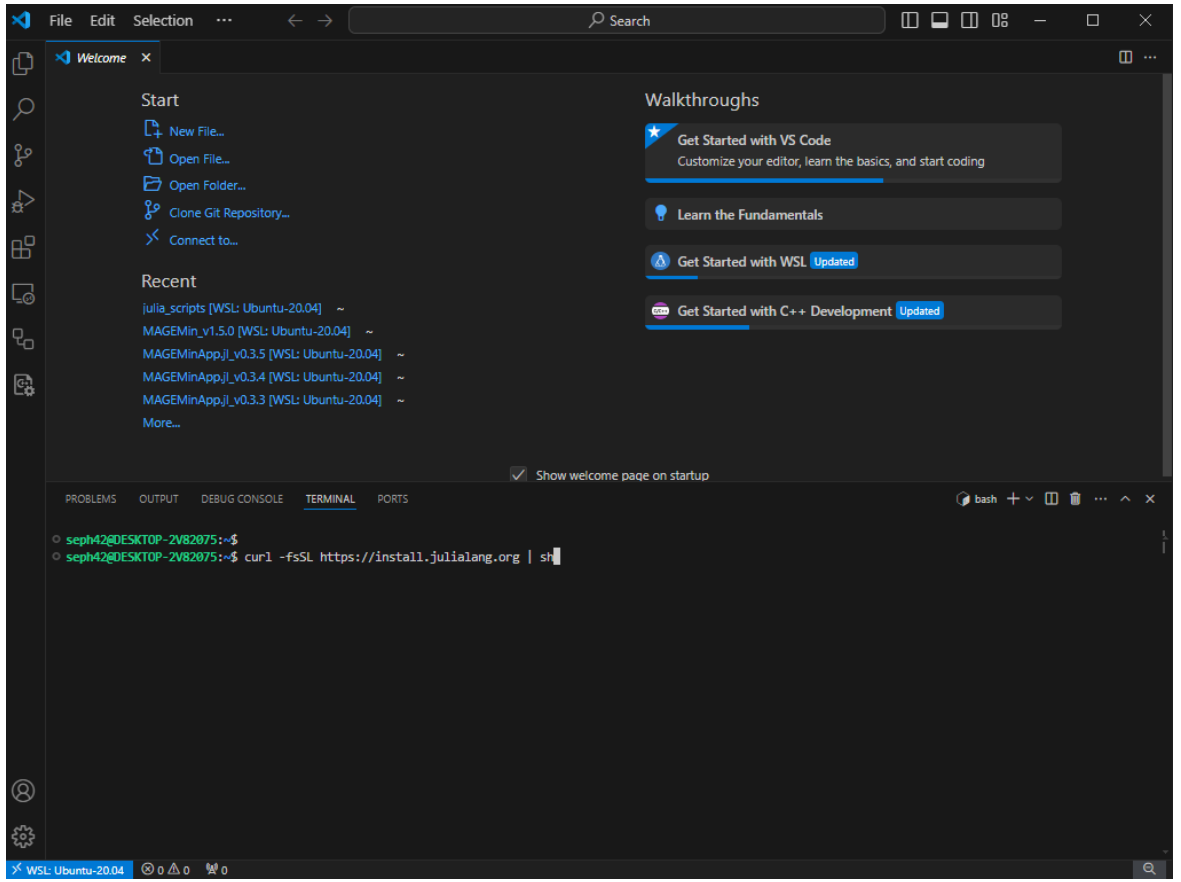
Once installed `julia` will be available via the command line interface.

This will install the Juliaup installation manager, which will automatically install julia and help keep it up to date. The comma
installed. To install different julia versions see `juliaup --help`.

Please star us on GitHub. If you use Julia in your research, please cite us. If possible, do consider sponsoring us.

Please do not use the version of "Julia" shipped by unix package managers

Many unix package managers ship broken and/or significantly out of date versions of Julia. Please use juliaup or download the c

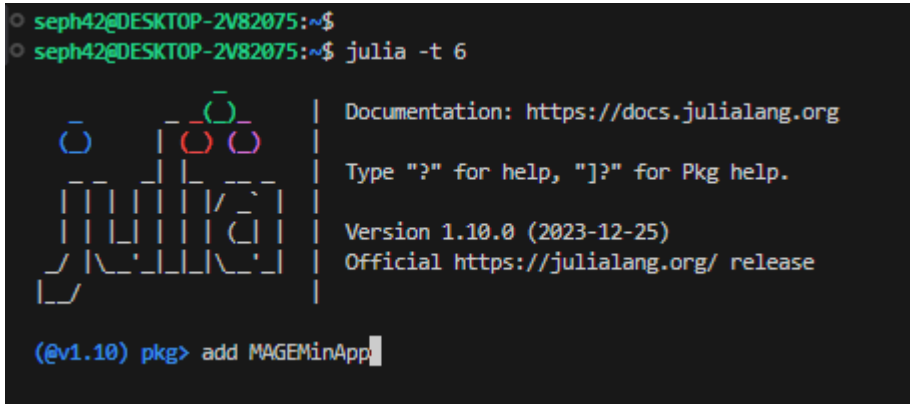


- Execute the command in the terminal

Install MAGEMinApp

- Close and open a new terminal (this makes Julia available)
- Type:

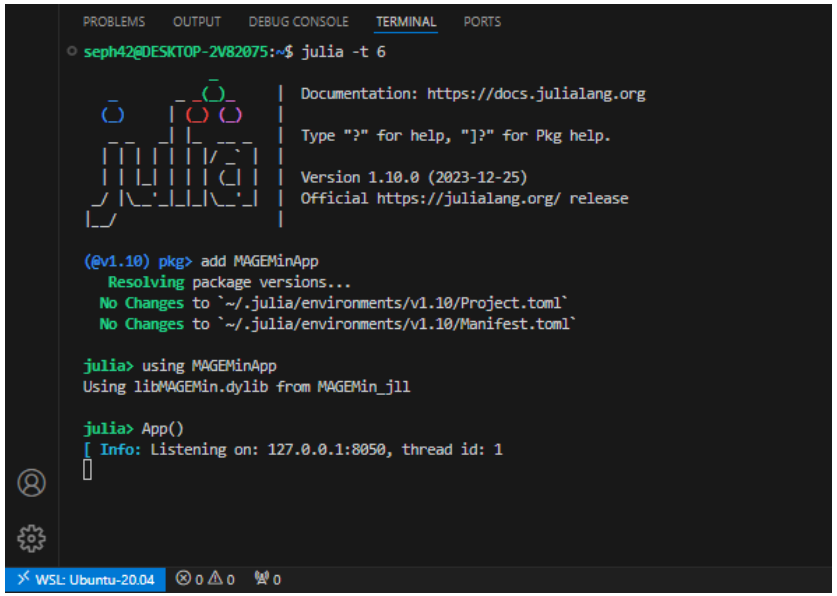
  julia –t 6 # where 6 is the number of core you want to use (depends on your machine, type
  # ‘versioninfo()’ to get more informations)



- In the terminal type ‘]’, this will open the package manager
- Type ‘add MAGEMinApp’, this will download and install MAGEMinApp
- Once installed, quite the package manager by typing ‘BACKSPACE’ key

Launch MAGEMinApp

- In the Julia terminal, type:
  'using MAGEMinApp'
  Then
  'App()'
- The following text will be displayed in the terminal:



- Copy and paste the address in your web-brower: