

2024 Operating Systems Assignment 5

- 8.13 The BTV operating system has a 21-bit virtual address, yet on certain embedded devices, it has only a 16-bit physical address. It also has a 2-KB page size. How many entries are there in each of the following?
- a. A conventional, single-level page table
 - b. An inverted page table
- 8.16 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 each of the following?
- a. A conventional single-level page table.
 - b. An inverted page table
- 8.17 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 2 nanoseconds, if the entry is present.)

8.20 Consider the following segment table:

Segment	Base	Length
0	219	600
1	2300	14
2	90	100
3	1327	580
4	1952	96

What are the physical addresses for the following logical addresses?

- a. 0, 430
- b. 1, 10
- c. 2, 500
- d. 3, 400
- e. 4, 112