***//Assignment-8 Data Structures Lab***

***//Perform Queues operations using Circular Array implementation***

#include<iostream>

#include<conio.h>

#include<stdlib.h>

using namespace std;

template<class Type>

class Queue

{

Type s[10];

int rear,front,n;

public:

Queue()

{

cout<<"\nEnter the Queue Size : ";

cin>>n;

rear=front=n-1;

}

void insert(Type elt)

{

if((rear+1)%n!=front)

{

rear=(rear+1)%n;

s[rear]=elt;

}

else

cout<<"\nQueue is full.Can't insert "<<elt<<endl;

}

void remove()

{

if(front==rear)

cout<<"\nQueue is empty";

else

{

front=(front+1)%n;

cout<<"\nRemoved: "<<s[front];

}

}

void que\_operation();

void display();

};

template<class Type>

void Queue<Type> :: display()

{

if(rear!=front)

{

cout<<"\nQueue Content: ";

for(int i=(front+1)%n;;i=(i+1)%n)

{

cout<<s[i]<<"\t";

if(i==rear) break;

}

}

else

cout<<"\nEmpty Queue Can't Be Print";

}

template<class Type>

void Queue<Type> :: que\_operation()

{

int choice=1,i;

Type elt;

while(choice>0 && choice<3)

{

cout<<"\n1.Insert\t2.Remove\tAny Key To Exit\nChoice : ";

cin>>choice;

switch(choice)

{

case 1 : //insert

cout<<"\nEnter the Element to insert : ";

cin>>elt;

insert(elt);

display();

break;

case 2 : //remove

remove();

display();

break;

}

}

}

int main()

{

cout<<"\nINT";

Queue<int> que1;

cout<<"\nFLOAT";

Queue<float> que2;

int ch;

while(1)

{

cout<<"\n1.INT QUEUE\t2.FLOAT QUEUE\tAny Key To Exit\nChoice : ";

cin>>ch;

switch(ch)

{

case 1 : //perform queue operation on int queue

que1.que\_operation();

break;

case 2 : //float

que2.que\_operation();

break;

default : exit(0);

}

}

return 0;

}

Output:

INT

Enter the Queue Size : 3

FLOAT

Enter the Queue Size : 3

1.INT QUEUE 2.FLOAT QUEUE Any Key To Exit

Choice : 1

1.Insert 2.Remove Any Key To Exit

Choice : 1

Enter the Element to insert : 10

Queue Content: 10

1.Insert 2.Remove Any Key To Exit

Choice : 1

Enter the Element to insert : 20

Queue Content: 10 20

1.Insert 2.Remove Any Key To Exit

Choice : 1

Enter the Element to insert : 30

Queue is full.Can't insert 30

Queue Content: 10 20

1.Insert 2.Remove Any Key To Exit

Choice : 2

Removed: 10

Queue Content: 20

1.Insert 2.Remove Any Key To Exit

Choice :