1 Homework 1

1.1 Textbook Problem 4.15.5

Consider three different processors P1, P2, and P3 executing the same instruction set. P1 has a 3 GHz clock rate and a CPI of 1.5. P2 has a 2.5 GHz clock rate and a CPI of 1.0. P3 has a 4.0 GHz clock rate and has a CPI of 2.2.

(a) Which processor has the highest performance expressed in instructions per second? Answer:

(b) If the processors each execute a program in 10 seconds, find the number of cycles and the number of instructions.

(c) We are trying to reduce the execution time by 30% but this leads to an increase of 20% in the CPI. What clock rate should we have to get this time reduction?

1.2 Textbook Problem 4.15.8

1.3 Textbook Problem 4.15.10

1.4 Textbook Problem 4.15.13

1.5 Textbook Problem 4.15.14

1.6 Textbook Problem 4.15.15

1.7 Textbook Problem 4.15.16