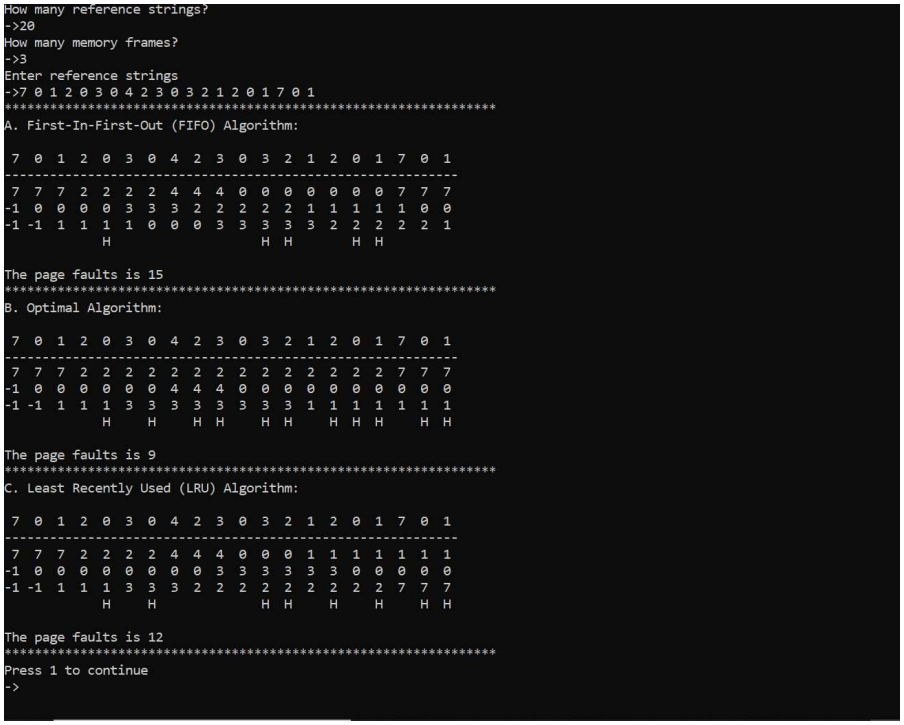
Execution

After executing the code, you will be asked for the number of reference strings and the number of frames, which you can enter from the keyboard. After that, you should type all the reference strings from your keyboard. Then, the results of the number of page faults computed using each algorithm and the frame movement will be output. Finally, press 1 if you want to calculate with a different input again, or press any keyboard key other than 1 if you want to exit.



```
How many reference strings?
->20
How many memory frames?
->3
Enter reference strings
->7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1
****************************************************************
A. First-In-First-Out (FIFO) Algorithm:

 7  0  1  2  0  3  0  4  2  3  0  3  2  1  2  0  1  7  0  1
------------------------------------------------------------
 7  7  7  2  2  2  2  4  4  4  0  0  0  0  0  0  0  7  7  7
-1  0  0  0  0  3  3  3  2  2  2  2  2  1  1  1  1  1  0  0
-1 -1  1  1  1  1  0  0  0  3  3  3  3  3  2  2  2  2  2  1
          H                   H  H        H  H

The page faults is 15
****************************************************************
B. Optimal Algorithm:

 7  0  1  2  0  3  0  4  2  3  0  3  2  1  2  0  1  7  0  1
------------------------------------------------------------
 7  7  7  2  2  2  2  2  2  2  2  2  2  2  2  2  2  7  7  7
-1  0  0  0  0  0  0  4  4  4  0  0  0  0  0  0  0  0  0  0
-1 -1  1  1  1  3  3  3  3  3  3  3  3  1  1  1  1  1  1  1
          H     H     H  H     H  H     H  H  H     H  H

The page faults is 9
****************************************************************
C. Least Recently Used (LRU) Algorithm:

 7  0  1  2  0  3  0  4  2  3  0  3  2  1  2  0  1  7  0  1
------------------------------------------------------------
 7  7  7  2  2  2  2  4  4  4  0  0  0  1  1  1  1  1  1  1
-1  0  0  0  0  0  0  0  0  3  3  3  3  3  3  0  0  0  0  0
-1 -1  1  1  1  3  3  3  2  2  2  2  2  2  2  2  2  7  7  7
          H     H           H  H     H     H     H  H

The page faults is 12
****************************************************************
Press 1 to continue
->
```

Result

Instruction:

Reference String: 5, 3, 3, 1, 0, 5, 7, 3, 0, 2, 7, 4, 6, 0, 2, 1, 0, 7, 4, 2, 6 (21)

Frame: 3

(A) FIFO: 19

(B) Optimal Algorithm: 12

(C) LRU: 19

```
->5 3 3 1 0 5 7 3 0 2 7 4 6 0 2 1 0 7 4 2 6
************************************************************
A. First-In-First-Out (FIFO) Algorithm:

 5  3  3  1  0  5  7  3  0  2  7  4  6  0  2  1  0  7  4  2  6
------------------------------------------------------------
 5  5  5  5  0  0  0  3  3  3  7  7  7  0  0  0  0  7  7  7  6
-1  3  3  3  3  5  5  5  0  0  0  4  4  4  2  2  2  2  4  4  4
-1 -1 -1  1  1  1  7  7  7  2  2  2  6  6  6  1  1  1  1  2  2
      H                                       H

The page faults is 19
************************************************************
B. Optimal Algorithm:

 5  3  3  1  0  5  7  3  0  2  7  4  6  0  2  1  0  7  4  2  6
------------------------------------------------------------
 5  5  5  5  5  5  7  7  7  7  7  4  6  6  6  1  1  7  7  7  6
-1  3  3  3  3  3  3  3  3  2  2  2  2  2  2  2  2  2  2  2  2
-1 -1 -1  1  0  0  0  0  0  0  0  0  0  0  0  0  0  4  4  4
      H       H     H  H     H       H  H     H       H

The page faults is 12
************************************************************
C. Least Recently Used (LRU) Algorithm:

 5  3  3  1  0  5  7  3  0  2  7  4  6  0  2  1  0  7  4  2  6
------------------------------------------------------------
 5  5  5  5  0  0  0  3  3  3  7  7  7  0  0  0  0  0  0  2  2
-1  3  3  3  3  5  5  5  0  0  0  4  4  4  2  2  2  7  7  7  6
-1 -1 -1  1  1  1  7  7  7  2  2  2  6  6  6  1  1  1  4  4  4
      H                                       H

The page faults is 19
```

Slides

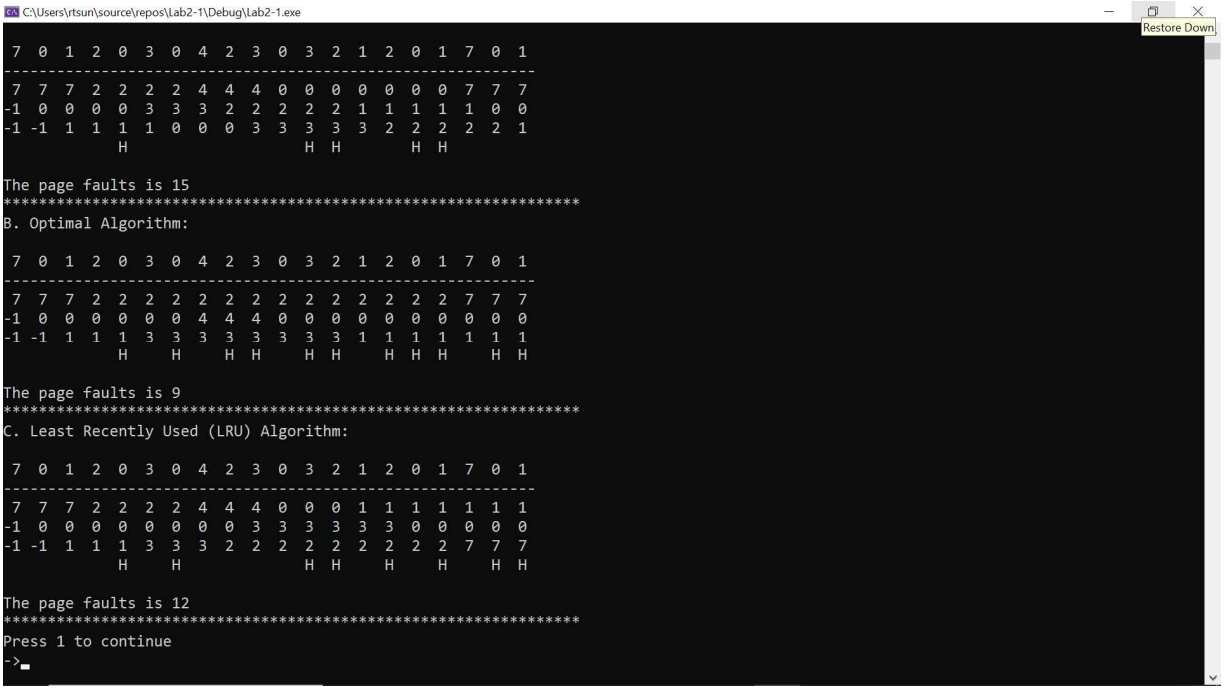
Reference String: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1(21)

Frame: 3

(A) FIFO: 15

(B) Optimal Algorithm: 9

(C) LRU: 12



Summary

It is likely that my code is working correctly because each algorithm from this experiment has the same movement and the same result as the example on the slide. From the results of this experiment, I found that the Optimal Algorithm has a significantly smaller number of page faults than the other two.