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A case study
In partial fulfillment of the requirements
for the course Operating System

Page Replacement Algorithms Simulator (FIFO, LRU and Optimal Algorithm)

Operating Systems Case Study

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I. DOCUMENTATION

1. User Interface

Figure 1: Popup Interface

Figure 1 shows the popup interface of the application, which includes textboxes for the reference string and number of frames, both pre-filled with default input values to guide users. It also displays information about the selected page replacement algorithm. This interface helps users better understand how the algorithm processes input and calculates page faults.

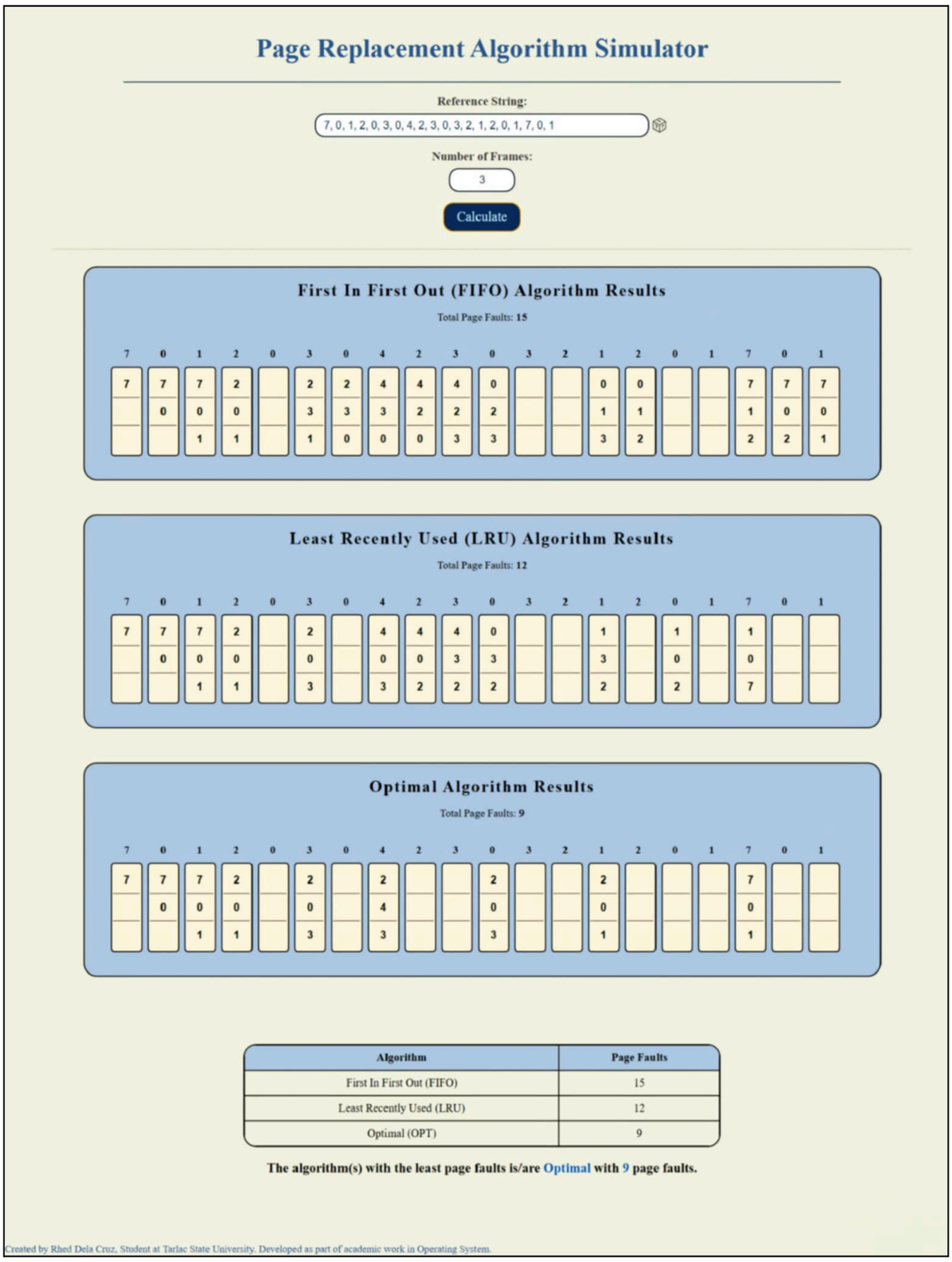

Figure 2: Computation Interface

Figure 2 shows the computation interface, where the results of the page replacement algorithm are displayed, including the number of page faults and the steps of the process based on the user's input.

2. Computation Result

2.1 First Sample Input

Reference String: 2, 0, 3, 4, 6, 7, 0, 0, 2, 5, 1, 2, 9, 5, 2, 5, 8, 1, 6, 4

Number of Frames: 3

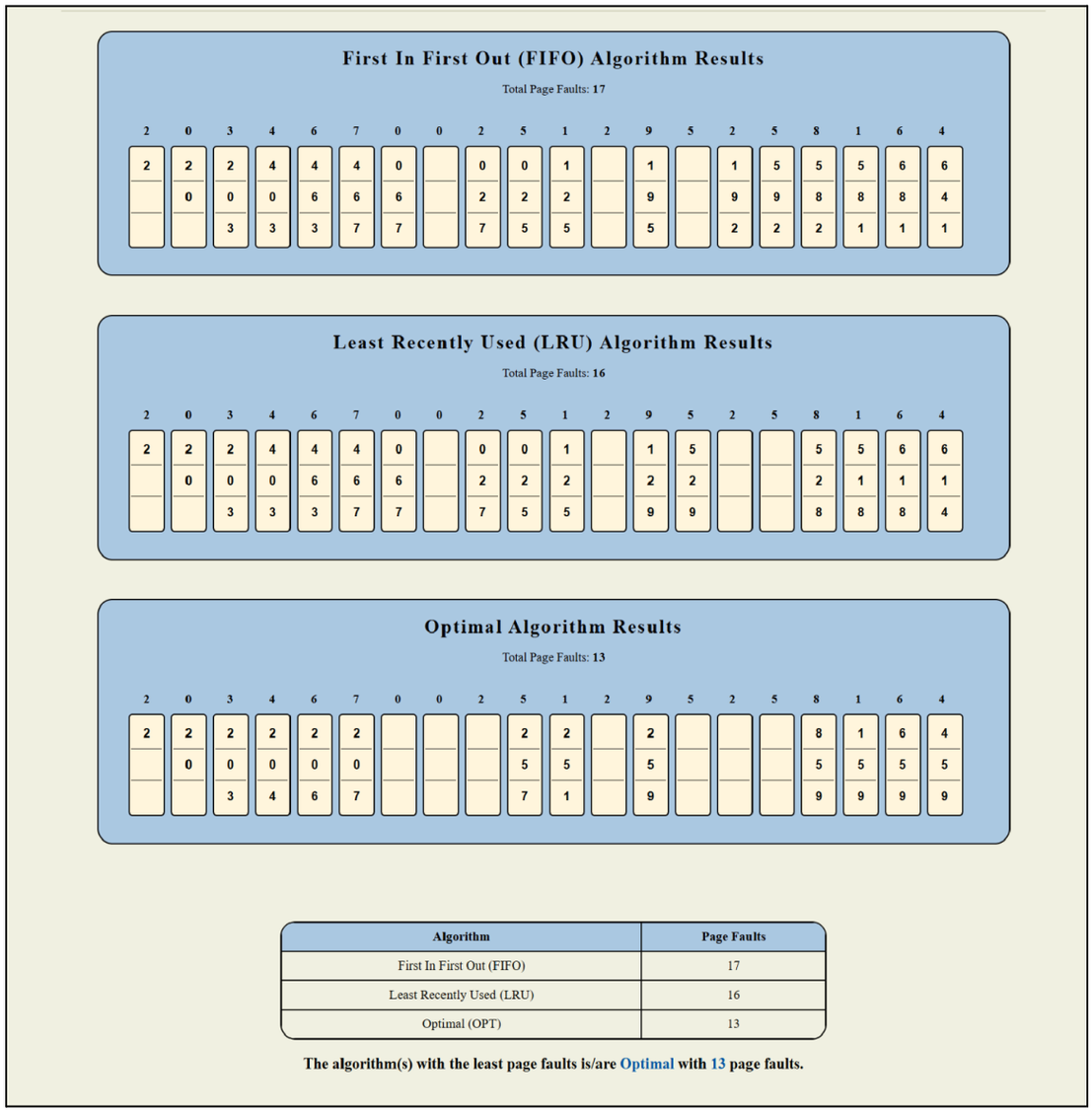

Figure 3: First Input Results

In this case, the Optimal Algorithm resulted in the least page faults (13). The Least Recently Used (LRU) Algorithm had a few more page faults (16), while the First-In-First-Out (FIFO) Algorithm had the highest number of page faults (17).

2.2 Second Sample Input

Reference String: 2, 3, 9, 6, 7, 0, 7, 3, 9, 6, 9, 6, 6, 8, 2, 9, 4, 1, 6, 7

Number of Frames: 4

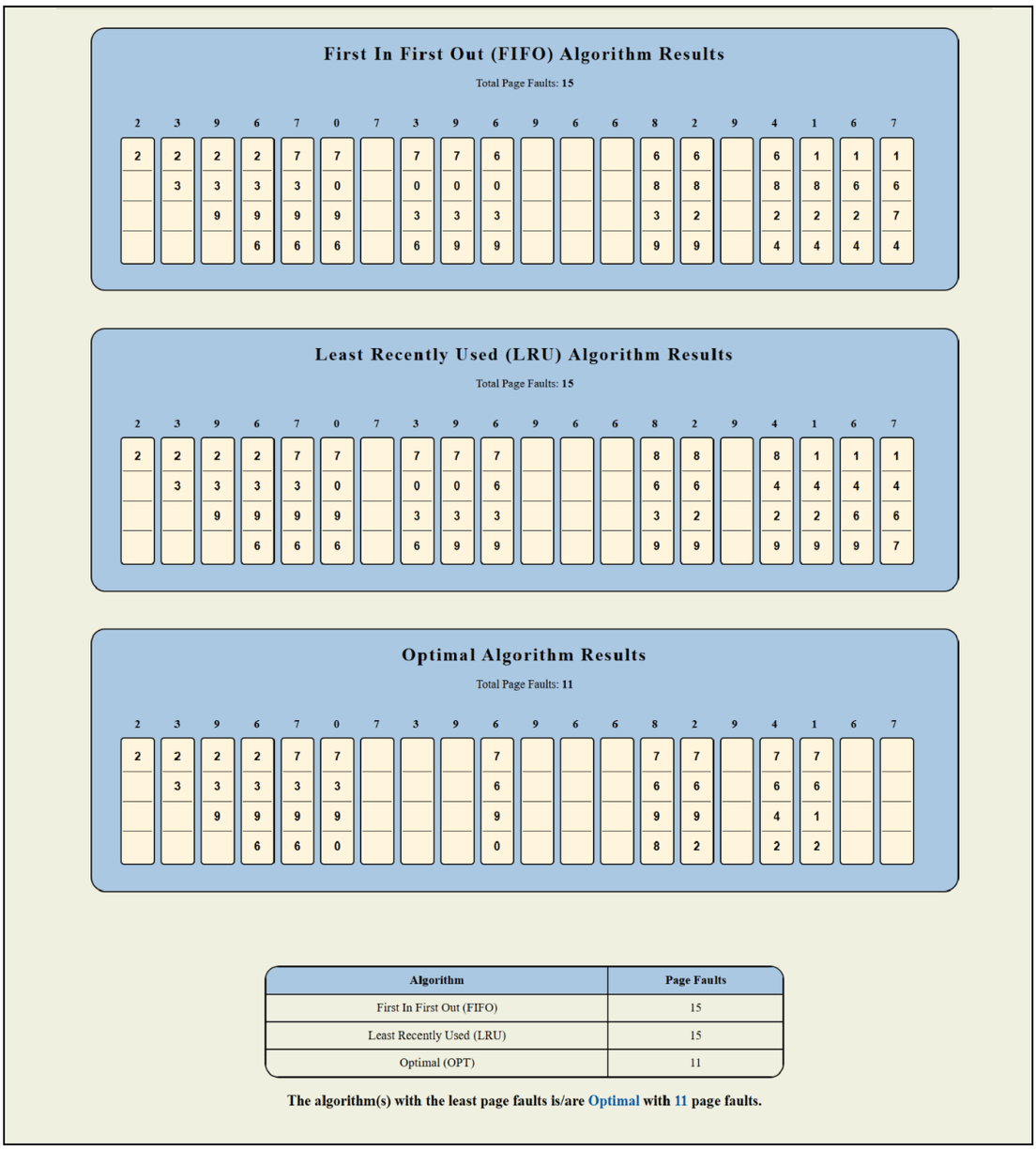

Figure 4: Second Input Results

In this case, the Optimal Algorithm resulted in the least number of page faults (11), while both the Least Recently Used (LRU) Algorithm and the First-In-First-Out (FIFO) Algorithm had a higher and equal number of page faults, totaling 15 each.

2.3 Third Sample Input

Reference String: 7, 0, 2, 4, 3, 1, 8, 5, 3, 9, 8, 8, 3, 2, 1, 6, 4, 1, 2, 9

Number of Frames: 5

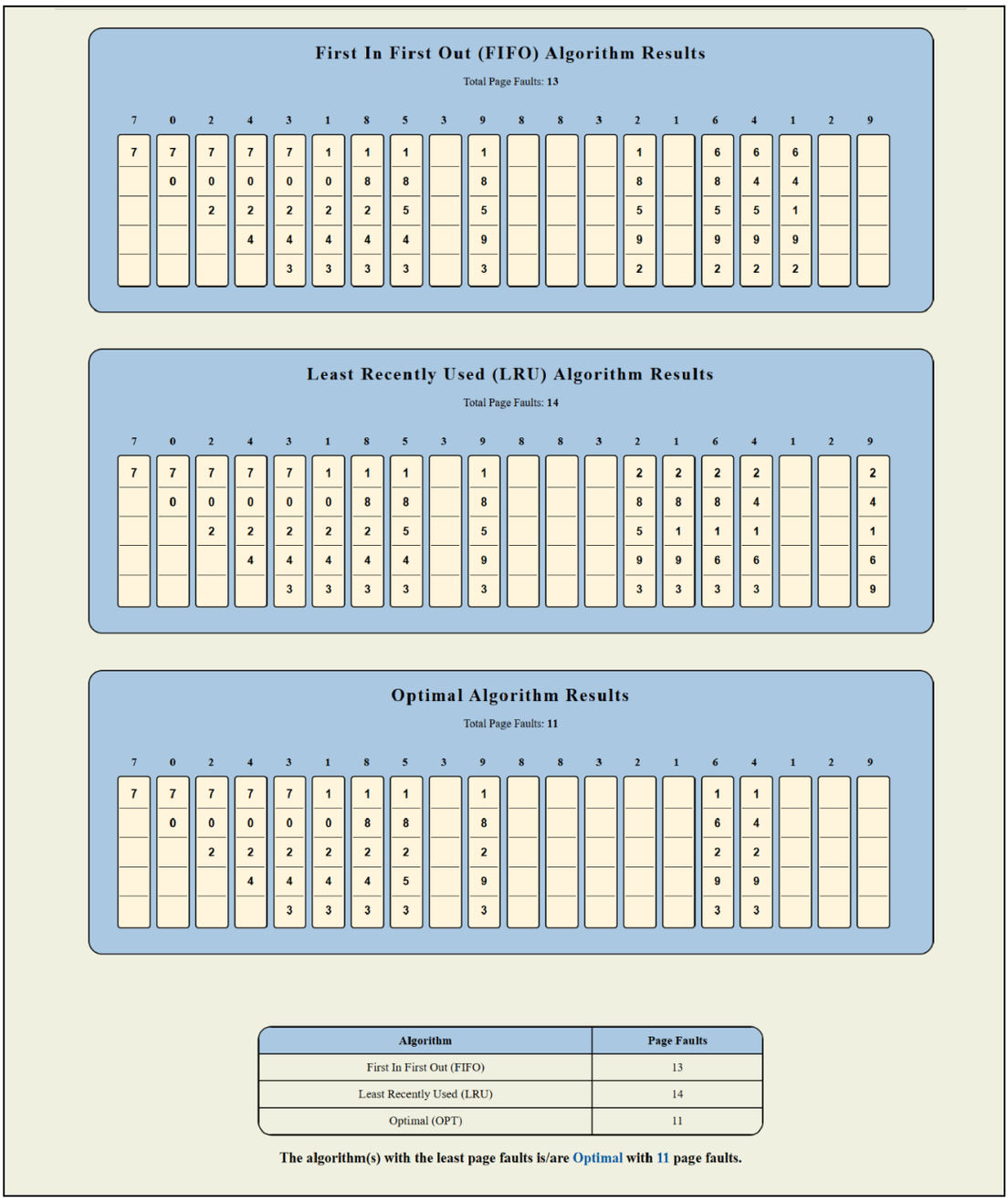

Figure 5: Third Input Results

In this case, the Optimal Algorithm resulted in the least page faults (11). The First-In-First-Out (FIFO) Algorithm had slightly more page faults (13), while the Least Recently Used (LRU) Algorithm had the highest number of page faults (14).