

COMP 304: Assignment 3

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1 Problem 1

Which of these algorithms has the most efficient memory usage?

first-fit Algorithm

best-fit Algorithm

worst-fit Algorithm

2 Problem 2

A system with 30-bit logical (virtual) address uses a two-level page table. Logical addresses are split into an 8-bit top-level page table field, a 12-bit second-level page table field, and an offset

What is the size of a page in this system ?

How many pages are there in the address space ?

3 Problem 3 Paging

3.a 5 frames for process

LRU

Page fault number:

FIFO

Page fault number:

Optimal

Page fault number:

3.b 6 frames for process

LRU

Page fault number:

FIFO

Page fault number:

Optimal

Page fault number:

4 Problem 4 Pure Demand Paging

- 4.a Page fault rate when a process first starts execution
- 4.b Page fault rate once the working set for a process is loaded into memory
- 4.c Page fault rate when a process changes its locality and its new working set size is larger than the size of free memory