Problem 1

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Fall 2016

TDT4200 Parallel Computing
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Contents

1 Theory

In Flynn's taxonomy there are six classified computer architecture. SISD(Single Instruction Single Data), SIMD (Single Instruction Multiple Data), MIMD (Multiple Instruction Multiple Data), MISD (Multiple Instruction Single Data) , SPMD (Single Program Multiple Data) , MPMD (Multiple Program Multiple Data).

A program **doStuff()** performs 1000 iterations. The first 250 iterations are inherently serial, but you are able to fully parallelize the work done in the last 750 iterations. Describe the possible speedup in terms of $T_{parallel}$ and T_{serial} and p, according to Amdahl's law.

$$S = \frac{T_s}{T_p} \tag{1}$$

The parallelized implementation manage to parallelize 75 % of the iterations:

$$T_p = 0.25T_s + 0.75\frac{T_s}{p} \tag{2}$$

Using 2 in 1:

$$S = \frac{1}{0.25 + \frac{0.75}{p}} \tag{3}$$