Amdahl’s Law

\[
\text{Execution Time} = \frac{\text{Execution Time, Affected}}{\text{Amount of Improvement}} + \text{Execution Time, Unaffected}
\]

\[
= \frac{\text{Parallel code}}{\# \text{ of processors}} + \text{Serial code}
\]
Hardware Multithreading
"Hyper Threading"

<table>
<thead>
<tr>
<th>OS</th>
<th>1a</th>
<th>1b</th>
<th>2a</th>
<th>2b</th>
<th>3a</th>
<th>3b</th>
<th>4a</th>
<th>4b</th>
</tr>
</thead>
<tbody>
<tr>
<td>core 1</td>
<td>Core 2</td>
<td>core 3</td>
<td>core 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Instr/Data

SISD
MIMD
SIMD
MISD
SPMD - multi-thread

program
OpenMP

C++ Build → Settings →

\[ \text{C++ Compiler,} \]

\[ \text{C++ Linker} \]

\[ \text{Misc} \]

\[ -fopenmp \]

\[ -march=i386 \]