/\*

Name : Amit Swami

2221018

FDS Assignment 8

\*/

#include<iostream>

using namespace std;

class Queue

{

int q[5],f,r;

public:

Queue()

{

f=-1;

r=-1;

}

int isfull();

int isempty();

void enq\_f();

void dq\_f();

void enq\_r();

void dq\_r();

void display();

};

int Queue::isempty()

{

if(f==-1 && r==-1)

{

return 1;

}

else

{

return 0;

}

}

int Queue::isfull()

{

if(r==4)

{

return 1;

}

else

{

return 0;

}

}

void Queue::enq\_f()

{

int x;

cout<<"ENter value to insert"<<endl;

cin>>x;

if(r==-1 && f==-1)

{

f=0;

r=0;

q[f]=x;

}

else if(f==0)

{

f=4;

q[f]=x;

}

else

{

f=(f-1)%5;

q[f]=x;

}

}

void Queue::dq\_r()

{

cout<<"Deleted ="<<q[r];

if(f==r)

{

f=-1;

r=1;

}

else if(r==0)

{

r=4;

}

else{

r=(r-1)%5;

}

}

void Queue::dq\_f()

{

cout<<"DEleted = "<<endl;

if(f==r)

{

f=-1;

r=-1;

}

else{

f=(f+1)%5;

}

}

void Queue::enq\_r()

{

int x;

cout<<"Enter value for x ";

cin>>x;

if(f==-1 && r==-1)

{

f=0;

r=0;

q[r]=x;

}

else

{

r++;

q[r]=x;

}

}

void Queue::display()

{

int i;

for(i=f;i!=r;i=(i+1)%5)

{

cout<<q[i]<<" ";

}

cout<<q[i]<<" ";

}

int main()

{

int ch;

Queue ob;

while(1)

{

cout<<"\n1. Enqueue from Front side"<<endl;

cout<<"2. Enqueue from rear side"<<endl;

cout<<"3. Dequeue from front side"<<endl;

cout<<"4. Dequeue from rear side"<<endl;

cout<<"5.Display"<<endl;

cout<<"6.Exit program"<<endl;

cout<<"Enter your choice: "<<endl;

cin>>ch;

switch(ch)

{

case 1:if(ob.isfull())

{

cout<<"Cannot enq queue is full!!"<<endl;

}

else

{

ob.enq\_f();

}

break;

case 2:if(ob.isfull())

{

cout<<"Cannot enq queue is full!!"<<endl;

}

else

{

ob.enq\_r();

}

break;

case 3:if(ob.isempty())

{

cout<<"Cannot dequeue queue is empty!!"<<endl;

}

else

{

ob.dq\_f();

}

break;

case 4:if(ob.isempty())

{

cout<<"Cannot dequeue queue is empty!!"<<endl;

}

else

{

ob.dq\_r();

}

break;

case 5:if(ob.isempty())

{

cout<<"Cannot display queue is empty!!"<<endl;

}

else

{

ob.display();

}

break;

case 6: return 0;

}

}

}