CSCI 3323 (Principles of Operating Systems), Fall 2020

Reading Quiz 5

Credit: 10 points.

1 Reading

Be sure you have read, or at least skimmed, sections 3.1 through 3.3 of Chapter 3.

2 Instructions

Answer the questions below using *only* the course textbook (i.e., no Web searches). Please work independently rather than in groups, and include the Honor Code pledge in what you turn in, either the full pledge or just the word "pledged".

You may write out your answers by hand and scan them, or you may use a word processor or other program, but please submit a PDF or plain text via e-mail to my TMail address. (No links to shared files on Google Drive please.) Please use a subject line that mentions the course and the assignment (e.g., "csci 3323 quiz 5" or "O/S quiz 5").

3 Questions

1. (2 points) A system designed to run a single program doesn't need an operating system to manage processes or memory. Is there still value in having one?

2. (2 points) The textbook describes a simple scheme for address translation using base and limit registers; how does this help with memory protection (i.e., protecting each process's memory from other processes)?

3. (2 points) The textbook says it is possible to run programs too large for physical memory even without paging. How?

4. (2 points) For systems where the page table is large, it's impractical to keep the whole table in CPU registers, but if you don't, there are performance implications. How so, and what's a common fix?

5. (2 points) An inverted page table is a big win with regard to space usage. What's the downside? Can it be mitigated, and if so how?