```
//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++)
      {
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    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)
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                    {
                        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);
  }
}
```