

# CS 411

## HW 7

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a.) \*Speed up =  $\frac{\text{New perf}}{\text{Old perf}} = \frac{28\text{ns}}{48\text{ns}} = \frac{7}{12} \approx 0.5833$

\*Not actual speedup (actual in b.)

\*realized bigger always is later

$\frac{48}{28\text{ns}} = \frac{12}{7} \approx 1.7143$

b.) instruction started/completed every  $14\text{ns}$  for single cycle & every  $4\text{ns}$  for pipelined

Speedup =  $\frac{4\text{ns}}{14\text{ns}} = \frac{2}{7} \approx 0.2857 \rightarrow \frac{14\text{ns}}{4\text{ns}} = \frac{7}{2} = 3.5$

c.) See HW7.txt

d.) Speed up for C:  $= \frac{15\text{ns}}{5\text{ns}} = \frac{1}{3} \approx 0.33$

↳ Single Cycle execution: every  $15\text{ns}$

↳ Pipelined: every  $5\text{ns}$

$\frac{15\text{ns}}{5\text{ns}} = 3$

