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CSE 140 Computer Architecture

Homework 2

a. P1 = 3GHz/1.5 = 2x10^9 instructions per second

P2 = 4GHz/2 = 2x10^9 instructions per second

They are the same speed in terms of instructions per second

b. P1 = 100= (n*1.5)/3*10^9 –> n = 2*10^11

New CPI = 1.5+(10/100)*1.5 = 1.65

50 = (2*10^11 *1.65)/x –> x = (2*10^11*1.65)/50 –> x = 6.6*10^9 Hz –> x = 6.6GHz

P2 = 100 = (n*2) /4*10^9 –> n = 2 * 10^11

New CPI = 2+(20/100)*2 = 2.4

50 = (2*10^11*2.4) /y –> y = (2*10^11*2.4)/50 –> y = 9.6*10^9 Hz –> y = 9.6GHz

Final clock speed of P1 and P2 are 6.6 GHz and 9.6 GHz.