

my Julia programming cheat sheet

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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

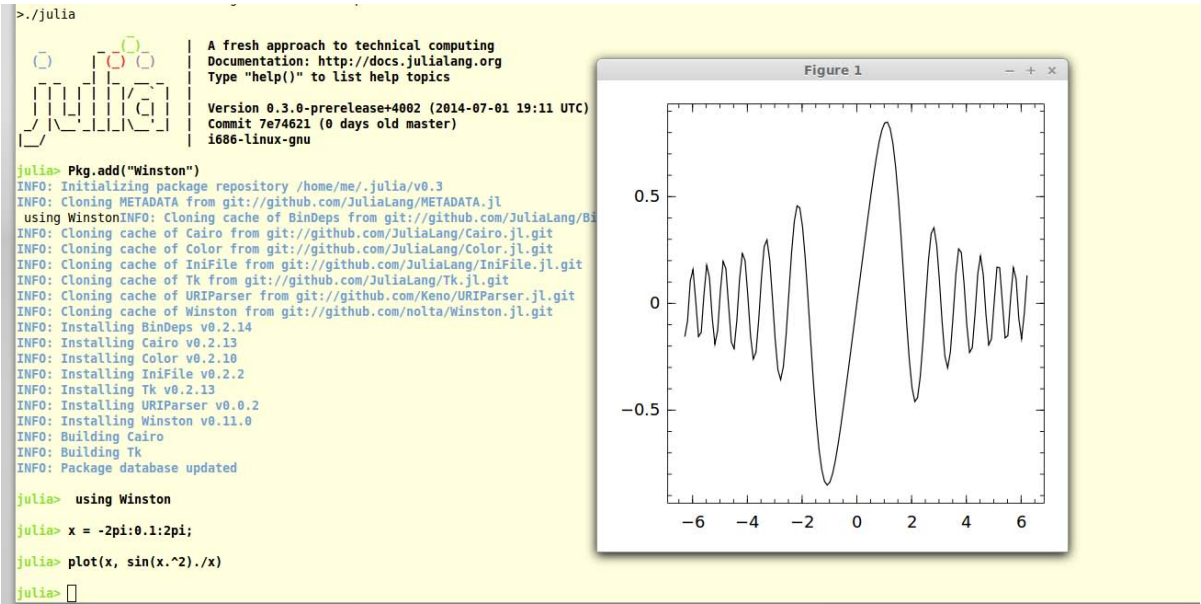
      _
     _(_) _
    ( )   | ( ) ( )
   _ _ _ | | _ _ _
  | | | | | | / _ ` | |
  | | | _ | | | ( _ | |
 _ / \ _ _ ' _ | _ \ _ _ ' _ |
| _ _ /                               | i686-linux-gnu

      | A fresh approach to technical computing
      | Documentation: http://docs.julialang.org
      | Type "help()" to list help topics
      |
      | Version 0.3.0-prerelease+4002 (2014-07-01 19:11 UTC)
      | Commit 7e74621 (0 days old master)

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



3 installing 0.2

get the source using git

```
>git clone git://github.com/JuliaLang/julia.git
Cloning into 'julia'...
remote: Reusing existing pack: 82408, done.
remote: Counting objects: 7, done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 82415 (delta 2), reused 4 (delta 0)
Receiving objects: 100% (82415/82415), 27.75 MiB | 4.92 MiB/s, done.
Resolving deltas: 100% (61567/61567), done.
Checking out files: 100% (567/567), done.
>lsd
drwxrwxrwx 1 me me      0 Jan  7 17:55 ./
drwxrwxrwx 1 me me  40960 Jan  6 02:41 ../
drwxrwxrwx 1 me me      0 Jan  7 17:56 julia/

>cd julia/
>lsd
drwxrwxrwx 1 me me      0 Jan  7 17:56 ./
drwxrwxrwx 1 me me      0 Jan  7 17:55 ../
drwxrwxrwx 1 me me 24576 Jan  7 17:56 base/
drwxrwxrwx 1 me me      0 Jan  7 17:56 contrib/
drwxrwxrwx 1 me me  8192 Jan  7 17:56 deps/
drwxrwxrwx 1 me me      0 Jan  7 17:56 doc/
drwxrwxrwx 1 me me      0 Jan  7 17:56 etc/
drwxrwxrwx 1 me me      0 Jan  7 17:56 examples/
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 '004
e056e4562a8e8459b3d283f7de2f655f99a8b'
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 '5
bf16a9b86b2b059b20703d52c1dbba5979b6f5c'
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 kB]
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 fallback, which may give poorer performance.
Warning: replacing module Base
```

it worked ! lets try it

```
>lsd
drwxr-xr-x 13 me me 4096 Jan 7 20:40 ./
drwxr-xr-x 4 me me 4096 Jan 7 19:15 ../
drwxr-xr-x 5 me me 4096 Jan 7 20:40 base/
drwxr-xr-x 6 me me 4096 Jan 7 19:15 contrib/
drwxr-xr-x 20 me me 4096 Jan 7 20:25 deps/
drwxr-xr-x 9 me me 4096 Jan 7 19:15 doc/
drwxr-xr-x 2 me me 4096 Jan 7 19:15 etc/
drwxr-xr-x 2 me me 4096 Jan 7 19:15 examples/
drwxr-xr-x 9 me me 4096 Jan 7 20:40 .git/
lrwxrwxrwx 1 me me 42 Jan 7 20:40 julia -> /home/me/data/julia/usr/bin/julia-
  readline*
drwxr-xr-x 4 me me 4096 Jan 7 20:27 src/
drwxr-xr-x 4 me me 4096 Jan 7 19:15 test/
drwxr-xr-x 2 me me 4096 Jan 7 20:40 ui/
drwxr-xr-x 8 me me 4096 Jan 7 19:16 usr/
>which julia
>./julia
OpenBLAS : Your OS does not support AVX instructions. OpenBLAS is using Nehalem
  kernels as a fallback, which may give poorer performance.

      _
     _(_) _ | A fresh approach to technical computing
  ( ) | ( ) ( ) | Documentation: http://docs.julialang.org
   _ _ _ | | _ _ _ | Type "help()" to list help topics
 | | | | | | / _ ` | |
 | | | _ | | | ( _ | | | Version 0.3.0-prerelease+860 (2014-01-07 22:41 UTC)
 _ / | \ _ ' _ | _ | \ _ ' _ | | Commit 0258864 (0 days old master)
 | _ / | | | | | | | | i686-linux-gnu

julia>
```

Let see if it will plot something

To update packages

```
julia> Pkg.update()
INFO: Initializing package repository /home/me/.julia
INFO: Cloning METADATA from git://github.com/JuliaLang/METADATA.jl
INFO: Updating METADATA...
INFO: Computing changes...
INFO: No packages to install, update or remove

julia> Pkg.add("PyPlot")
INFO: Cloning cache of Color from git://github.com/JuliaLang/Color.jl.git
INFO: Cloning cache of PyCall from git://github.com/stevengj/PyCall.jl.git
INFO: Cloning cache of PyPlot from git://github.com/stevengj/PyPlot.jl.git
INFO: Installing Color v0.2.6
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
```

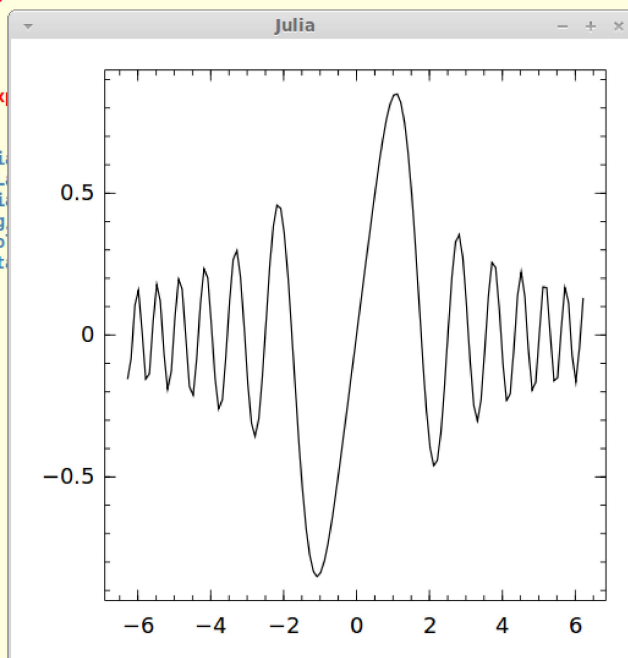
```
julia> using Winston
```

```
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:22
plot(p::FramedPlot,f::Function,a::Real,b::Real,args...) at /home/me/.julia/Winston/src/plot_interfaces.jl:26
plot(p::FramedPlot,fs::Array{Function,1},a::Real,b::Real,args...) at /home/me/.julia/Winston/src/plot_interfaces.jl:36
plot(p::FramedPlot,fs::(Function,Function),a::Real,b::Real,args...) at /home/me/.julia/Winston/src/plot_interfaces.jl:57
plot(p::FramedPlot,args...) at /home/me/.julia/Winston/src/plot.jl:107
plot(fs::Array{Function,2},a::Real,b::Real,args...) at /home/me/.julia/Winston/src/plot_interfaces.jl:68
plot(f::Contourc) at /home/me/.julia/Winston/src/plot_interfaces.jl:317
plot(args...) at /home/me/.julia/Winston/src/plot.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](#)