hw1

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1 Q1.7

$$CPI = \frac{\sum CycleCount}{\sum InstrCount} = \frac{45k + 150k + 32k + 3k}{45k + 75k + 8k + 1.5k} = 1.776$$

$$MIPS = \frac{CyclePerSecond}{CPI * 1Million} = \frac{400M}{1.776 * 1M} = 225.217$$

$$ExecutionTime = \frac{\sum InstrCount}{MIPS * 1Million} = \frac{45k + 75k + 8k + 1.5k}{225.217 * 1M} = 0.575ms$$

2 Q1.10

(1) Obviously, $10 = \frac{t}{0.3t/30+0.3t/20+Factori/10+(0.4-Factor)t}$, gives $Factor = 0.361 = 36.111\%$.
   (2) Obviously,

$$Result = \frac{0.2t}{0.3t/30 + 0.3t/20 + 0.2t/10 + 0.2t} = 0.816 = 81.632\%$$

, where t is the original execution time.

3 Q1.11

In PlanA, $CPI* = 1.25 * 0.7 + 3 * 0.04 + 5 * 0.26 = 2.295$
In PlanB, $CPI* = 1.25 * 0.7 + 20 * 0.04 + 3 * 0.26 = 2.455$
   因此，方案1更好.