1.6

P1: CPU TIME

P2: CPU TIME

a.

Global CPI P1

Global CPI P2

b.

clock cycles of P1

clock cycles of P2

1.9.1

1 processor:

2 processors:

Speed up 1.36

4 processors:

Speed up 2.5

8 processors:

Speed up 4.29

1.9.2

1 processor:

slow down 1.3

2 processors:

slow down 1.3

4 processors:

slow down 1.2

8 processors:

slow down 1.1

1.9.3

Assume x is the reduced number

Compute the above equation, we finally get

1.12.1

CPU time P1:

CPU time P2:

P2 runs faster than P1, but P1 has a larger clock rate than P2, in this case, it contradicts with the statement, the statement is false.

1.12.2

CPU time P1:

CPU time P2:

P2 can execute

1.14.1

Compute the equation, we get x = -4.12, thus it cannot be improved as expected

1.14.2

Compute the equation, we get x = 0.8

If we improve CPI of load and store by 0.8 times. It will run two times faster

1.14.3

ls: 4 \* 0.7 = 2.8

br: 2\*0.7 = 1.4

FP: 0.6

Int:0.6

Improves by 1.495 times.