Assigment-8

1.

Assuming a 1-KB page size, what are the page numbers and offsets for the following address references (provided as decimal numbers):

a. 3085

b. 42095

c. 215201

A:

a. page:3, offset:13

b. page:41, offset:111

c. page:210, offset:161

2.

Consider a logical address of 256 pages with a 4-KB page size, mapped onto a physical memory of 64 frames.

a. How many bits are required in the logical address?

b. How many bits are required in the physical address?

A:

a. 12 + 8 = 20bits.

b. 12 + 6 = 18bits.

3.

Consider a computer system with a 32-bit logical address and 4-KB page size. The system supports up to 512 MB of physical memory. How many entries are there in a conventional single level page table?

A:

2^32 / 2^12 = 2^20 pages

4.

Consider a paging system with the page table stored in memory.

a. If a memory reference takes 50 nanoseconds, how long does a paged memory reference take?

b. If we add TLBs, and 75 percent of all page-table references are found in the TLBs, what is the effective memory reference time? (Assume that finding a page-table entry in the TLBs takes zero nanoseconds, if the entry is present.)

A:

a. 50 + 50 = 100ns

b. 50 \* 75% + 100 \* 25% = 62.5ns