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

**Unit 2: Parallel Computing Concepts**

**Lesson 5: Parallel Algorithms 2**

**Exercise Instructions for Students**

*Developed by Beau Christ for the Shodor Education Foundation, Inc.*



*Except where otherwise noted, this work by The Shodor Education Foundation, Inc. is licensed under CC BY-SA 4.0. To view a copy of this license, visit*[*https://creativecommons.org/licenses/by-sa/4.0*](https://creativecommons.org/licenses/by-sa/4.0)

*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. Spend a few minutes searching the internet for a scientific application that is advanced by HPC / parallel algorithms.
2. Describe a parallel algorithm to compute the maximum of ***n* numbers** with ***p* processes**.
3. Implement a sequential program for ***matrix multiplication***.
4. Implement a sequential program for ***odd-even transposition sort***.
5. Implement a sequential program for the ***trapezoidal rule***.