

# Lab 12 Report

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## FIFO

```
void first_in_first_out(){
    /* Your code for FIFO algorithm here */

    struct PageFrame fifoPage[*pageSize];
    for (int i = 0; i < *pageSize; ++i) {
        fifoPage[i].Id = page[i].Id;
        fifoPage[i].ArrivalTime = page[i].ArrivalTime;
        fifoPage[i].LastRefTime = page[i].LastRefTime;
        fifoPage[i].Rbit = page[i].Rbit;
        fifoPage[i].Mbit = page[i].Mbit;
    }

    // Sorting struct based on ArrivalTime
    qsort (fifoPage, *pageSize, sizeof(PageFrame), arrival_cmp);

    // Print sorted struct
    for (int i = 0; i < *pageSize; ++i) {
        printf("Page selected: Page %d, Loaded at time %d, Last Referred at
time %d, Rbit %d, Mbit %d.\n", fifoPage[i].Id, fifoPage[i].ArrivalTime,
fifoPage[i].LastRefTime, fifoPage[i].Rbit, fifoPage[i].Mbit);
    }
}

// Sorting method
int arrival_cmp(const void *p1, const void *p2)
{
    const struct PageFrame *el1 = p1;
    const struct PageFrame *el2 = p2;

    if (el1->ArrivalTime < el2->ArrivalTime)
        return -1;
    else if (el1->ArrivalTime > el2->ArrivalTime)
        return 1;
    else
        return 0;
}
```

## LRU

```
void least_recently_used(){
    /* Your code for LRU algorithm here */

    struct PageFrame lruPage[*pageSize];
    for (int i = 0; i < *pageSize; ++i) {
        lruPage[i].Id = page[i].Id;
        lruPage[i].ArrivalTime = page[i].ArrivalTime;
        lruPage[i].LastRefTime = page[i].LastRefTime;
        lruPage[i].Rbit = page[i].Rbit;
        lruPage[i].Mbit = page[i].Mbit;
    }
    // Sorting struct based on LastRefTime
    qsort (lruPage, *pageSize, sizeof(PageFrame), last_referred_cmp);

    // Print sorted struct
    for (int i = 0; i < *pageSize; ++i) {
        printf("Page selected: Page %d, Loaded at time %d, Last Referred at
time %d, Rbit %d, Mbit %d.\n", lruPage[i].Id, lruPage[i].ArrivalTime,
lruPage[i].LastRefTime, lruPage[i].Rbit, lruPage[i].Mbit);
    }
}

// Sorting method
int last_referred_cmp(const void *p1, const void *p2)
{
    const struct PageFrame *el1 = p1;
    const struct PageFrame *el2 = p2;

    if (el1->LastRefTime < el2->LastRefTime)
        return -1;
    else if (el1->LastRefTime > el2->LastRefTime)
        return 1;
    else
        return 0;
}
```

## Output

\$ ./pra

Page	Arrival	LastRef	Rbit	Mbit
0	126	280	1	0
1	230	265	0	1
2	235	270	0	0
3	110	285	1	1
4	115	275	1	0
5	169	290	0	0
6	112	300	0	1
7	220	295	1	0
8	119	276	0	1
9	222	281	1	1
10	215	283	0	0
11	200	295	0	1
12	150	266	1	1
13	113	277	0	0
14	120	278	1	0
15	222	299	0	0

First-in-First-out...

Page selected: Page 3, Loaded at time 110, Last Refered at time 285, Rbit 1, Mbit 1.  
Page selected: Page 6, Loaded at time 112, Last Refered at time 300, Rbit 0, Mbit 1.  
Page selected: Page 13, Loaded at time 113, Last Refered at time 277, Rbit 0, Mbit 0.  
Page selected: Page 4, Loaded at time 115, Last Refered at time 275, Rbit 1, Mbit 0.  
Page selected: Page 8, Loaded at time 119, Last Refered at time 276, Rbit 0, Mbit 1.  
Page selected: Page 14, Loaded at time 120, Last Refered at time 278, Rbit 1, Mbit 0.  
Page selected: Page 0, Loaded at time 126, Last Refered at time 280, Rbit 1, Mbit 0.  
Page selected: Page 12, Loaded at time 150, Last Refered at time 266, Rbit 1, Mbit 1.  
Page selected: Page 5, Loaded at time 169, Last Refered at time 290, Rbit 0, Mbit 0.  
Page selected: Page 11, Loaded at time 200, Last Refered at time 295, Rbit 0, Mbit 1.  
Page selected: Page 10, Loaded at time 215, Last Refered at time 283, Rbit 0, Mbit 0.  
Page selected: Page 7, Loaded at time 220, Last Refered at time 295, Rbit 1, Mbit 0.  
Page selected: Page 9, Loaded at time 222, Last Refered at time 281, Rbit 1, Mbit 1.  
Page selected: Page 15, Loaded at time 222, Last Refered at time 299, Rbit 0, Mbit 0.  
Page selected: Page 1, Loaded at time 230, Last Refered at time 265, Rbit 0, Mbit 1.  
Page selected: Page 2, Loaded at time 235, Last Refered at time 270, Rbit 0, Mbit 0.

Least-Recently-Used...

Page selected: Page 1, Loaded at time 230, Last Refered at time 265, Rbit 0, Mbit 1.  
Page selected: Page 12, Loaded at time 150, Last Refered at time 266, Rbit 1, Mbit 1.  
Page selected: Page 2, Loaded at time 235, Last Refered at time 270, Rbit 0, Mbit 0.  
Page selected: Page 4, Loaded at time 115, Last Refered at time 275, Rbit 1, Mbit 0.  
Page selected: Page 8, Loaded at time 119, Last Refered at time 276, Rbit 0, Mbit 1.  
Page selected: Page 13, Loaded at time 113, Last Refered at time 277, Rbit 0, Mbit 0.  
Page selected: Page 14, Loaded at time 120, Last Refered at time 278, Rbit 1, Mbit 0.  
Page selected: Page 0, Loaded at time 126, Last Refered at time 280, Rbit 1, Mbit 0.  
Page selected: Page 9, Loaded at time 222, Last Refered at time 281, Rbit 1, Mbit 1.  
Page selected: Page 10, Loaded at time 215, Last Refered at time 283, Rbit 0, Mbit 0.  
Page selected: Page 3, Loaded at time 110, Last Refered at time 285, Rbit 1, Mbit 1.  
Page selected: Page 5, Loaded at time 169, Last Refered at time 290, Rbit 0, Mbit 0.  
Page selected: Page 7, Loaded at time 220, Last Refered at time 295, Rbit 1, Mbit 0.  
Page selected: Page 11, Loaded at time 200, Last Refered at time 295, Rbit 0, Mbit 1.  
Page selected: Page 15, Loaded at time 222, Last Refered at time 299, Rbit 0, Mbit 0.  
Page selected: Page 6, Loaded at time 112, Last Refered at time 300, Rbit 0, Mbit 1.