Digital Electronics and Microprocessor Systems (ELEC211)

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Week 5 – Lecture 13
Microprocessor Systems

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Question

What is the average memory access time when

- the hit ratio is 0.95,
- the cache access time is 10 nsec,
- the main memory access time is 80 nsec and
- the extra time delay due to the cache control and routing circuits is 12 nsec?

Answer

$$t_{ave} = h \times t_c + (1 - h) \times t_m + a$$

$$t_{ave} = 0.95 \times 10 + (1 - 0.95) \times 80 + 12$$
$$= 0.95 \times 10 + 0.05 \times 80 + 12$$
$$= 9.5 + 4 + 12$$
$$= 25.5 \text{ nsec}$$