```
//optimal
import java.util.Scanner;

public class Optimal {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter the number of frames: ");
        int frame_len = scanner.nextInt();

        System.out.print("Enter the length of the reference string: ");
        int n = scanner.nextInt();

        int[] reference = new int[n];
        System.out.println("Enter the reference string: ");
        for (int i = 0; i < n; i++) {
            reference[i] = scanner.nextInt();
        }

        int fault = 0, hit = 0;
        int ref_len = reference.length;
        int[] buffer = new int[frame_len];
        int[][] matrix = new int[frame_len][ref_len];

        for (int i = 0; i < frame_len; i++) {
            buffer[i] = -1;
        }
```

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

    int search = -1;
    for (int j = 0; j < frame_len; j++) {
        if (buffer[j] == reference[i]) {
            hit++;
            search = 1;
            break;
        }
    }

    if (search == -1) {
        if (i < frame_len) {
            buffer[i] = reference[i];
        } else {
            int[] future = new int[frame_len];
            for (int j = 0; j < frame_len; j++) {
                future[j] = Integer.MAX_VALUE;
                for (int k = i + 1; k < ref_len; k++) {
                    if (buffer[j] == reference[k]) {
                        future[j] = k;
                        break;
                    }
                }
            }

            int replace_index = 0;
            for (int j = 1; j < frame_len; j++) {
                if (future[j] > future[replace_index]) {
                    replace_index = j;
                }
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                }

                buffer[replace_index] = reference[i];
            }
            fault++;
        }


        for (int j = 0; j < frame_len; j++) {
            matrix[j][i] = buffer[j];
        }
    }


    System.out.println("Memory Layout:");
    for (int i = 0; i < frame_len; i++) {
        for (int j = 0; j < ref_len; j++) {
            if(matrix[i][j] == -1) {
                System.out.print(" \t");
            } else {
                System.out.print(matrix[i][j] + "\t");
            }
        }
        System.out.print("\n");
    }

    System.out.println("Page fault: " + fault + "\tPage hit: " + hit);
  }
}
```