MPI: Practical 4 Solutions

1 Scatter and Gather

Recall that element $A_{i,j}$ is at location `A[i + j*N]` in memory.

When allocating an array for each row on each process, the memory locations are completely distinct (and have no way to communicate with each other, except by MPI calls).

2 Transpose

The use of multiple `MPI_Scatter`s means you call it once for each column in the matrix. You will need to work out the memory address at the start of each column, and the elemnt in each row to which that column should be scattered.

2.1 Extension

See `transpose_alltoall.cpp`.

3 Calculation of π

See `montecarlo_pi_parallel.cpp` and `montecarlo_pi_parallel_long.cpp`.