Oct 13, 2010

Do
get next instr
decode
execute it
save result
end
1. Exploit parallelism
2. Exploit locality
3. Make common case fast
The probability that an item is in the cache is denoted by \( p \).

The overall access time \( t_{total} \) is given by:

\[
    t_{total} = p \cdot t_c + (1-p) \cdot t_m
\]

where \( t_c \) is the cache time and \( t_m \) is the main memory time.

Expanding further:

\[
    = p \cdot 1\text{ns} + (1-p) \cdot 10^{-3}\text{s}
\]

Therefore, the overall access time can be expressed as:

\[
    10^{-9} + (1-p) \cdot 10^{-3}\text{s}
\]

For \( p \geq 95\% \).
Moore's Law Observation

Newton's Law

Prediction

# transition on chair

2y

y

x X + 18 mm b

Time