DS 7347
High-Performance Computing (HPC) and Data Science
Session 13

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Research and Data Sciences Services
Office of Information Technology
Center for Research Computing
Southern Methodist University

Outline

Async Lecture: Tuesday, June 14, 2022

Session Question

Build Systems

- Make
- CMake

Readings and Assignments

Async Lecture: Tuesday, June 14, 2022

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- No class meeting on Tuesday, June 14, 2022
- Lecture will be recorded ahead of next Tuesday and will be posted in 2DS

Session Question

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Why are there so many different build systems?

Build Systems

Build Systems

- Script the build process
- Execute an efficient build process
  - Only build what is needed
  - Parallelize compilations
- Define tests
- Prerequisite for autmated builds and testing

Make

- Essentially ubiquitous on UNIX(-like) systems
- Fairly simple syntax for defining operations
- Easy to manually edit

Makefile Tutorial

High Performance Computing Linpack Benchmark

CMake

- Meta build system that itself does not build software
- Defines build requirements
- Exports to numerous other build systems
- Fairly simple syntax for defining operations
- Easy to manually edit

CMake Tutorial

CMake Example

PyTorch

Readings and Assignments

Readings and Assignments

Readings

- Makefile Tutorial
- CMake Tutorial

Lab

- Provide the following for application of your choice:
  1. `spack.yaml` that defines build environment
  2. Shell script that builds the application using Make or CMake
  3. The `Makefile` or `CMakeLists.txt`
- Commit to your class repo `assignments/lab_03.{yaml,sh,make or cmake}`.
- Due 12:00 AM Central, Tuesday, June 21, 2022