

CS613 Spring 2012 Homework 1 Answers

1. $\text{ExTime}_A = \text{IC} \times \text{CPI}_A / \text{Freq}_A$

$$10 = \text{IC} \times \text{CPI}_A / 2 \times 10^9$$

$$\text{IC} \times \text{CPI}_A = 20 \times 10^9$$

$$\text{ExTime}_B = \text{IC} \times \text{CPI}_B / \text{Freq}_B$$

$$8 = \text{IC} \times (1.1 \times \text{CPI}_A) / \text{Freq}_B$$

$$8 = 1.1 \times 20 \times 10^9 / \text{Freq}_B$$

$$\text{So } \text{Freq}_B = 1.1 \times 20 \times 10^9 / 8 = 2.75 \text{ Ghz}$$

2. $\text{ExTime}_{\text{new}} = 10 [(1 - \text{FracEnh}) + \text{FracEnh}/5]$

a) $\text{ExTime}_{\text{new}} = 10 [.9 + .1/5] = 9.02$

b) $\text{ExTime}_{\text{new}} = 10 [.75 + .25/5] = 8.0$

c) $\text{ExTime}_{\text{new}} = 10 [.5 + .5/5] = 6.0$