

// LRU

```
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 Reference string:");
        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 reference string: ");
        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);
}
}

```