Design document

Create a design document that briefly describes your API, if modified from Assignment 4, and your design of the infrastructural enhancements described below. Identify essential design issues, and how your approach to them is manifested in your object-oriented design. Figures are welcome. This should be no more than 1 or 2 pages.

A computer has 4 cores and 3 different queues. Each core is responsible to get a task from the ready task queue, compute the task and deliver the solution of the task back to the computer. The computer is no longer responsible to compute the task (which it was in assignment 3), but only responsible to send back the task to space. The cores only communicate with the computer and the computer is now not depending on the tasks itself, and is able to be communicating with the Space whenever he wants. We believe that that this could help to hide the ameliorate communication latency because now cores can focus only computing the tasks.

If ameliorate communication latency occurs, we enable the computer task prefetching. The computer task prefetching is used to improve the overlapping communication latency.

Issues:

Concurrency and racing conditions are two of the essential design issues. It is important that all the resources distributed on the computer is thread safe. To approach this we decided to implement trade safe data structures, such as Block Linking Queue and Concurrenthashmap.

If one of the computers is shut down while computing tasks, the space will know which tasks that got lost and will make sure that the other computers (which is still up) compute the lost tasks.