Computer Architecture

Lecture 1

September 11, 2019

Abstraction

- You'd interface with a 'black box' by using a 'knob of sorts'

Performance

Performance is affected by:

- Response time: *The execution of a specific task*
- Throughput

Power of a processor can be calculated using:
Power = Capacitive Power * Voltage^2

Elapsed time

- Total to complete task
- Determines System Performance

CPU time: Time spent ot do each job

CPU Clocking

- CPU exec time for program:

$$Cputime = Clockcycles \times Cycletime = \frac{CPUclockcycles}{Clockrate} \quad (1)$$

Instruction Count & Cycles Per Instruction (*CPI*)

$$ClockCycles = InstructCount \times CyclesPerInstruction \tag{2}$$

$$CPUTime = InstructCount \times CPI \times ClockCycleTime \tag{3}$$

$$CPUTime = \frac{InstructCount \times CPI}{ClockRate} \tag{4}$$