CS350 Operating Systems

In-Class Problems: Simple Paging

Consider a paging-based virtual memory system with 32-bit virtual and physical addresses, and a page size of 2^{12} bytes (4KB). Suppose that process P is running. P uses only 128KB of virtual memory. The first 5 entries of P's page table are shown below.

Page #	Frame #	Valid
0x0	0x00234	1
0x1	0x00235	1
0x2	0x0023f	1
0x3	0x00ace	1
0x4	0x00004	1

Answer the following questions:

Q1: What is the total number of entries in P's page table?

Q2: How many of the entries are valid?

Q2: Which physical addresses correspond to each of these virtual addresses?

- 0x00001a60
- 0x00000fb5
- 0x00004664

Q3: If the page size were 16KB instead of 4KB, how many entries would there be in P's page table? How many bits of each virtual address would be used for the offset, and how many for the page number?