| **Function** | **Description** | **Parameters** | | | **Returns** | | **Author** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Name** | **Type** | **Description** | **Type** | **Description** |
| initializeMPI | Initialize MPI | processorName | string \* | Pointer to location to store processor name | void | Nothing is returned | JJL |
| myRank | int \* | Pointer to location to store current process’s rank |
| numNodes | int \* | Pointer to location to store number of nodes in cluster |
| argc | int | Number of command line arguments |
| argv | char \*\* | Command line arguments |
| listFiles | Read in file list | path | string | File system path to look for data | vector<string> | List of files in path with a filename of five characters or more ending in .txt | JJL |
| distributeFiles | Distribute filenames from rank 0 | files | vector<string> | List of files to distribute | void | Nothing is returned | JJL |
| numWorkers | int | Number of workers (excluding rank 0) |
| receiveFiles | Receive filenames on worker nodes | myRank | int | Rank of worker | vector<string> | List of files for worker to process | JJL |
| importFiles | Import data on workers | files | vector<string> | Files to import | double \* | An array of imported data | JJL |
|  | Worker sort routine |  |  |  |  |  |  |
|  | Receive min and max on rank 0 |  |  |  |  |  |  |
|  | Transmit min and max from workers |  |  |  |  |  |  |
|  | Transmit bins from rank 0 |  |  |  |  |  |  |
|  | Receive bins on worker nodes |  |  |  |  |  |  |
|  | Receive bin count on rank 0 |  |  |  |  |  |  |
|  | Transmit bin count from workers |  |  |  |  |  |  |
|  | Adapt bin sizes |  |  |  |  |  |  |
|  | Determine uniformity on node 0 |  |  |  |  |  |  |
|  | Transmit uniformity results from rank 0 |  |  |  |  |  |  |
|  | Receive uniformity results on workers |  |  |  |  |  |  |
|  | Send elements from workers to other workers |  |  |  |  |  |  |
|  | Receive elements from other workers on worker |  |  |  |  |  |  |
|  | Export results |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |