**######################FIFO.c**

#include<stdio.h>

int main()

{

int memory[3]={-1,-1,-1}; //-1 means no page in this memory page

int page[12]={1,2,5,1,3,2,5,4,1,4,5,2};//the test pages

int pm=0; //pointer of memory

int count=0;//missing page count

int replace[12];

int pr=0;

printf("###########FIFO############\n");

//search begin

for (int i=0;i<12;i++)

{

//check if there is page[i] in memory

int exist = 0;

for (int j=0;j<3;j++)

{

if (page[i]==memory[j])

{

exist=1;

break;

}

}

//not exist , replace this memory page

if (exist==0)

{

if(memory[pm]!=-1)

{

replace[pr]=memory[pm];

pr++;

}

count++;

memory[pm]=page[i];

pm++;

if (pm==3) pm=0;

}

//output

printf("%d : [", page[i]);

for(int j=0;j<3;j++)

{

if (memory[j]==-1) printf("\* ");

else printf("%d ", memory[j]);

}

printf(" ]\n");

}

//output

printf("######################\n");

printf("the lack page count = %d\n", count);

printf("repalce pages are : ");

for (int i=0;i<pr;i++)

{

printf("%d ", replace[i]);

}

printf("\n");

printf("the rate of page lack is %lf", count/12.0\*100);

printf("%%\n");

return 0;

}

**#######################################LRU.c**

#include<stdio.h>

int main()

{

int memory[3]={-1,-1,-1};

int page[12]={1,2,5,1,3,2,5,4,1,4,5,2};//the test pages

int count=0;//lack page count

int replace[12]; //replace page record

int pr=0; //pointer of replace

printf("##############LRU##############\n");

//search begin

for (int i=0;i<12;i++)

{

//there are 3 memory pages in memory ,so if i<3,just put it in memory

if(i<3)

{

memory[i]=page[i];

count++;

}

else

{

//check if this page is in memory already

int exist=0;

for(int j=0;j<3;j++)

{

if(page[i]==memory[j])

{

exist=1;

break;

}

}

if (exist==0)

{

//begin to choose a memory page to replace

int last=0;

int ok[3];

for (int j=0;j<3;j++) ok[j]=0;

//check from i step -1 till 0

for(int j=i;j>=0;j--)

{

for(int k=0;k<3;k++)

{

if (page[j]==memory[k])

{

ok[k]=1;

last++;

break;

}

}

if (last==2)break;

}

//check which ok ==false

for (int j=0;j<3;j++)

{

if (ok[j]==0)

{

//replace this memory[j]

count++;

replace[pr]=memory[j];

pr++;

memory[j]=page[i];

break;

}

}

}

}

//output

printf("%d : [ ", page[i]);

for(int j=0;j<3;j++)

{

if (memory[j]==-1) printf("\* ");

else printf("%d ", memory[j]);

}

printf("]\n");

}

//out put

printf("#####################");

printf("the lack page count = %d\n", count);

printf("repalce pages are : ");

for (int i=0;i<pr;i++)

{

printf("%d ", replace[i]);

}

printf("\n");

printf("the rate of page lack is %lf", count/12.0\*100);

printf("\n");

return 0;

}

**#####################################OPT.cpp**

#include<iostream>

using namespace std;

int main()

{

int memory[3]={-1,-1,-1};

int page[12]={1,2,5,1,3,2,5,4,1,4,5,2};//the test pages

int count=0;//missing page count

int replace[12]; //replace page record

int pr=0; // pointer of replace

cout<<"######OPT#######"<<endl;

//search begin

for (int i=0;i<12;i++)

{

//there are 3 memory pages in memory ,so if i<3,just put it in memory

if(i<3)

{

memory[i]=page[i];

count++;

}

else

{

//check if this page is in memory already

bool exist=false;

for(int j=0;j<3;j++)

{

if(page[i]==memory[j])

{

exist=true;

break;

}

}

if (exist==false)

{

//###############################

//begin to choose a memory page to replace

int later=0;

bool ok[3];

for (int j=0;j<3;j++) ok[j]=false;

//check from i step -1 till 0

for(int j=i+1;j<12;j++)

{

for(int k=0;k<3;k++)

{

if (page[j]==memory[k])

{

ok[k]=true;

later++;

break;

}

}

if (later==2)break;

}

//check which ok ==false

for (int j=0;j<3;j++)

{

if (ok[j]==false)

{

//replace this memory[j]

count++;

replace[pr]=memory[j];

pr++;

memory[j]=page[i];

break;

}

}

//#############################

}

}

//output

cout<<page[i]<<": [ ";

for(int j=0;j<3;j++)

{

if (memory[j]==-1) cout<<"\* ";

else cout<<memory[j]<<" ";

}

cout<<"]"<<endl;

}

cout<<"######################"<<endl;

cout<<"the lack page count = " <<count<<endl;

cout<<"repalce pages are : ";

for (int i=0;i<pr;i++)

{

cout<<replace[i]<<" ";

}

cout<<endl;

cout<<"the rate of page lack is "<<count/12.0\*100<<"%"<<endl;

return 0;

}