

Answer on Question #45883, Programming, Other

Problem.

In demand paging 200ns is required to satisfy a memory request if the page is in the memory. If the page is not in memory it takes 7ms if free frame is available, 15ms if page to be swapped. Calculate the Effective Access time if page fault rate is 5% and 60% of time the page has to be replaced.

Solution.

1 millisecond = 1000000 nanoseconds.

EAT (Effective Access Time)

$$= (1 - \text{Fault rate})(\text{Memory access time}) + \text{Fault rate}(\text{Memory access time} + (1 - \text{Rate of time for page swapping})(\text{Frame is available time}) + (\text{Rate of time for page swapping})(\text{Page to be swapped time}))$$

Hence $EAT = 0.95 \cdot 200 + 0.05(200 + (1 - 0.6) \cdot 7 \cdot 10^6 + 0.6 \cdot 15 \cdot 10^6) = 200 + 140000 + 450000 = 590200$ ns.

Answer: 590200 ns.