Using the MPI, write a parallel code (using both python and Fortran) to calculate the product between a vector and a matrix. Consider a square NxN matrix, where the parameter N must be read from an external file. Consider the cases N=1000, 10000 and 20000. Write the first 100 elements of the resulting vector in an output file.

The code must include comments that explain how the procedure was implemented. In the report, in addition to an introduction to the problem, there must be an adequate description of how the algorithm was implemented. Furthermore, the speedup and the efficiency of the code must be shown and discussed.

A draft of the project must be submitted by the evening of Friday, June 27. The committee will take a few days to evaluate the project and possibly suggest changes to the work. The final version must be submitted by July 2 at 10:30 AM.