Assignment 9: MapReduce MPI.

The purpose of this assignment is for you to learn more about

- Map Reduce
- how to write simple problems in Map Reduce MPI

Installing MapReduce-MPI on mamba

Download the archive to mamba. Uncompress it with `tar zcvf mrmpi.tar.gz`. go to the src directory. And compile the library with `CXX=mpicxx CC=mpicc LD=mpicxx make -e linux`.

Compile you own MapReduce MPI application by passing

- `-I path/to/mrmpi/src` at compile time
- and `path/to/mrmpi/src/libmrmpi_linux.a` at link time (make sure it is the last parameter of the linker).

To summarize, I compiled with: `mpicxx -O3 -I /users/esaule/prog/mrmpi/src -c -o foomrmpi.o foomrmpi.cpp` and linked with `mpicxx -o foomrmpi foomrmpi.o /users/esaule/prog/mrmpi/src/libmrmpi_linux.a`

1 Word Count

Question: write a MapReduce-MPI program that takes a list of filenames and count the number of time each word appears in all the files. Output the result in multiple files if needed (usually one file per rank).

Find some texts from project gutenberg on canvas.

2 Sorting

Question: Adapt the previous program to output the words in lexicographical order (order they would appear in a dictionary).

3 Histogram

Question: Adapt the previous program to generate a table of how many words appear x times.