11/26-12/3 回家作業

10.8 Consider the following page reference string:

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.

How many page faults would occur for the following replacement algorithms, assuming one, two, three, four, five, six, and seven frames? Remember that all frames are initially empty, so your first unique pages will cost one fault each.

* LRU replacement
* FIFO replacement
* Optimal replacement

# Answer:

|  |  |  |  |
| --- | --- | --- | --- |
| N umber of frames | LRU | FIFO | Optimal |
| 1 | 20 | 20 | 20 |
| 2 | 18 | 18 | 15 |
| 3 | 15 | 16 | 11 |
| 4 | 10 | 14 | 8 |
| 5 | 8 | 10 | 7 |
| 6 | 7 | 10 | 7 |
| 7 | 7 | 7 | 7 |

10.9 Consider the following page reference string:

7, 2, 3, 1, 2, 5, 3, 4, 6, 7, 7, 1, 0, 5, 4, 6, 2, 3, 0, 1.

Assuming demand paging with three frames, how many page faults would occur for the following replacement algorithms?

* LRU replacement
* FIFO replacement
* Optimal replacement

# Answer:

* 18
* 17
* 13

10.13 Consider a demand-paged computer system where the degree of multi-programming is currently fixed at four. The system was recently measured to determine utilization of the CPU and the paging disk. Three alternative results are shown below. For each case, what is happening? Can the degree of multiprogramming be increased to increase the CPU utilization? Is the paging helping?

* + 1. CPU utilization 13 percent; disk utilization 97 percent
    2. CPU utilization 87 percent; disk utilization 3 percent
    3. CPU utilization 13 percent; disk utilization 3 percent

# Answer

1. Thrashing is occurring.

發生輾轉現象

1. CPU utilization is sufficiently high to leave things alone and increase the degree of multiprogramming.

CPU使用率夠高，可以不必考量輾轉現象發生的可能性並提高多元程式的程度

1. Increase the degree of multiprogramming.

可提高多元程式的程度