Increase to 50 physical frames:

FIFO: Page Faults: 965, Page Faults Rate: 48.25%

LRU: Page Faults: 962, Page Faults Rate: 48.10%

Second Chance: Page Faults: 965, Page Faults Rate: 48.25%

Enhanced Second Chance: Page Faults: 999, Page Faults Rate: 49.95%

Increase to 200 physical frames:

FIFO: Page Faults: 100, Page Faults Rate: 5%

LRU: Page Faults: 100, Page Faults Rate: 5%

Second Chance: Page Faults: 100, Page Faults Rate: 5%

Enhanced Second Chance: Page Faults: 100, Page Faults Rate: 5%

With 50 Frames:

The page fault rates are relatively close across all algorithms, with Enhanced Second Chance slightly higher. This similarity suggests that, for this workload and frame size, the choice of algorithm does not drastically affect the overall efficiency in handling page faults. The slightly higher rate for Enhanced Second Chance might be due to its preference for keeping modified pages in memory longer, which could be less optimal for this specific set of page references.

With 200 Frames:

All algorithms show a significant decrease in page fault rates to 5%, indicating that when the number of frames is substantially increased, the page fault rate drops significantly across the board. This decrease reflects the fact that with ample memory (in this case, frames), the efficiency differences between these algorithms diminish because the large memory capacity can accommodate more of the working set or even the entire set, drastically reducing the need for page replacements.

Why Do These Observations Occur?

Increased Frame Count Reduces Page Faults: More frames mean more pages can be kept in memory, reducing the frequency of page faults for all algorithms. The effect is especially pronounced when the frame count is increased to 200, highlighting the importance of having sufficient physical memory to accommodate the working set of the processes.

Algorithm Efficiency Becomes Less Distinguishable: With enough memory to reduce competition for frames (as seen with 200 frames), the differences in how each algorithm manages memory become less impactful on performance. Essentially, when memory is not a limiting factor, the efficiency of memory usage strategies (such as LRU or Second Chance) becomes less critical, as evidenced by the uniform page fault rates across all algorithms at 200 frames.

These results underscore the importance of adequate memory allocation to minimize page faults and illustrate that the benefits of sophisticated page replacement strategies are most noticeable when memory is a scarce resource.