1.13 Another pitfall cited in Section 1.10 is expecting to improve the overall performance of a computer by improving only one aspect of the computer. Consider a computer running a program that requires 250s, with 70s spent executing FP instructions, 85s executed L/S instructions, and 40s spent executing branch instructions

1.13.1 By how much is the total time reduced if the time for FP operations is reduced by 20%?

Total time: 250s

FP instructions = 70s \* .2 – 14 = 56s

Total time reduced to: 236s

1.13.2 By how much is the time for INT operations reduced if the total time is reduced by 20%?

Total time: 250s \* .2

New Total = 200s

INT operations = 55, 55 \* .2 = 11, 55-11 = 44s

1.13.3 Can the total time can be reduced by 20% by reducing only the time for branch instructions?

No, only 40s are used for branch instructions the total time needs to be reduced by 50s to be 20% lower. Not possible to reduce total time by 20% by only reducing branch instruction time.

1.8.2 Find the percentage of the total dissipated power comprised by static power and the ratio of static power to dynamic power for each technology.

Pentium 4 Prescott processor:

Total 1.25 V

Consumed 10W of static

Consumed 90W of dynamic

10/10+90 = 10% static power or 1:9 static to dynamic power

Ivy Bridge

Total .9 V

Consumed 30W static

Consumed 40W dynamic

30/30+40 = 3% static power, or 3:4 static to dynamic power