**Blue Waters Petascale Semester Curriculum v1.0**

**Unit 9: Optimization**

**Lesson 1: Cache Efficient Matrix Multiplication**

**Exercise Instructions for Students**

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*Browse and search the full curriculum at*[*http://shodor.org/petascale/materials/semester-curriculum*](http://shodor.org/petascale/materials/semester-curriculum)

*We welcome your improvements! You can submit your proposed changes to this material and the rest of the curriculum in our GitHub repository at*[*https://github.com/shodor-education/petascale-semester-curriculum*](https://github.com/shodor-education/petascale-semester-curriculum)

*We want to hear from you! Please let us know your experiences using this material by sending email to* [*petascale@shodor.org*](mailto:petascale@shodor.org)

1. Download the programs (matMult.c and blockMM.c), the Makefile, and the two BASH scripts.
2. Make sure the BASH scripts are executable (see the chmod command)
3. Generate the output files and plot their contents.
4. Explain why the plot looks the way it does.
5. Write code to generate a three-dimensional array.