**Dequearray.h**

#pragma once

class DEQUEARRAY

{

int size;

int front, rear, n;

public:

int\* ARRAY = new int[size];

DEQUEARRAY()

{

front = -1;

rear = -1;

n = 0;

size = 2;

}

void add\_at\_start(int x);

void add\_at\_end(int x);

void delete\_from\_start();

void delete\_from\_end();

bool isempty();

bool isfull();

void doublethesize();

void halfthesize();

void show();

int arraysize();

};

**Dequearray.cpp**

#include "DEQUEARRAY.h"

#include <iostream>

using namespace std;

bool DEQUEARRAY::isempty()

{

if (n == 0)

{

return true;

}

else

{

return false;

}

}

void DEQUEARRAY::add\_at\_start(int x)

{

if (isfull())

doublethesize();

else if (n==0)

{

front++;

rear++;

ARRAY[rear] = x;

n++;

}

else

{

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

{

ARRAY[j] = ARRAY[j - 1];

}

rear++;

n++;

ARRAY[front] = x;

}

}

bool DEQUEARRAY::isfull()

{

if (n == size)

return true;

else

return false;

}

void DEQUEARRAY::show()

{

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

{

cout << ARRAY[i] << endl;

}

}

void DEQUEARRAY::doublethesize()

{

size = size \* 2;

int\* RS = new int[size];

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

RS[i] = ARRAY[i];

ARRAY = RS;

}

void DEQUEARRAY::add\_at\_end(int x)

{

if (isfull())

{

doublethesize();

}

if (isempty())

{

front++;

rear++;

ARRAY[rear] = x;

n++;

}

else

rear = rear + 1;

ARRAY[rear] = x;

n++;

}

int DEQUEARRAY::arraysize()

{

cout << "size of array.." << size;

return size;

}

void DEQUEARRAY::delete\_from\_start()

{

if (n <= size / 4)

halfthesize();

else if (n == 0)

cout << "ARRAY IS ALREADY EMPTY";

else

{

n--;

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

{

ARRAY[i] = ARRAY[i + 1];

}

cout << "number of element.." << n << endl;

}

}

void DEQUEARRAY::halfthesize()

{

int\* RS = new int[size];

size = size / 2;

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

RS[i] = ARRAY[i];

ARRAY = RS;

}

void DEQUEARRAY::delete\_from\_end()

{

if (n <= (size / 4))

halfthesize();

else if (n == 0)

cout << "array is already empty";

else

{

n--;

ARRAY[rear] = 0;

rear--;

}

}

**Source.cpp**

#include<iostream>

#include"DEQUEARRAY.h"

using namespace std;

void main()

{

DEQUEARRAY obj;

int option;

do

{

cout << " Please press 1 to add at start " << endl;

cout << " Please press 2 to add at end " << endl;

cout << " Please press 3 delete form start " << endl;

cout << " Please press 4 delete form end " << endl;

cout << " Please press 5 to check the size of array " << endl;

cout << " Please press 6 to display " << endl;

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

cin >> option;

if (option == 1)

{

int num;

cout << "please enter your array element ";

cin >> num;

obj.add\_at\_start(num);

}

else if (option == 2)

{

int num;

cout << "enter number ";

cin >> num;

obj.add\_at\_end(num);

}

else if (option == 3)

{

obj.delete\_from\_start();

}

else if (option == 4)

{

obj.delete\_from\_end();

}

else if (option == 5)

{

obj.arraysize();

}

else if (option == 6)

{

obj.show();

}

else

cout << "please enter a valid choice";

} while (option != 7);

system("pause");

}





