| University Mohamed Khider Biskra<br>Faculty of exact sciences and natural and life sciences.<br>Department of Computer Science | | | |
|---|---|---|---|
| **Level** : 2LMD | **Date** : April 2024 | **Module** : Operating Systems 1 | **Duration : 2** sessions |

# PW3: Page replacement algorithms

To fully understand how page replacement algorithms work, you are asked to implement the following algorithms:

- **LRU** (Least Recently Used page): use the counter method, where the victim page is that which has a farthest index in the past of the page sequence.
- **Optimal**: search the victim page which has a farthest index in the future of the page sequence.
- **Second chance**: use a reference bit R with frames, the victim page is that which selected with FIFO and has R=0, if R≠0 then we modify it to 0 and continue.

In order to carry out this simulation, the following points must be taken into account:

**Session1:**

- Reading of the chain of references (sequence of page numbers).
- Specify the memory size and the page size, and then calculate the number of memory frames.
- Choice of the replacement algorithm (From a menu) and calculate the number of page faults by specifying the different states of the memory.
-Write the corresponding program for algorithm: LRU, taking into account the necessary data structures and the algorithm principle described above.

**Session2:**

-Write the corresponding program for algorithms: Optimal and Second chance, taking into account the necessary data structures and the algorithm principles described above.
-Display the number of page faults and specifying the different states of the memory.
-Application on several examples.

**Note**: Any other algorithm principle used, is not acceptable for consultation.

**Good luck**