Upgrading from v0.6 to v0.7 (and 1.0)

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Just upgraded from v0.6 to v1.0. That is NOT a good idea if you have ever used julia before, either as an expert or not unless you are following the julia development on a daily basis. The more efficient way is to follow the instruction on the website, download v0.7 (will use for the semester of Fall 2017), and see all the warning messages about deprecated commands (there are a lot of them).

Here are a few noticeable changes. The order of the list is purely determined by the order of the problems I encountered during the upgrading process.

- Always only refer to manuals for v0.7 and above (not obvious if you just google a keyword)! For experts of Julia (only), the release note about breaking changes can sometimes be helpful https://docs.julialang.org/en/release-0.7/NEWS/

- The "Package" system is changed. Pkg.add("package name") no longer works. The new way is to type "]" which gives "|pkg>", and then do

  |pkg> add "package name"

- If you define a Module called MyMod and then do

  ```
  using MyMod
  ```

  it does not work. You need to use

  ```
  using ..MyMod
  ```

  In particular, "if you want to load a module defined in Main from Main you have to load it with import .X; to load it from a submodule of Main you have to do import ..X."

  See https://discourse.julialang.org/t/including-modules-in-julia-v0-7/12559/5

- @printf is deprecated. Need to load the package

using Printf

- Many linear algebra routines can be used in Julia directly before. This is because they are located in Base.LinAlg module. Now many are moved to the LinearAlgebra package. So

  using LinearAlgebra

  need to be placed in the code if linear algebra routines are to be used.

- eye(N) for identity matrix is deprecated. Now it is Matrix(1.0I,N,N)
- diagm(vec,n) to create a matrix with vec on its n-th sub-diagonal (if n=0 it is the diagonal) is deprecated. Now it is diagm(n=>vec)
- Matrix functions such as 'expm' and 'logm' are deprecated. Now they are 'exp' and 'log' directly.
- diagonalization 'eig' is replaced by 'eigen'
- 'qr' does not return (q,r), but a structure. So if F=qr(A) is called, F.Q and F.R are needed to retrieve the Q and R factors.
- 'full(A)' is deprecated. Now it becomes 'Matrix(A)'
- Special functions such as 'erf','erfc' is no longer available in Base. Need to load the 'SpecialFunctions' package.