Homework 3

- No "Collaborative" effort allowed. Students are expected to work themselves.
- Its okay to discuss, but not okay to share code or ask others to code for you!!!
- Penalty for late submissions.
- *Severe penalty for academic dishonesty.*

1. Create two matrices, A and B, each of size (N  N). Initialise the matrices to random floating point numbers. Write a CUDA or OpenCL (choice is yours) for computing C = AB. Report the times taken for the codes. Vary the size of the problem for N = 100 ,1000 and 10000. Also report the specifications of the computer you are running this on. Also technical specifications of the GPU (if any).
2. Consider a function $f(x) = sin(x)$ in the interval $[0, \pi]$. The same one from Homework 1. Write either a CUDA or an OpenCL codes to numerically integrate the function using the
   (a) Trapezoidal Rule
   (b) Montecarlo Method

   The choice of CUDA or OpenCL depends on the graphics card you have access to and your personal choice.
3. Perform a convergence study, using different numbers of divisions (or sampling points), by comparing the integral obtained the numerical method with the analytical integral.
4. Report the average time taken by the accelerated code.
5. Submit your codes and a report.