**Problem Statement 8**

**Designing a simulator on Linux to implement the functionality of FIFO, LRU, and OPTIMAL page replacement algorithms.**

**Objectives:** Simulator should accept number of physical frames, list of page accesses, and the page replacement algorithm and output the number of faults and whether each access was a fault or not. Implementation of FIFO, LRU, and OPTIMAL page replacement algorithms. There must be an input file (\*.txt) in the directory. The first line in the file should contain the number of physical frames. Each subsequent line represents one page access, and contains exactly one integer, which represents the page number being accessed.All values must be non-negative and fit in the int data type of the system.

**Description**: Page replacement is needed in the operating systems that use virtual memory using Demand Paging. As we know that in Demand paging, only a set of pages of a process is loaded into the memory. This is done so that we can have more processes in the memory at the same time.

When a page that is residing in virtual memory is requested by a process for its execution, the Operating System needs to decide which page will be replaced by this requested page. This process is known as page replacement and is a vital component in virtual memory management. The various page replacement algorithms like FIFO, Optimal page replacement, LRU, LIFO, and Random page replacement help the operating system to decide which page to replace. The primary objective of all the page replacement algorithms is to minimize the number of page faults.