N-body Simulation

Description :

Write a sequential program, an MPI program, a Pthread program, a CUDA program, and an OpenMP program to simulate an astronomical *N*-body system, but in two-dimensions. The bodies are initially at rest. Their initial positions and masses are to be selected randomly (using a random number generator). Display the movement of the bodies using xlib or other GUI systems on your computers.

Bonus (10 points) :

Write an MPI + OpenMP program for a two-dimensional *N*-body simulation.

Please turn in a report includes:

- The design methodology
- Performance analysis
- What you have learned from this programming project