LAB – 6

AIM – Page Replacement algorithm (FIFO, LRU)

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FIFO – First In, First Out

CODE:

```
#include <stdio.h>

int main()
{
int referenceString[10], pageFaults = 0, m, n, s, pages, frames;
printf("\nEnter the number of Pages: ");
scanf("%d", &pages);
printf("\nEnter reference string values:\n");
for( m = 0; m < pages; m++)
{
   printf("Value No. [%d]:\t", m + 1);
   scanf("%d", &referenceString[m]);
}
printf("\n What are the total number of frames: ");
{
   scanf("%d", &frames);
}
int temp[frames];
for(m = 0; m < frames; m++)
{
  temp[m] = -1;
}
for(m = 0; m < pages; m++)
{
  s = 0;
  for(n = 0; n < frames; n++)
   {
      if(referenceString[m] == temp[n])
         {
            s++;
            pageFaults--;
         }
   }
   pageFaults++;
   if((pageFaults <= frames) && (s == 0))
      {
        temp[m] = referenceString[m];
```

```
      }
   else if(s == 0)
      {
        temp[(pageFaults - 1) % frames] = referenceString[m];
      }
      printf("\n");
      for(n = 0; n < frames; n++)
       {
         printf("%d\t", temp[n]);
       }
}
printf("\n");
printf("\nTotal Page Faults:%d\n", pageFaults);
printf("\n");
return 0;
}
```

OUTPUT:

```
shruti@shruti-VirtualBox:~/Documents/OS LAB/Exp 6$ gcc -o ls fifo.c
shruti@shruti-VirtualBox:~/Documents/OS LAB/Exp 6$ ./ls

Enter the number of Pages: 4

Enter reference string values:
Value No. [1]:  2
Value No. [2]:  7
Value No. [3]:  5
Value No. [4]:  9

 What are the total number of frames: 5

2       -1      -1      -1      -1
2       7       -1      -1      -1
2       7       5       -1      -1
2       7       5       9       -1

Total Page Faults:4
```

LRU – Least Recently Used

CODE

```
#include<stdio.h>

int findLRU(int time[], int n){
    int i, minimum = time[0], pos = 0;

    for(i = 1; i < n; ++i){
        if(time[i] < minimum){
            minimum = time[i];
            pos = i;
        }
    }

    return pos;
}

int main()
{
    int no_of_frames, no_of_pages, frames[10], pages[30], counter = 0,
time[10], flag1, flag2, i, j, pos, faults = 0;
    printf("Enter number of frames: ");
    scanf("%d", &no_of_frames);

    printf("Enter number of pages: ");
    scanf("%d", &no_of_pages);

    printf("Enter reference string:\n");

    for(i = 0; i < no_of_pages; ++i){
        scanf("%d", &pages[i]);
    }

    for(i = 0; i < no_of_frames; ++i){
        frames[i] = -1;
    }

    for(i = 0; i < no_of_pages; ++i){
        flag1 = flag2 = 0;

        for(j = 0; j < no_of_frames; ++j){
            if(frames[j] == pages[i]){
                counter++;
                time[j] = counter;
                   flag1 = flag2 = 1;
                   break;
```

```
                }
        }
        if(flag1 == 0){
            for(j = 0; j < no_of_frames; ++j){
                if(frames[j] == -1){
                    counter++;
                    faults++;
                    frames[j] = pages[i];
                    time[j] = counter;
                    flag2 = 1;
                    break;
                }
            }
        }
        if(flag2 == 0){
            pos = findLRU(time, no_of_frames);
            counter++;
            faults++;
            frames[pos] = pages[i];
            time[pos] = counter;
        }
        printf("\n");

        for(j = 0; j < no_of_frames; ++j){
            printf("%d\t", frames[j]);
        }
    }
    printf("\n\nTotal Page Faults = %d", faults);
    printf("\n");
    return 0;
}
```

OUTPUT:

```
shruti@shruti-VirtualBox:~/Documents/OS LAB/Exp 6$ gcc -o ls lru.c
shruti@shruti-VirtualBox:~/Documents/OS LAB/Exp 6$ ./ls
Enter number of frames: 4
Enter number of pages: 5
Enter reference string:
5 7 4 3 4 7

5       -1      -1      -1
5       7       -1      -1
5       7       4       -1
5       7       4       3
5       7       4       3

Total Page Faults = 4
shruti@shruti-VirtualBox:~/Documents/OS LAB/Exp 6$
```