# High Performance Computing

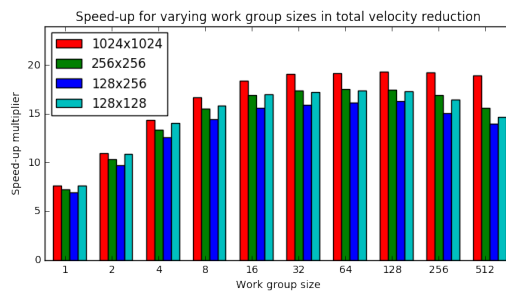Dylan Cope, Coursework 2 Report

Introduction

Starting with the serial optimisations performed in the first coursework, this report outlines the optimisations made using OpenCL to parallelise the program. For this coursework the Lattice-Boltzmann algorithm was run on four 2D grids of sizes 128x128, 128x256, 256x256 and 1024x1024 to analyse how the optimisations are effected by scaling. Figure 1 is the runtimes for each input with the starting codebase. These runtimes will be used as the baseline to assess future optimisations.

Figure 1
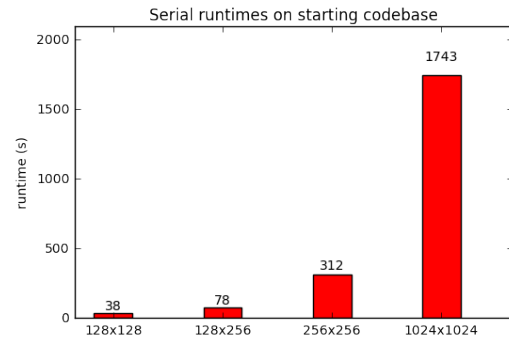
Basic OpenCL Kernels

Figure 2

Structure of Arrays

Figure 3