**LRU:**

**Program:**

import java.io.\*;

import java.util.\*;

public class LRU {

public static void main(String[] args) throws IOException {

BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

int frames, pointer = 0, hit = 0, fault = 0, ref\_len;

Boolean isFull = false;

int buffer[];

ArrayList<Integer> stack = new ArrayList<Integer>();

int reference[];

int mem\_layout[][];

System.out.println("Please enter the number of Frames: ");

frames = Integer.parseInt(br.readLine());

System.out.println("Please enter the length of the inputs: ");

ref\_len = Integer.parseInt(br.readLine());

reference = new int[ref\_len];

mem\_layout = new int[ref\_len][frames];

buffer = new int[frames];

for (int j = 0; j < frames; j++)

buffer[j] = -1;

System.out.println("Please enter the inputs: ");

for (int i = 0; i < ref\_len; i++) {

reference[i] = Integer.parseInt(br.readLine());

}

System.out.println();

for (int i = 0; i < ref\_len; i++) {

if (stack.contains(reference[i])) {

stack.remove(stack.indexOf(reference[i]));

}

stack.add(reference[i]);

int search = -1;

for (int j = 0; j < frames; j++) {

if (buffer[j] == reference[i]) {

search = j;

hit++;

break;

}

}

if (search == -1) {

if (isFull) {

int min\_loc = ref\_len;

for (int j = 0; j < frames; j++) {

if (stack.contains(buffer[j])) {

int temp = stack.indexOf(buffer[j]);

if (temp < min\_loc) {

min\_loc = temp;

pointer = j;

}

}

}

}

buffer[pointer] = reference[i];

fault++;

pointer++;

if (pointer == frames) {

pointer = 0;

isFull = true;

}

}

for (int j = 0; j < frames; j++)

mem\_layout[i][j] = buffer[j];

}

for (int i = 0; i < frames; i++) {

for (int j = 0; j < ref\_len; j++)

System.out.printf("%3d ", mem\_layout[j][i]);

System.out.println();

}

System.out.println("The number of Hits: " + hit);

System.out.println("Hit Ratio: " + (float) ((float) hit / ref\_len));

System.out.println("The number of Faults: " + fault);

}

}

**Output:**

Please enter the number of Frames:

4

Please enter the length of the inputs:

3

Please enter the inputs:

6

5

4

6 6 6

-1 5 5

-1 -1 4

-1 -1 -1

The number of Hits: 0

Hit Ratio: 0.0

The number of Faults: 3