

# my Julia programming cheat sheet

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September 8, 2023

Compiled on September 8, 2023 at 10:39am

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## 1 installing 0.5

see <http://julialang.org/downloads/platform.html>

I did, on Linux mint, per above:

```
sudo apt-add-repository ppa:staticfloat/julianightlies
sudo apt-add-repository ppa:staticfloat/julia-deps
sudo apt-get update
sudo apt-get install julia
```

and now

```
~>julia

      _             _
     (_)          _(_) _      | A fresh approach to technical computing
    ( )          | ( ) ( )     | Documentation: http://docs.julialang.org
   _ _ _ _ _ _ _ | | _ _ _ _ _ | Type "?help" for help.
  | | | | | | | / _ _ _ _ _ | |
  | | | _ | | | | ( _ | | | | Version 0.5.0-dev+1491 (2015-11-27 16:54 UTC)
```

```

_/ | \__'_|_|_| \__'_| | Commit 41fb1ba (54 days old master)
|__/_/ | x86_64-linux-gnu

julia>

```

## 2 installing 0.3

Same steps as below for 0.2, from git. After installing I did

```

>./julia

      _
     _(_)_
    ( )   | ( ) ( )
   _ _   | | _ _ _
  | | | | | | | / _ ` | |
  | | | _ | | | ( | | |
_/ | \__'_|_|_| \__'_| | Commit 7e74621 (0 days old master)
|__/_/ | i686-linux-gnu

julia> Pkg.add("Winston")
INFO: Initializing package repository /home/me/.julia/v0.3
INFO: Cloning METADATA from git://github.com/JuliaLang/METADATA.jl
INFO: Cloning cache of BinDeps from git://github.com/JuliaLang/BinDeps.jl.git
INFO: Cloning cache of Cairo from git://github.com/JuliaLang/Cairo.jl.git
INFO: Cloning cache of Color from git://github.com/JuliaLang/Color.jl.git
INFO: Cloning cache of IniFile from git://github.com/JuliaLang/IniFile.jl.git
INFO: Cloning cache of Tk from git://github.com/JuliaLang/Tk.jl.git
INFO: Cloning cache of URIParser from git://github.com/Keno/URIParser.jl.git
INFO: Cloning cache of Winston from git://github.com/nolta/Winston.jl.git
INFO: Installing BinDeps v0.2.14
INFO: Installing Cairo v0.2.13
INFO: Installing Color v0.2.10
INFO: Installing IniFile v0.2.2
INFO: Installing Tk v0.2.13
INFO: Installing URIParser v0.0.2
INFO: Installing Winston v0.11.0
INFO: Building Cairo
INFO: Building Tk
INFO: Package database updated

julia> using Winston
julia> x = -2pi:0.1:2pi;
julia> plot(x, sin(x.^2)./x)

```

Here is screen shot



```
drwxrwxrwx 1 me me      0 Jan  7 17:56 .git/
drwxrwxrwx 1 me me 12288 Jan  7 17:56 src/
drwxrwxrwx 1 me me 12288 Jan  7 17:56 test/
drwxrwxrwx 1 me me      0 Jan  7 17:56 ui/
>
```

compile

```
>make
Cloning into 'deps/Rmath'...
remote: Reusing existing pack: 332, done.
remote: Total 332 (delta 0), reused 0 (delta 0)
Receiving objects: 100% (332/332), 247.59 KiB, done.
Resolving deltas: 100% (217/217), done.
Submodule path 'deps/Rmath': checked out '004e056e4562a8e8459b3d283f7de2f655f99a8b'
Cloning into 'deps/libuv'...
remote: Counting objects: 18022, done.
remote: Compressing objects: 100% (7331/7331), done.
remote: Total 18022 (delta 10650), reused 18000 (delta 10629)
Receiving objects: 100% (18022/18022), 10.53 MiB | 3.42 MiB/s, done.
Resolving deltas: 100% (10650/10650), done.
Submodule path 'deps/libuv': checked out '5bf16a9b86b2b059b20703d52c1dbba5979b6f5c'
Cloning into 'deps/openlibm'...
....
/usr/bin/ld: cannot find -lncurses
collect2: error: ld returned 1 exit status
*** Please ensure that the ncurses-devel package is installed on your OS, and try again. ***
make[2]: *** [/home/me/data/julia/usr/bin/julia-readline] Error 1
make[1]: *** [julia-release] Error 2
make: *** [release] Error 2
>
```

so I installed ncurses

```
>sudo apt-get install ncurses-dev
[sudo] password for me:
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'libncurses5-dev' instead of 'ncurses-dev'
The following extra packages will be installed:
  libtinfo-dev
Suggested packages:
  ncurses-doc
The following NEW packages will be installed:
  libncurses5-dev libtinfo-dev
0 upgraded, 2 newly installed, 0 to remove and 5 not upgraded.
```

```

Need to get 306 kB of archives.
After this operation, 1,146 kB of additional disk space will be used.
Do you want to continue [Y/n]? y
Get:1 http://archive.ubuntu.com/ubuntu/ raring/main libtinfo-dev i386 5.9-10ubuntu4 [93.1 kB]
Get:2 http://archive.ubuntu.com/ubuntu/ raring/main libncurses5-dev i386 5.9-10ubuntu4 [213 k
Fetched 306 kB in 0s (389 kB/s)
Selecting previously unselected package libtinfo-dev:i386.
(Reading database ... 229715 files and directories currently installed.)
Unpacking libtinfo-dev:i386 (from ../libtinfo-dev_5.9-10ubuntu4_i386.deb) ...
Selecting previously unselected package libncurses5-dev.
Unpacking libncurses5-dev (from ../libncurses5-dev_5.9-10ubuntu4_i386.deb) ...
Setting up libtinfo-dev:i386 (5.9-10ubuntu4) ...
Setting up libncurses5-dev (5.9-10ubuntu4) ...

```

use `g++ -print-search-dirs` to find which libraries are searched by `g++`

```

>locate libncurses
/lib/i386-linux-gnu/libncurses.so.5
/lib/i386-linux-gnu/libncurses.so.5.9
/lib/i386-linux-gnu/libncursesw.so.5
/lib/i386-linux-gnu/libncursesw.so.5.9
/usr/lib/vlc/plugins/gui/libncurses_plugin.so
/usr/share/doc/libncurses5
/usr/share/doc/libncursesw5
/var/lib/dpkg/info/libncurses5:i386.list
/var/lib/dpkg/info/libncurses5:i386.md5sums
/var/lib/dpkg/info/libncurses5:i386.postinst
/var/lib/dpkg/info/libncurses5:i386.postrm
/var/lib/dpkg/info/libncurses5:i386.shlibs
/var/lib/dpkg/info/libncurses5:i386.symbols
/var/lib/dpkg/info/libncursesw5:i386.list
/var/lib/dpkg/info/libncursesw5:i386.md5sums
/var/lib/dpkg/info/libncursesw5:i386.postinst
/var/lib/dpkg/info/libncursesw5:i386.postrm
/var/lib/dpkg/info/libncursesw5:i386.shlibs
/var/lib/dpkg/info/libncursesw5:i386.symbols

```

Ok, now try the build of Julia again, just type `make` again where it was left

```

>make
  LINK usr/bin/julia-readline
  CC ui/repl-basic.o
  LINK usr/bin/julia-basic
linalg.jl
OpenBLAS : Your OS does not support AVX instructions. OpenBLAS is using Nehalem kernels as a
Warning: replacing module Base

```



```

INFO: Installing PyCall v0.3.1
INFO: Installing PyPlot v1.1.0
INFO: REQUIRE updated

using PyPlot
ERROR: PyError (PyImport_ImportModule) <type 'exceptions.ImportError'>
ImportError('No module named matplotlib',)

in pyerr_check at /home/me/.julia/PyCall/src/exception.jl:58
in pyimport at /home/me/.julia/PyCall/src/PyCall.jl:85
in reload_path at loading.jl:146
in _require at loading.jl:59
in require at loading.jl:43
while loading /home/me/.julia/PyPlot/src/PyPlot.jl, in expression starting on line 32

```

Ok, so the above is no good. Try this now

```

julia> Pkg.add("Winston")
INFO: Cloning cache of BinDeps from git://github.com/JuliaLang/BinDeps.jl.git
INFO: Cloning cache of Cairo from git://github.com/JuliaLang/Cairo.jl.git
INFO: Cloning cache of IniFile from git://github.com/JuliaLang/IniFile.jl.git
INFO: Cloning cache of Tk from git://github.com/JuliaLang/Tk.jl.git
INFO: Cloning cache of URIParser from git://github.com/loladiro/URIParser.jl.git
INFO: Cloning cache of Winston from git://github.com/nolta/Winston.jl.git
INFO: Installing BinDeps v0.2.12
INFO: Installing Cairo v0.2.12
INFO: Installing IniFile v0.2.2
INFO: Installing Tk v0.2.10
INFO: Installing URIParser v0.0.1
INFO: Installing Winston v0.7.2
INFO: Building Cairo
INFO: Building Tk
INFO: REQUIRE updated

julia> using Winston
julia> x = -2pi:0.1:2pi;
julia> plot(x, sin(x.^2)./x)

```

it worked!

```
julia> using PyPlot
ERROR: PyError (PyImport_ImportModule) <type 'exceptions.ImportError'>
ImportError('No module named matplotlib',)
```

```
in pyerr_check at /home/me/.julia/PyCall/src/exception.jl:58
in pyimport at /home/me/.julia/PyCall/src/PyCall.jl:85
in reload_path at loading.jl:146
in _require at loading.jl:59
in require at loading.jl:43
while loading /home/me/.julia/PyPlot/src/PyPlot.jl, in ex
```

```
julia> Pkg.add("Winston")
INFO: Cloning cache of BinDeps from git://github.com/JuliaLang/BinDeps.jl
INFO: Cloning cache of Cairo from git://github.com/JuliaLang/Cairo.jl
INFO: Cloning cache of IniFile from git://github.com/JuliaLang/IniFile.jl
INFO: Cloning cache of Tk from git://github.com/JuliaLang/Tk.jl
INFO: Cloning cache of URIParser from git://github.com/JuliaLang/URIParser.jl
INFO: Cloning cache of Winston from git://github.com/nolta/Winston.jl
INFO: Installing BinDeps v0.2.12
INFO: Installing Cairo v0.2.12
INFO: Installing IniFile v0.2.2
INFO: Installing Tk v0.2.10
INFO: Installing URIParser v0.0.1
INFO: Installing Winston v0.7.2
INFO: Building Cairo
INFO: Building Tk
INFO: REQUIRE updated
```

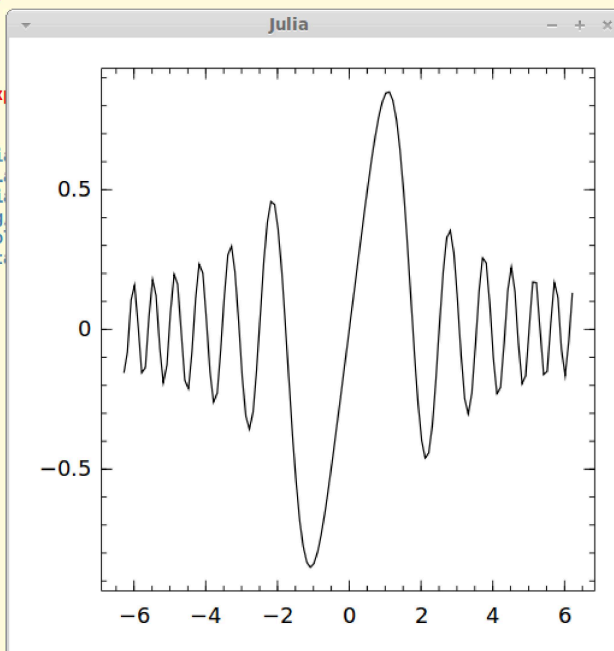
```
julia> using Winston
```

```
julia> x = -2pi:0.1:2pi;
```

```
julia> plot(x, sin(x.^2)./x);
```

```
julia> plot(x, sin(x.^2)./x)
```

```
julia> □
```



## 4 getting help on functions

use the methods command

```
julia> methods(plot)
# 8 methods for generic function "plot":
plot(p::FramedPlot,x::(Array{T<:Real,1},Array{S<:Real,1}),args...) at /home/me/.julia/Winston/src/plot_interfaces.jl:107
plot(p::FramedPlot,f::Function,a::Real,b::Real,args...) at /home/me/.julia/Winston/src/plot_interfaces.jl:107
plot(p::FramedPlot,fs::Array{Function,1},a::Real,b::Real,args...) at /home/me/.julia/Winston/src/plot_interfaces.jl:107
plot(p::FramedPlot,fs::(Function,Function),a::Real,b::Real,args...) at /home/me/.julia/Winston/src/plot_interfaces.jl:107
plot(p::FramedPlot,args...) at /home/me/.julia/Winston/src/plot_interfaces.jl:107
plot(fs::Array{Function,2},a::Real,b::Real,args...) at /home/me/.julia/Winston/src/plot_interfaces.jl:317
plot(f::Contourc) at /home/me/.julia/Winston/src/plot_interfaces.jl:317
plot(args...) at /home/me/.julia/Winston/src/plot_interfaces.jl:168
```

There is also help, but does not work for all functions like the above

```
julia> help(open)
Base.open(file_name[, read, write, create, truncate, append]) -> IOStream

julia> ?help
```



Welcome to Julia. The full manual is available at

<http://docs.julialang.org>

To get help, try `help(function)`, `help("@macro")`, or `help("variable")`.  
To search all help text, try `apropos("string")`. To see available functions,  
try `help(category)`, for one of the following categories:

- "Getting Around"
- "All Objects"
- "Types"
- "Generic Functions"
- "Syntax"
- "Iteration"
- "General Collections"
- "Iterable Collections"
- "Indexable Collections"
- "Associative Collections"
- "Set-Like Collections"
- "Dequeues"
- "Strings"
- "I/O"
- "Network I/O"
- "Text I/O"
- "Multimedia I/O"
- "Memory-mapped I/O"
- "Mathematical Operators"
- "Mathematical Functions"
- "Data Formats"
- "Numbers"
- "BigFloats"
- "Random Numbers"
- "Arrays"
- "Combinatorics"
- "Statistics"
- "Signal Processing"
- "Numerical Integration"
- "Parallel Computing"
- "Distributed Arrays"
- "System"
- "C Interface"
- "Errors"
- "Tasks"
- "Events"
- "Reflection"
- "Internals"
- "Collections and Data Structures"

```

"Constants"
"Filesystem"
"Graphics"
"Linear Algebra"
"BLAS Functions"
"Package Manager Functions"
"Profiling"
"Sorting and Related Functions"
"Sparse Matrices"
"Unit and Functional Testing"

```

## 5 How to show plot using Julia studio?

Need to use `display`, like this

```

using Winston
x=-2pi:0.1:2pi
display(plot(x,sin(x.^2)./x))

```

On Linux, from terminal, there is not need to use `display`, but on windows I found that it is needed, else the plot do not show up.

## 6 How to find the version number of Julia?

```

julia> VERSION
v"0.2.0"

```

```

julia>

```

To get more information:

```

julia> versioninfo(true)
Julia Version 0.2.0
Commit 05c6461 (2013-11-16 23:44 UTC)
Platform Info:
  System: Windows (x86_64-w64-mingw32)
  WORD_SIZE: 64
             Microsoft Windows [Version 6.1.7601]
  uname: MINGW32_NT-6.1 1.0.12(0.46/3/2) 2011-07-20 17:52 i686 unknown
Memory: 15.925960540771484 GB (8968.46484375 MB free)
Uptime: 272274.5636161 sec
Load Avg: 0.0 0.0 0.0

```

## 7 How to upgrade Julia?

First time you install Julia:

```
cd .... to where you want Julia folder to be
git clone git://github.com/JuliaLang/julia.git
cd julia
make
.... go take a long nap....
```

Now, to upgrade Julia anytime after the above, do

```
git pull && make
```

see [updating-an-existing-source-tree](#)