Programming Problems 1110590450 歐佳昀

```
gcc <filename> -c <output>
```

chap. 10

- 10.44*: Write a program that implements the FIFO, LRU, and optimal (OPT) page-replacement algorithms presented in Sec.10.4.
    - Have your program initially generate a random page-reference string where page numbers range from 0 to 9.
    - Apply the random page-reference string to each algorithm, and record the number of page faults incurred by each algorithm.
    - Pass the number of page frames to the program at startup.
    - You may implement this program in any programming language of your choice.

    ```
    ./c10_44 3
    ```

    - (show on next page)

```
PS C:\Users\USER\OneDrive - 逢甲大學\桌面\OS H4\personal_program> ./c10_44 3
page reference string is :
 8  0  0  0  1  0  9  2  6  1  0  8
ref : 8 0 0 0 1 0 9 2 6 1 0 8
 [8 f]     8 -1 -1
 [0 f]     8  0 -1
           8  0 -1
           8  0 -1
 [1 f]     8  0  1
           8  0  1
 [9 f]     9  0  1
 [2 f]     9  2  1
 [6 f]     9  2  6
 [1 f]     1  2  6
 [0 f]     1  0  6
 [8 f]     1  0  8

FIFO page fault = 9

ref : 8 0 0 0 1 0 9 2 6 1 0 8
 [8 f]     8 -1 -1
 [0 f]     8  0 -1
           8  0 -1
           8  0 -1
 [1 f]     8  0  1
           8  1  0
 [9 f]     1  0  9
 [2 f]     0  9  2
 [6 f]     9  2  6
 [1 f]     2  6  1
 [0 f]     6  1  0
 [8 f]     1  0  8

LRU page fault = 9

ref : 8 0 0 0 1 0 9 2 6 1 0 8
 [8 f]     8 -1 -1
 [0 f]     8  0 -1
           8  0 -1
           8  0 -1
 [1 f]     8  0  1
           8  0  1
 [9 f]     9  0  1
 [2 f]     2  0  1
 [6 f]     6  0  1
           6  0  1
           6  0  1
 [8 f]     8  0  1

OPT page fault = 7
```

chap. 11

- 11.27*: Write a program that implements the following disk-scheduling algorithms:
    - (a) FCFS

- (b) SCAN
- (c) C-SCAN

Your program will service a disk with 5,000 cylinders numbered 0 to 4,999. The program will generate a random series of 1,000 cylinder requests and service them according to each of the algorithms listed above. The program will be passed the initial position of the disk head (as a parameter on the command line) and report the total amount of head movement required by each algorithm.

```
./c11_27 2500
```