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

**Unit 5: MPI**

**Lesson 2: Collective vs. Point-to-Point Communication**

**Sample Assessment**

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

1. What is the main difference between point-to-point communication and collective communication in MPI?
2. Why use MPI collective communication routines, instead of having programmers implement a tree/butterfly structure of their own for their applications?
3. Which process(s) in the MPI communicator calls the MPI collective communication routines, especially when data exchange is required?
4. Describe a scenario where an MPI application can make use of both point-to-point communication as well as collective communication routines?



*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)