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

**Unit 5: MPI**

**Lesson 4: Performance Evaluation of MPI Programs**

**Instructor Guide**

*Developed by Mobeen Ludin for the Shodor Education Foundation, Inc.*



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

**Common Pitfalls for Students and Instructors**

1. Depending on when this lesson is used for teaching or learning, OpenMPI library implementation might have changed. Most of the time main MPI communication routines will stay the same and have the same naming conventions. However, it's possible that the developers will modify some routines such as those for error handling or MPI data types. Therefore, both instructors and students are encouraged to check the [MPI library documentation](https://www.open-mpi.org/doc/) for updates.
2. Deadlocks are the most common errors when using MPI caused by synchronous or blocking send/receive functions. One could either fix the issue by changing the order of operations, or use the non-blocking implementation of the same communication routines provided by MPI library.