ACM40640/PH504 Practical 5

ICHEC

2022/23 Spring

1 Matrix Multiplication

Write a simple program in your favourite language to multiply two matrices. $C = A.B$

1. Use static arrays if you want. Obviously you will only see an improvement if the matrices are large but in this case it is the correct implementation that is important.
2. Generate random arrays A and B (use a fixed seed to ensure they are the same each time).
3. Use a sections construct to initialise them or if you are brave use tasks.
4. Then use a loop construct to determine C.
5. Write C to a file so that you can check if the program is thread-safe.

2 Find Primes

Find the Prime Number between 1 and N.

1. The easiest way to check if a number i is prime is to divide i by all the numbers $2 \rightarrow \sqrt{N}$ and check to see if the residual is 0.
2. Parallelize the code using OpenMP.
3. The process can be speedup by eliminating the multiples of the prime. Thus all even numbers except 2 are not prime for instance.