



Mawlana Bhashani Science and Technology University

Lab-Report

Report No: 11

Course code: ICT-3110

Course title: Operating System Lab

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Experiment No :- 11

Experiment Name: Implementation of FIFO page replacement algorithm.

Objectives:

- i. What is FIFO page replacement algorithm?
- ii. Implementation of FIFO page replacement algorithm.

Theory :-

This is the simplest page replacement algorithm. In a page replacement algorithm we decide when a page replacement occurs then which frames are to be replaced. For evaluating an algorithm we take a particular string of memory references, called reference string.

In FIFO page replacement algorithm- for each page we track the time when it was brought into the memory and when any replacement request comes then oldest page is chosen. If we choose a queue to hold all pages in memory then it's more easy to understand and implement rather than tracking time of all pages.

Implementation:

1. Take Input of frame size, page number and pages.
2. Then iterate over the pages and check.
3. If new page is present then increment hit.
4. If not then replace the longest page with new one and increment fault.

Example:

| Frame | Page frame | | | | | | | | | | | | | | | | | | | |
|-------|------------|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7 | 0 | 1 | 2 | 0 | 3 | 0 | 4 | 2 | 3 | 0 | 3 | 2 | 1 | 2 | 0 | 1 | 7 | 0 | 1 |
| F1 | 7 | 7 | 7 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 7 | 7 |
| F2 | -1 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| F3 | -1 | -1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 |
| | M | M | M | M | H | M | M | M | M | M | M | H | H | M | M | H | H | M | M | M |

Source code:

```

#include<stdio.h>
int main()
{
    int
    i,j,fr_size,pno,fault=0,hit=0,pages[1000],frame[10],k,avail,res[50][50];
    printf("Enter Frame size: ");    scanf("%d",&fr_size);
    printf("\nEnter page number:
");    scanf("%d",&pno);
    printf("\nEnter pages: \n");
    for(i=0; i<pno; i++)
    scanf("%d",&pages[i]);    for(i=0;
i<fr_size; i++)    frame[i]= -1;
    j=0;
    printf("\nFrame    Number\t\tpage    frame\n");
    printf(" \t\t");
    for(i=0; i<pno; i++)
    {
        printf("%d  ",pages[i]);
    }
    avail=0;
    for(k=0; k<fr_size; k++)
    {
        if(frame[k]==pages[i])
        {
            hit++;
            avail=1;
        }
    }
    if (avail==0)
    {
        frame[j]=pages[i];
        j=(j+1)%fr_size;
        fault++;
        for(k=0; k<fr_size; k++)
        res[i][k]=frame[k];
    }
    else
    {
        for(k=0;k<fr_size;k++)
        res[i][k]=frame[k];
    }
}

```

```

    }
}
printf("\n\n");    for(i=0; i<fr_size;
i++)
{
    printf("F%d\t\t",i+1);
    for(j=0; j<pno; j++)
    {
        if(res[j][i]==-1)
            printf("%d ",res[j][i]);
else
            printf("%d ",res[j][i]);
    }
    printf("\n");
}
printf("Page Fault Is %d\n",fault);
printf("Page Hit Is %d\n",hit);
return 0;
}

```

Output:

```

"D:\programming\c_c++ programming\algorithm\FIFO page replacement in c.exe"
Enter Frame size: 3
Enter page number: 20
Enter pages:
7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1
Frame Number      page frame
      7  0  1  2  0  3  0  4  2  3  0  3  2  1  2  0  1  7  0  1
F1      7  7  7  2  2  2  2  4  4  4  0  0  0  0  0  0  0  7  7  7
F2     -1  0  0  0  0  3  3  3  2  2  2  2  2  1  1  1  1  1  0  0
F3     -1 -1  1  1  1  1  0  0  0  3  3  3  3  3  2  2  2  2  2  1
Page Fault Is 15
Page Hit Is 5
Process returned 0 (0x0)   execution time : 10.868 s
Press any key to continue.

```

Conclusion:

In this lab I learn the FIFO algorithm and how to implement it in c language.

I also add source code and output of the FIFO algorithm.