Queue Via Link List

#include "stdafx.h"

#include<iostream>

#include<string>

using namespace std;

class student

{

int id, age;

float cgpa;

string name;

student \*n, \*s;

public:

student()

{

s=NULL;

}

void Enqueue()

{

student\* q=new student;

cout<<"Please enter id of the student\t";

cin>>q->id;

cout<<"Please enter age of the student\t";

cin>>q->age;

cout<<"Please enter cgpa of the student\t";

cin>>q->cgpa;

cout<<"Please enter name of the student\t";

flushall();

getline(cin,q->name);

q->n=NULL;

if(s==NULL)

{

s=q;

}

else

{

student\* t=s;

while(t->n!=NULL)

t=t->n;

t->n=q;

}

}

void Dequeue()

{

if(s==NULL)

cout<<"Queue is empty"<<endl;

else

{

cout<<"Student having"<<endl;

cout<<"\t\t"<<s->id<<"\tas id"<<endl;

cout<<"\t\t"<<s->age<<"\tas age"<<endl;

cout<<"\t\t"<<s->name<<"\tas name"<<endl;

cout<<"\t\t"<<s->cgpa<<"\tas cgpa"<<endl;

cout<<"is going to Dequeue from Queue"<<endl;

s=s->n;

}

}

void Display()

{

if(s==NULL)

{

cout<<"Queue is empty"<<endl;

}

else

{

student \*t=s;

while(t!=NULL)

{

cout<<"Id\t\t"<<t->id<<endl;

cout<<"Name\t\t"<<t->name<<endl;

cout<<"age\t\t"<<t->age<<endl;

cout<<"cgpa\t\t"<<t->cgpa<<endl;

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

t=t->n;

}

}

}

};

int \_tmain(int argc, \_TCHAR\* argv[])

{

int a;

student s;

cout<<"Please press"<<endl;

cout<<"\t\t"<<"1 to Enqueue student in Queue"<<endl;

cout<<"\t\t"<<"2 to D2queue student in Queue"<<endl;

cout<<"\t\t"<<"3 to Display student in Queue"<<endl;

cout<<"\t\t"<<"4 to Exit student in Queue"<<endl;

cin>>a;

while(a!=4)

{

switch(a)

{

case 1:

s.Enqueue();

break;

case 2:

s.Dequeue();

break;

case 3:

s.Display();

break;

default:

cout<<"Invalid Option"<<endl;

}

cout<<"Please press"<<endl;

cout<<"\t\t"<<"1 to Enqueue student in Queue"<<endl;

cout<<"\t\t"<<"2 to D2queue student in Queue"<<endl;

cout<<"\t\t"<<"3 to Display student in Queue"<<endl;

cout<<"\t\t"<<"4 to Exit student in Queue"<<endl;

cin>>a;

}

system("pause");

return 0;

}

Queue via Array

1. Output Restricted Queue and size is static

#include "stdafx.h"

#include<iostream>

#include<string>

using namespace std;

class student

{

public:

int id, age;

float cgpa;

string name;

};

student q[5];

int top=-1;

void Enqueue()

{

if(top<4)

{

top++;

cout<<"Please enter id of the student\t";

cin>>q[top].id;

cout<<"Please enter age of the student\t";

cin>>q[top].age;

cout<<"Please enter cgpa of the student\t";

cin>>q[top].cgpa;

cout<<"Please enter name of the student\t";

flushall();

getline(cin,q[top].name);

}

else

cout<<"Queue is full"<<endl;

}

void Dequeue()

{

if(top<0)

cout<<"Queue is empty"<<endl;

else

{

cout<<"Student having"<<endl;

cout<<"\t\t"<<q[0].id<<"\tas id"<<endl;

cout<<"\t\t"<<q[0].age<<"\tas age"<<endl;

cout<<"\t\t"<<q[0].name<<"\tas name"<<endl;

cout<<"\t\t"<<q[0].cgpa<<"\tas cgpa"<<endl;

cout<<"is going to Dequeue from Queue"<<endl;

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

q[i]=q[i+1];

top--;

}

}

void Display()

{

if(top<0)

{

cout<<"Queue is empty"<<endl;

}

else

{

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

{

cout<<"Id\t\t"<<q[i].id<<endl;

cout<<"Name\t\t"<<q[i].name<<endl;

cout<<"age\t\t"<<q[i].age<<endl;

cout<<"cgpa\t\t"<<q[i].cgpa<<endl;

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

}

}

}

int \_tmain(int argc, \_TCHAR\* argv[])

{

int a;

cout<<"Please press"<<endl;

cout<<"\t\t"<<"1 to Enqueue student in Queue"<<endl;

cout<<"\t\t"<<"2 to D2queue student in Queue"<<endl;

cout<<"\t\t"<<"3 to Display student in Queue"<<endl;

cout<<"\t\t"<<"4 to Exit student in Queue"<<endl;

cin>>a;

while(a!=4)

{

switch(a)

{

case 1:

Enqueue();

break;

case 2:

Dequeue();

break;

case 3:

Display();

break;

default:

cout<<"Invalid Option"<<endl;

}

cout<<"Please press"<<endl;

cout<<"\t\t"<<"1 to Enqueue student in Queue"<<endl;

cout<<"\t\t"<<"2 to D2queue student in Queue"<<endl;

cout<<"\t\t"<<"3 to Display student in Queue"<<endl;

cout<<"\t\t"<<"4 to Exit student in Queue"<<endl;

cin>>a;

}

system("pause");

return 0;

}

Output Restricted Queue via dynamic array

#include "stdafx.h"

#include<iostream>

#include<string>

using namespace std;

class student

{

public:

int id, age;

float cgpa;

string name;

};

int top=-1;

void Enqueue(student q[], int s)

{

if(top<s-1)

{

top++;

cout<<"Please enter id of the student\t";

cin>>q[top].id;

cout<<"Please enter age of the student\t";

cin>>q[top].age;

cout<<"Please enter cgpa of the student\t";

cin>>q[top].cgpa;

cout<<"Please enter name of the student\t";

flushall();

getline(cin,q[top].name);

}

else

cout<<"Queue is full"<<endl;

}

void Dequeue(student q[])

{

if(top<0)

cout<<"Queue is empty"<<endl;

else

{

cout<<"Student having"<<endl;

cout<<"\t\t"<<q[0].id<<"\tas id"<<endl;

cout<<"\t\t"<<q[0].age<<"\tas age"<<endl;

cout<<"\t\t"<<q[0].name<<"\tas name"<<endl;

cout<<"\t\t"<<q[0].cgpa<<"\tas cgpa"<<endl;

cout<<"is going to Dequeue from Queue"<<endl;

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

q[i]=q[i+1];

top--;

}

}

void Display(student q[])

{

if(top<0)

{

cout<<"Queue is empty"<<endl;

}

else

{

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

{

cout<<"Id\t\t"<<q[i].id<<endl;

cout<<"Name\t\t"<<q[i].name<<endl;

cout<<"age\t\t"<<q[i].age<<endl;

cout<<"cgpa\t\t"<<q[i].cgpa<<endl;

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

}

}

}

int \_tmain(int argc, \_TCHAR\* argv[])

{

int a;

int size;

cout<<"Please enter size of queue"<<endl;

cin>>size;

student \*q=new student[size];

cout<<"Please press"<<endl;

cout<<"\t\t"<<"1 to Enqueue student in Queue"<<endl;

cout<<"\t\t"<<"2 to D2queue student in Queue"<<endl;

cout<<"\t\t"<<"3 to Display student in Queue"<<endl;

cout<<"\t\t"<<"4 to Exit student in Queue"<<endl;

cin>>a;

while(a!=4)

{

switch(a)

{

case 1:

Enqueue(q,size);

break;

case 2:

Dequeue(q);

break;

case 3:

Display(q);

break;

default:

cout<<"Invalid Option"<<endl;

}

cout<<"Please press"<<endl;

cout<<"\t\t"<<"1 to Enqueue student in Queue"<<endl;

cout<<"\t\t"<<"2 to D2queue student in Queue"<<endl;

cout<<"\t\t"<<"3 to Display student in Queue"<<endl;

cout<<"\t\t"<<"4 to Exit student in Queue"<<endl;

cin>>a;

}

system("pause");

return 0;

}

Input Restricted Queue via Dynamic Array

#include "stdafx.h"

#include<iostream>

#include<string>

using namespace std;

class student

{

public:

int id, age;

float cgpa;

string name;

};

int top=-1;

void Enqueue(student q[], int s)

{

if(top<s-1)

{

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

q[i+1]=q[i];

top++;

cout<<"Please enter id of the student\t";

cin>>q[0].id;

cout<<"Please enter age of the student\t";

cin>>q[0].age;

cout<<"Please enter cgpa of the student\t";

cin>>q[0].cgpa;

cout<<"Please enter name of the student\t";

flushall();

getline(cin,q[0].name);

}

else

cout<<"Queue is full"<<endl;

}

void Dequeue(student q[])

{

if(top<0)

cout<<"Queue is empty"<<endl;

else

{

cout<<"Student having"<<endl;

cout<<"\t\t"<<q[top].id<<"\tas id"<<endl;

cout<<"\t\t"<<q[top].age<<"\tas age"<<endl;

cout<<"\t\t"<<q[top].name<<"\tas name"<<endl;

cout<<"\t\t"<<q[top].cgpa<<"\tas cgpa"<<endl;

cout<<"is going to Dequeue from Queue"<<endl;

top--;

}

}

void Display(student q[])

{

if(top<0)

{

cout<<"Queue is empty"<<endl;

}

else

{

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

{

cout<<"Id\t\t"<<q[i].id<<endl;

cout<<"Name\t\t"<<q[i].name<<endl;

cout<<"age\t\t"<<q[i].age<<endl;

cout<<"cgpa\t\t"<<q[i].cgpa<<endl;

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

}

}

}

int \_tmain(int argc, \_TCHAR\* argv[])

{

int a;

int size;

cout<<"Please enter size of queue"<<endl;

cin>>size;

student \*q=new student[size];

cout<<"Please press"<<endl;

cout<<"\t\t"<<"1 to Enqueue student in Queue"<<endl;

cout<<"\t\t"<<"2 to D2queue student in Queue"<<endl;

cout<<"\t\t"<<"3 to Display student in Queue"<<endl;

cout<<"\t\t"<<"4 to Exit student in Queue"<<endl;

cin>>a;

while(a!=4)

{

switch(a)

{

case 1:

Enqueue(q,size);

break;

case 2:

Dequeue(q);

break;

case 3:

Display(q);

break;

default:

cout<<"Invalid Option"<<endl;

}

cout<<"Please press"<<endl;

cout<<"\t\t"<<"1 to Enqueue student in Queue"<<endl;

cout<<"\t\t"<<"2 to D2queue student in Queue"<<endl;

cout<<"\t\t"<<"3 to Display student in Queue"<<endl;

cout<<"\t\t"<<"4 to Exit student in Queue"<<endl;

cin>>a;

}

system("pause");

return 0;

}

Circular Queue via Array

#include "stdafx.h"

#include<iostream>

#include<string>

using namespace std;

class student

{

public:

int id, age;

float cgpa;

string name;

};

int f=0;

int r=0;

int top=-1;

void Enqueue(student q[], int s)

{

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

cout<<"Queue is full"<<endl;

else

{

top++;

cout<<"Please enter id of the student\t";

cin>>q[top].id;

cout<<"Please enter age of the student\t";

cin>>q[top].age;

cout<<"Please enter cgpa of the student\t";

cin>>q[top].cgpa;

cout<<"Please enter name of the student\t";

flushall();

getline(cin,q[top].name);

if(top==s-1)

{

top=-1;

f=1;

}

}

}

void Dequeue(student q[], int s)

{

if(f==0&&r>top)

cout<<"Queue is empty"<<endl;

else

{

cout<<"Student having"<<endl;

cout<<"\t\t"<<q[r].id<<"\tas id"<<endl;

cout<<"\t\t"<<q[r].age<<"\tas age"<<endl;

cout<<"\t\t"<<q[r].name<<"\tas name"<<endl;

cout<<"\t\t"<<q[r].cgpa<<"\tas cgpa"<<endl;

cout<<"is going to Dequeue from Queue"<<endl;

r++;

if(r==s)

{

r=0;

f=0;

}

}

}

void Display(student q[], int s)

{

if(f==0&&r>top)

{

cout<<"Queue is empty"<<endl;

}

else

{

if(f==0)

{

for(int i=r; i<=top; i++)

{

cout<<"Id\t\t"<<q[i].id<<endl;

cout<<"Name\t\t"<<q[i].name<<endl;

cout<<"age\t\t"<<q[i].age<<endl;

cout<<"cgpa\t\t"<<q[i].cgpa<<endl;

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

}

}

else

{

for(int i=r; i<s; i++)

{

cout<<"Id\t\t"<<q[i].id<<endl;

cout<<"Name\t\t"<<q[i].name<<endl;

cout<<"age\t\t"<<q[i].age<<endl;

cout<<"cgpa\t\t"<<q[i].cgpa<<endl;

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

}

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

{

cout<<"Id\t\t"<<q[i].id<<endl;

cout<<"Name\t\t"<<q[i].name<<endl;

cout<<"age\t\t"<<q[i].age<<endl;

cout<<"cgpa\t\t"<<q[i].cgpa<<endl;

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

}

}

}

}

int \_tmain(int argc, \_TCHAR\* argv[])

{

int a;

int size;

cout<<"Please enter size of queue"<<endl;

cin>>size;

student \*q=new student[size];

cout<<"Please press"<<endl;

cout<<"\t\t"<<"1 to Enqueue student in Queue"<<endl;

cout<<"\t\t"<<"2 to D2queue student in Queue"<<endl;

cout<<"\t\t"<<"3 to Display student in Queue"<<endl;

cout<<"\t\t"<<"4 to Exit student in Queue"<<endl;

cin>>a;

while(a!=4)

{

switch(a)

{

case 1:

Enqueue(q,size);

break;

case 2:

Dequeue(q, size);

break;

case 3:

Display(q, size);

break;

default:

cout<<"Invalid Option"<<endl;

}

cout<<"Please press"<<endl;

cout<<"\t\t"<<"1 to Enqueue student in Queue"<<endl;

cout<<"\t\t"<<"2 to D2queue student in Queue"<<endl;

cout<<"\t\t"<<"3 to Display student in Queue"<<endl;

cout<<"\t\t"<<"4 to Exit student in Queue"<<endl;

cin>>a;

}

system("pause");

return 0;

}