lecture 6
Rules

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$$\text{Performance} = \frac{1}{\text{execution time}}$$

$$\text{Performance} \propto \frac{1}{\text{Execution time}}$$

كل ما الـ exec. time يزيد بيقل الـ Perf. وده

$$\therefore \text{Performance}_x > \text{Performance}_y$$

$$\therefore \frac{1}{\text{Execution Time}_x} > \frac{1}{\text{Execution time}_y}$$

$$\therefore \text{Ex. Time}_y > \text{Ex. Time}_x$$

$$\therefore \text{Ex time}_x < \text{Ex. time}_x$$

(or)

$$\frac{\text{Perf}_x}{\text{Perf}_y} = n \quad (x \text{ is } n \text{ times faster than } y)$$

$$\frac{\text{Perf}_x}{\text{Perf}_y} = \frac{\text{Time}_y}{\text{Time}_x} = n \quad (x \text{ is } n \text{ times faster than } y)$$

* CPU — CPU — CPU

Execution time = Clock Cycles X cycle time

عدد كبير X رقم ثابت

بتاع ال CPU

Clock Cycle → هي ال 1 او ال 0 [illegible] اللي بعدها

$$= \frac{\#\ \text{Clock cycles}}{\text{Clock Rate}} = \frac{\#\ \text{of Cycles}}{1 / \text{clock cycle time}}$$

عدد ال cycle في الثانية ← Clock Rate

$$\#\ \text{of Clock Cycles} = \sum (CPI_i \times C_i)$$

CPI_i ← عدد ال cycles اللي ال Instruction تحتاجها

C_i ← عدد ال Instruction من نوع ال Category دي اللي في البرنامج

= Instruction Count X CPI

عدد كلي X ال Average بتاع كل ال Types كلهم

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CPU Time = Instruction Count X

CPI (Average # of cycles for Instructions) X

X Clock Cycle time

Time = $\frac{\#\text{Seconds}}{\text{Program}}$ in the

$= \frac{\#\text{Instructions}}{\text{Program}}$ in the

$= \frac{\#\text{Cycles}}{\text{Instruction}}$ in the

$= \frac{\#\text{Seconds}}{\text{Clockcycle}}$ for