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

**Unit 2: Parallel Computing Concepts**

**Lesson 4: Parallel Algorithms 1**

**Sample Assessment**

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

1. What does it mean if an algorithm is **embarrassingly parallel**?
2. Assume you have a vector with one million numbers. Assume you also have a CPU with 4 processing cores. How could you use all 4 cores to sum up all the values in the vector utilizing a parallel approach to speed up the computation?
3. For each of the following options, would a **serial** or **parallel** program be better suited for the task, and *why*?
   1. Simulating galaxy formations
   2. Simulating the spread of disease
   3. Predicting the path of a hurricane
   4. Computing the tip for a meal at a restaurant
   5. Simulating planetary movements
   6. Converting temperature from celsius to Fahrenheit



*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)