**page replacement algorithms Implementation**

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# Description

## Functionality

The program implements the FIFO, LRU, LFU, Second-Chance, Enhance Second-Chance, and optimal page replacement algorithms.

## Language Used

We have decided on using java because of its console application and its structured and object-oriented programming paradigm.

## Data Structures Used

## The following data structures have been used:

1. Array List

Array List has been used because it can expand to represent the user input; and for its built-in functionality, which facilitate the coding process.

## Assumptions

1. The page numbers range from 0 to 99.
2. The number of page frames can vary from 1 to 20.
3. The Modification Bit is randomized at the beginning.
4. The Reference Bit is initialized to zero.

# 3.0 Input/output

Input:

1. Number of Frames

2. Number of Pages

3. Reference String

P.S: This is a system Input not a user Input (Randomly generated)

Output:

For each Algorithm:-

1. The Algorithm name.

2. The page replacements in sequence.

2. The number of Faults.

At the end:-

1. The best algorithm for this reference string, and number of Faults.

**4.0 TESTING**

**1st Test Case:Number of Frames: 7Number of Pages: 44Reference String: 55,68,84,49,85,53,79,4,66,58,27,73,49,93,76,64,97,21,66,33,2,5,55,5,64,26,80,15,21,89,27,65,98,2,30,40,42,34,47,86,20,77,23,5 FIFO: Page Faults: 43LRU: Page Faults: 43LFU: Page Faults: 42Second Chance: Page Faults: 43Enhanced Second Chance: Page Faults: 41Optimal: Page Faults: 38The best algorithm for this reference string is Optimal, Page Faults: 38------------------------------------------------------------------------------------------------------2nd Test Case:Number of Frames: 8Number of Pages: 25Reference String: 50,44,68,32,76,45,70,30,86,8,34,98,60,30,8,86,36,24,12,46,98,32,44,5,4 FIFO: Page Faults: 21LRU: Page Faults: 22LFU: Page Faults: 22Second Chance: Page Faults: 22Enhanced Second Chance: Page Faults: 23Optimal: Page Faults: 19The best algorithm for this reference string is Optimal, Page Faults: 19**

**3rd Test Case:Number of Frames: 12Number of Pages: 32Reference String: 62,88,50,24,81,8,96,54,40,44,49,1,91,2,45,87,91,60,8,49,86,43,25,4,79,26,40,53,16,75,22,65 FIFO: Page Faults: 29LRU: Page Faults: 29LFU: Page Faults: 29Second Chance: Page Faults: 29Enhanced Second Chance: Page Faults: 30Optimal: Page Faults: 28The best algorithm for this reference string is Optimal, Page Faults: 28**