CS613 Spring 2012 – Homework 1   Due 18 Jan 2012

1. A program executes on computer A in 10 seconds (CPU time). There is a second computer, B, that is identical to A except that: (1) B has a different clock frequency than A, and (2) The program's CPI on B is 10% higher than on A. Given that the program's CPU time on B is in 8 seconds and that A's clock frequency is 2GHz, calculate B's clock frequency.

2. A program's CPU time is 10 seconds on a particular computer. The computer's Arithmetic/Logic unit is replaced with a new unit that is 5 times faster than the original one. Calculate the new execution time assuming the following fractions of the program's instructions are arithmetic instructions:

   a. 10%
   b. 25%
   c. 50%