## Summative Assessment

This set of modules provides a sample summative assessment: a student project. An alternative type of student assessment might include an exam or quiz consisting of multiple-choice or free-response questions.

### Sample Summative Assessment: Student Project

- *Research component:* students will use internet resources to find a fluid dynamics problem they wish to explore with PLUTO.
- *Coding component*: students will identify an appropriate test problem to modify. Students will then edit the definitions.h, init.c and pluto.ini files to initialize the problem.
- *Testing component*: Students will test code at lower mesh resolution on development queue, and modify code as needed. Students will generate makefile (python script), compile with MI, schedule, run, and debug C code.
- *Simulation component:* Students will select appropriate simulation time and mesh resolution, then allocate cluster resources based on prior performance and scaling results. Students will schedule job on cluster, and analyze performance.
- *Visualization component:* students will visualize and animate simulation results in VisIt.
- *Analysis component:* Students will qualitatively and quantitatively analyse their results, and compare them to published results.
- *Discussion component:* students will critically analyze their code, their methodology and their results. Students will reflect upon what they learned and possible next steps.
- *Reference section:* students will properly cite appropriate references.