

18.337/6.338 Problem Set 1

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Please contact `vchuravy [at] mit.edu` with questions or use piazza.

Exercise 1 – AWS & Anubis

Follow the instructions [1] on how to setup an AWS account and Anubis account and launch a compute instance.

Exercise 2

Create a 1000×1000 Markov matrix associated with the metropolis algorithm for $e^{-\frac{x^2}{2}}$ on $[-4, 4]$.

Setup Julia to start with `JULIA_NUM_THREADS=N` where `N` is the number of hardware threads on your machine (on linux use `nproc`). Familiarize yourself with `BenchmarkTools.jl` and use it to benchmark the power method: 1. Single threaded 2. Multi threaded 3. On a gpu (if possible)

Think about how to correctly benchmark GPU code (hin: memory transfer, asynchronous execution). Compare times and detail your benchmark methodology.

Exercise 4

The goal of this exercise is to get you used to Julia and how to read in data. Do the homework in [2], but explore Julia tooling and let us know if `IterableTables.jl` or `JuliaDB.jl` are better options.

We will answer questions as we go. Write down issues and troubles you run into and any solutions you discovered.

Links

- [1] https://github.com/alanelman/18.337_2017/blob/master/infrastructure_guide.md
- [2] <https://goo.gl/cfonaW>