

Page Replacement – LRU-12

```
import java.util.*;  
  
public class LRU_PageReplacement {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
  
        System.out.print("Enter number of frames: ");  
        int frames = sc.nextInt();  
  
        System.out.print("Enter number of pages: ");  
        int n = sc.nextInt();  
  
        int[] pages = new int[n];  
        System.out.println("Enter page reference string:");  
        for (int i = 0; i < n; i++) pages[i] = sc.nextInt();  
  
        ArrayList<Integer> frame = new ArrayList<>(frames);  
        int pageFaults = 0;  
  
        for (int i = 0; i < n; i++) {  
            int page = pages[i];  
  
            if (!frame.contains(page)) {  
                if (frame.size() == frames) {  
                    int lru = Integer.MAX_VALUE, indexToRemove = -1;  
                    for (int f = 0; f < frame.size(); f++) {  
                        int lastUsed = -1;  
                        for (int j = i - 1; j >= 0; j--) {  
                            if (pages[j] == frame.get(f)) { lastUsed = j; break; }  
                        }  
                        if (lastUsed != -1) {  
                            indexToRemove = f;  
                            break;  
                        }  
                    }  
                    frame.remove(indexToRemove);  
                }  
                frame.add(page);  
                pageFaults++;  
            }  
        }  
        System.out.println("Page Faults: " + pageFaults);  
    }  
}
```

```
        if (lastUsed < lru) {  
            lru = lastUsed;  
            indexToRemove = f;  
        }  
        frame.set(indexToRemove, page);  
    } else {  
        frame.add(page);  
    }  
    pageFaults++;  
}  
  
System.out.print("Frames: ");  
for (int f = 0; f < frames; f++) {  
    if (f < frame.size()) System.out.print(frame.get(f) + " ");  
    else System.out.print("- ");  
}  
System.out.println();  
}  
  
System.out.println("\nTotal Page Faults = " + pageFaults);  
}
```