

CSCE 451/851 Homework 4

Solutions

Problem 2 (100 points)

Consider a virtual memory paging system with the following parameters: 2^{16} bytes of physical memory; page size of 2^{12} bytes; 2^{20} pages of logical address space.

1. **(35 points)** How many bits are in a logical address?
There are 20 bits for the page number and 12 bits for the offset. So the logical address is 32 bits.
2. **(35 points)** How many bits in the physical address specify the frame?
There are $2^{16}/2^{12} = 2^4$ frames. So 4 bits are needed to specify the frame.
3. **(30 points)** How many entries are in the page table?
There are 2^{20} pages of logical address, so there must be 2^{20} entries.