

Lab-Report

Report No: 11

Course code: ICT-3110

Course title: Operating System Lab

Date of Performance:

Date of Submission: 09/09/2020

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3rd year 1st semester

Session: 2017-2018

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Experiment No: 11

Experiment Name: Implementation of FIFO page replacement algorithm.

Objective:

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

Theory:

FIFO is the simplest page replacement algorithm. In this algorithm, the operating system keeps track of all pages in the memory in a queue. When a new page come and this page is not in the queue then it replaces the oldest element and it called page fault. But when the new page is in the queue the it did not do anything and it called hit.

Source code:

```
#include<bits/stdc++.h>
using namespace std;
int ans[100][1000];
void store_result(int i,queue<int>q,int frame_size)
{
    for(int j=0;j<frame_size;j++)
    {
        ans[j][i]=q.front();;
        q.pop();
        if(q.empty())
            q.push(-1);
    }
}
int main()
{
    int i,frame_size,n,pages[1000],hit=0,fault=0;
    queue<int>q;
    bool mark[1000]={false};
    cout<<"Enter frame size: ";
    cin>>frame_size;
    cout<<endl<<"Enter page number: ";
```

```

cin>>n;
cout<<endl<<"Enter pages:"<<endl;
for(i=0;i<n;i++)
    cin>>pages[i];
for(i=0;i<n;i++)
{
    if(mark[pages[i]]==true)
    {
        hit++;
        store_result(i,q,frame_size);
    }
    else
    {
        q.push(pages[i]);
        mark[pages[i]]=true;
        if(q.size()>frame_size)
        {
            int p=q.front();
            mark[p]=false;
            q.pop();
        }
        fault++;
        store_result(i,q,frame_size);
    }
}
cout<<"Frame Number\t\t\tPages"<<endl;
for(i=0;i<frame_size;i++)
{
    cout<<"\tF"<<i+1<<"\t\t";
    for(int j=0;j<n;j++)
    {
        if(ans[i][j]==-1)
            cout<<ans[i][j]<<" ";
        else
            cout<<ans[i][j]<<" ";
    }
    cout<<endl;
}
cout<<"Number if hit: "<<hit<<endl;
cout<<"Number of fault: " <<fault<<endl;
}

```

Output:

```
"D:\programming\c & c++ programming\algorithm\FIFO algorithm.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      Pages
F1                7  7  7  0  0  1  2  3  0  4  2  2  2  3  0  0  0  1  2  7
F2               -1  0  0  1  1  2  3  0  4  2  3  3  3  0  1  1  1  2  7  0
F3               -1 -1  1  2  2  3  0  4  2  3  0  0  0  1  2  2  2  7  0  1
Number if hit: 5
Number of fault: 15
```

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.