Paging: Introduction

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1 Before doing any translations, use the simulator to study how linear page tables change size given different parameters. How should page-table size change as the address space grows? As the page size grows? Why not use big pages in general?

The page-table grows as the address space grows but shrinks as the page size grows. The problem with using big pages is that it requires loading the entire page into memory, which is wasteful if only a small part of it is needed.

2 What happens as you increase the percentage of pages that are allocated in each address space?

As the percentage of pages that are allocated in the address space increases, the number of valid entries increases.

3 Which of the following parameter combinations are unrealistic? Why?

Ignoring the absolute sizes of the memory and address spaces, the combination that is the least realistic is the third one, since the address space for a single process is half the size of physical memory. Taking into account absolute sizes, the first one is so small as to be completely useless.

4 Use the program to try out some other problems. Can you find the limits of where the program doesn't work anymore?

The page size must be equal to or smaller than the size of the address space. The address space must be strictly smaller than physical memory.