```
import java.io.*;
public class FIFO {
    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;
        int[] buffer;
        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];

        // Initialize the buffer with -1 indicating empty frame slots
        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();
```

```
// Process each reference string entry
for(int i = 0; i < ref_len; i++) {
    int search = -1;

    // Check if the current page is already in one of the frames
    for(int j = 0; j < frames; j++) {
        if(buffer[j] == reference[i]) {
            search = j;
            hit++;
            break;
        }
    }
    // If the page is not found, it's a page fault, replace the oldest page
    if(search == -1) {
        buffer[pointer] = reference[i];
        fault++;
        pointer++;

        // If pointer reaches the end of the buffer, reset to 0 (FIFO circular queue)
        if(pointer == frames) {
            pointer = 0;
        }
    }
    // Store the current state of buffer into memory layout for display later
    for(int j = 0; j < frames; j++) {
        mem_layout[i][j] = buffer[j];
    }
}
// Display memory layout for each step
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();
        }
        // Display hit and fault details
        System.out.println("The number of Hits: " + hit);
        System.out.println("Hit Ratio: " + (float)hit / ref_len);
        System.out.println("The number of Faults: " + fault);
    }
}
```

```
java -cp /tmp/UejjH32Ces/FIFO
Please enter the number of Frames:
3
Please enter the length of the Reference string:
7
Please enter the reference string:
7
5
4
6
8
1
3

  7   7   7   6   6   6   3
 -1   5   5   5   8   8   8
 -1  -1   4   4   4   1   1
The number of Hits: 0
Hit Ratio: 0.0
The number of Faults: 7

=== Code Execution Successful ===
```