Program 12: Write a program to implement the First In First Out (FIFO) page replacement algorithm. Program should take input reference string and total no. of pages that can accommodate in memory. Output contains detail about each page fault details and calculate average page fault.

Answer:

Source Code:

```
#include<iostream>

#include <vector>

#include <queue>

#include <string>

using namespace std;


float algorithm(int max_page,queue<int> programs){

   int fault=0,oldest=0;

   vector<int> page;

   for(int i=0;i<max_page;i++){

      page.push_back(programs.front());

      cout<<"Number of Faults= 1.\nAdding "<<programs.front()<<" to Page Table."<<endl;

      cout<<"----------------------------------------"<<endl;

      programs.pop();

      fault+=1;

   }

   while(!programs.empty()){

      bool mila=false;
```

```
        for (int i=0; i<=(int)page.size(); i++){
            if(programs.front()==page[i]){
                mila=true;
                break;
            }
        }
        if(mila){
            cout<<"Number of Faults= 0."<<endl;
            cout<<"----------------------------------------"<<endl;
        }else{
            fault+=1;
            cout<<"Number of Faults= 1.\nReplacing "<<page[oldest]<<" with "<<programs.front()<<"."<<endl;
            cout<<"----------------------------------------"<<endl;
            page[oldest]=programs.front();
            oldest= ++oldest % (int)page.size();
        }
        programs.pop();
    }
    return (float)fault;
}
int main(){
    queue<int> programs;
    int max_page,n,ind=0,t;
    string s,temp;
    cout<< "Enter Maximum Page Holding Capacity"<<endl;
    cin>>max_page;
    cout<< "Enter Page Refrencing String(to end reading enter $):\n";
```

```
    while(true){
        cin>>t;
        cin>>temp;
        programs.push(t);
        if(temp[0]=='$'){
            break;
        }
    }
    float total_faults=algorithm(max_page, programs);
    cout<<"Average Page Fault= "<<total_faults/programs.size()<<endl;
    return 0;
}
```

Output:

```
D:\os lab\Tanmay-Vig19BCS061_p12.exe
Enter Maximum Page Holding Capacity
4
Enter Page Refrencing String(to end reading enter $):
 0, 2, 1, 6, 4, 0, 1, 0, 3, 1, 2, 1$
Number of Faults= 1.
Adding 0 to Page Table.
---------------------------------------
Number of Faults= 1.
Adding 2 to Page Table.
---------------------------------------
Number of Faults= 1.
Adding 1 to Page Table.
---------------------------------------
Number of Faults= 1.
Adding 6 to Page Table.
---------------------------------------
Number of Faults= 1.
Replacing 0 with 4.
---------------------------------------
Number of Faults= 1.
Replacing 2 with 0.
---------------------------------------
Number of Faults= 0.
---------------------------------------
Number of Faults= 0.
---------------------------------------
Number of Faults= 1.
Replacing 1 with 3.
---------------------------------------
Number of Faults= 1.
Replacing 6 with 1.
---------------------------------------
Number of Faults= 1.
Replacing 4 with 2.
---------------------------------------
Number of Faults= 0.
---------------------------------------
Average Page Fault= 0.75

--------------------------------
Process exited after 16.81 seconds with return value 0
Press any key to continue . . .
```