



CIRCULAR DOUBLE LINKED LIST

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Task 1

//Write a program to create a new circular double linked list & store values into nodes

Code:

```
#include<iostream>
```

```
using namespace std;
```

```
struct linklist
```

```
{
```

```
    int data;
```

```
    linklist*pre,*next;
```

```
    linklist()
```

```
    {
```

```
        pre=next=NULL;
```

```
    }
```

```
};
```

```
class nodes
```

```
{
```

```
    linklist*start,*cur,*temp;
```

```
    public:
```

```
        nodes()
```

```
        {
```

```
            start=NULL;
```

```
        }
```

```
void create_nodes(int n)
{
    if(start==NULL)
    {
        start=new linklist;

        start->pre=start;

        start->next=start;

        start->data=n;

        //cout<<"adress"<<start<<endl;
    }
    else
    {
        cur=start;

        while(cur->next!=start)
        {
            cur=cur->next;
        }

        temp=new linklist;

        temp->pre=cur;

        temp->next=start;

        cur->next=temp;
    }
}
```

```
        temp->data=n;

        start->pre=temp;

        //cout<<"adress"<<temp->pre<<endl;

    }

}

void print()

{

    cout<<"_____ "<<endl<<endl;

    cout<<"_____ DATA IN LINKLIST IS _____ "<<endl<<endl;

    cur=start;

    int c=1;

    while(cur->next!=start)

    {

        cout<<"data "<<c<<" = "<<cur->data<<endl;

        c++;

        cur=cur->next;

    }

    cout<<"data "<<c<<" = "<<cur->data<<endl;

}

};

int main()
```

```
{  
  
    nodes l1;  
  
    int c,no;  
  
    cout<<"HOW MANY NODES YOU WANT TO CREATE"<<endl;  
  
    cin>>no;  
  
    cout<<"_____CREATE NODES_____"<<endl<<endl;  
  
    for(int i=1;i<=no;i++)  
    {  
  
        cout<<"enter data "<<i<<"\t ";  
  
        cin>>c;  
  
        l1.create_nodes(c);  
  
    }  
  
    l1.print();  
  
}
```

Output:

```
HOW MANY NODES YOU WANT TO CREATE  
5  
_____CREATE NODES_____  
  
enter data 1:    1  
enter data 2:    2  
enter data 3:    3  
enter data 4:    4  
enter data 5:    5  
  
_____DATA IN LINKLIST IS_____  
  
data 1 = 1  
data 2 = 2  
data 3 = 3  
data 4 = 4  
data 5 = 5
```

Task 2

Write a program to insert data at any place in circular double linklist

Code:

```
#include<iostream>
```

```
using namespace std;
```

```
struct linklist
```

```
{
```

```
    int data;
```

```
    linklist*pre,*next;
```

```
    linklist()
```

```
    {
```

```
        pre=next=NULL;
```

```
    }
```

```
};
```

```
class nodes
```

```
{
```

```
    linklist*start,*cur,*temp,*end;
```

```
    public:
```

```
        nodes()
```

```
        {
```

```
        start=NULL;

    }

void create_nodes(int n)

{

    if(start==NULL)

    {

        start=new linklist;

        start->pre=start;

        start->next=start;

        start->data=n;

        //cout<<"adress"<<start<<endl;

    }

    else

    {

        cur=start;

        while(cur->next!=start)

        {

            cur=cur->next;

        }

        temp=new linklist;

        temp->pre=cur;
```

```
        temp->next=start;

    cur->next=temp;

    temp->data=n;

    start->pre=temp;

    //cout<<"adress"<<temp->pre<<endl;

    }

}

void insertion(int p,int dd)
{

    end=cur=start;

    while(end->next!=start)
    {

        end=end->next;

    }

    if(p==1)
    {

        temp=start;

        start=new linklist;

        temp->pre=start;

        start->pre=end;

        end->next=start;
```

```
        start->next=temp;

        start->data=dd;

    }

    else

    {

        for(int i=1;i<p-1;i++)

        {

            cur=cur->next;

        }

        temp=new linklist;

        cur->next->pre=temp;

        temp->next=cur->next;

        cur->next=temp;

        temp->pre=cur;

        temp->data=dd;

    }

}

void print()

{

    cout<<"_____ "<<endl<<endl;

    cout<<"_____DATA IN LINKLIST IS _____ "<<endl<<endl;
```

```
cur=start;

int c=1;

while(cur->next!=start)

{

    cout<<"data "<<c<<" = "<<cur->data<<endl;

    c++;

    cur=cur->next;

}

cout<<"data "<<c<<" = "<<cur->data<<endl;

    cout<<"_____ TRAVERSE _____"<<endl;

    temp=cur;

while(temp->pre!=cur)

{

    cout<<"data "<<c<<" = "<<temp->data<<endl;

    c--;

    temp=temp->pre;

}

cout<<"data "<<c<<" = "<<temp->data<<endl;

}

};

int main()
```

```
{

    nodes l1;

    int c,no;

    cout<<"HOW MANY NODES YOU WANT TO CREATE"<<endl;

    cin>>no;

    cout<<"_____CREATE NODES_____"<<endl<<endl;

    for(int i=1;i<=no;i++)

    {

        cout<<"enter data "<<i<<":\t ";

        cin>>c;

        l1.create_nodes(c);

    }

    int p,dd;

    cout<<"_____INSERTION_____"<<endl<<endl;

    cout<<"ENTER POSITION where you want to insert"<<endl;

    cin>>p;

    cout<<"enter data you want to insert"<<endl;

    cin>>dd;

    l1.insertion(p,dd);

    l1.print();

}
```

Output:

```
HOW MANY NODES YOU WANT TO CREATE
5
      CREATE NODES_____
enter data 1:      1
enter data 2:      2
enter data 3:      3
enter data 4:      4
enter data 5:      5
      INSERTION_____

ENTER POSITION where you want to insert
1
enter data you want to insert
11
_____
      DATA IN LINKLIST IS_____

data 1 = 11
data 2 = 1
data 3 = 2
data 4 = 3
data 5 = 4
data 6 = 5
      TRAVERSE_____
data 6 = 5
data 5 = 4
data 4 = 3
data 3 = 2
data 2 = 1
data 1 = 11
```

Task 3

Create a circular double linklist and create a function that can delete data from it.

Code:

```
#include<iostream>
```

```
using namespace std;
```

```
struct linklist
```

```
{
```

```
    int data;
```

```
    linklist*pre,*next;
```

```
    linklist()
```

```
{  
  
    pre=next=NULL;  
  
}  
  
};  
  
class nodes  
{  
  
    linklist*start,*cur,*temp,*end;  
  
    public:  
  
        nodes()  
  
        {  
  
            start=NULL;  
  
        }  
  
    void create_nodes(int n)  
  
    {  
  
        if(start==NULL)  
        {  
  
            start=new linklist;  
  
            start->pre=start;  
  
            start->next=start;  
  
            start->data=n;  
  
            //cout<<"adress"<<start<<endl;
```

```
    }

    else

    {

        cur=start;

        while(cur->next!=start)

        {

            cur=cur->next;

        }

        temp=new linklist;

        temp->pre=cur;

        temp->next=start;

        cur->next=temp;

        temp->data=n;

        start->pre=temp;

        //cout<<"adress"<<temp->pre<<endl;

    }

}

void deletion(int d)

{

    end=cur=temp=start;

    while(end->next!=start)
```

```
        {  
            end=end->next;  
        }  
  
    if(start->data==d)  
    {  
        start->next->pre=end;  
        start=start->next;  
        end->next=start;  
        delete temp;  
    }  
    else  
    {  
        while(cur->data!=d)  
        {  
            cur=cur->next;  
        }  
        cur->pre->next=cur->next;  
        cur->next->pre=cur->pre;  
        delete cur;
```

```
    }  
  
}  
  
void print()  
{  
  
    cout<<"_____ "<<endl<<endl;  
  
    cout<<"_____DATA IN LINKLIST IS _____ "<<endl<<endl;  
  
    cur=start;  
  
    int c=1;  
  
    while(cur->next!=start)  
    {  
  
        cout<<"data "<<c<<" = "<<cur->data<<endl;  
  
        c++;  
  
        cur=cur->next;  
  
    }  
  
    cout<<"data "<<c<<" = "<<cur->data<<endl;  
  
    cout<<"_____TRAVERSE _____ "<<endl;  
  
    temp=cur;  
  
    while(temp->pre!=cur)  
    {  
  
        cout<<"data "<<c<<" = "<<temp->data<<endl;  
  
        c--;
```

```
        temp=temp->pre;

    }

    cout<<"data "<<c<<" = "<<temp->data<<endl;

}

};

int main()

{

    nodes l1;

    int c,no;

    cout<<"HOW MANY NODES YOU WANT TO CREATE"<<endl;

    cin>>no;

    cout<<"_____CREATE NODES_____"<<endl<<endl;

    for(int i=1;i<=no;i++)

    {

        cout<<"enter data "<<i<<"\t ";

        cin>>c;

        l1.create_nodes(c);

    }

    int dd;

    cout<<"_____DELETION_____"<<endl<<endl;

    cout<<"enter data you want to delete from list"<<endl;
```

```
        cin>>dd;

        l1.deletion(dd);

        l1.print();

    }
```

Output:

```
HOW MANY NODES YOU WANT TO CREATE
5
      CREATE NODES_____
enter data 1:      1
enter data 2:      2
enter data 3:      3
enter data 4:      4
enter data 5:      5
      DELETION_____
enter data you want to delete from list
5
      DATA IN LINKLIST IS_____
data 1 = 1
data 2 = 2
data 3 = 3
data 4 = 4
      TRAVERSE_____
data 4 = 4
data 3 = 3
data 2 = 2
data 1 = 1
```

Task 4

Create a circular double linklist and search data from it...

Code:

```
#include<iostream>

using namespace std;

struct linklist

{

    int data;
```

```
linklist*pre,*next;

linklist()

{

    pre=next=NULL;

}

};

class nodes

{

    linklist*start,*cur,*temp,*end;

    public:

        nodes()

        {

            start=NULL;

        }

        void create_nodes(int n)

        {

            if(start==NULL)

            {

                start=new linklist;

                start->pre=start;

                start->next=start;

            }

        }

    };

};
```

```
        start->data=n;

    }

    else

    {

        cur=start;

        while(cur->next!=start)

        {

            cur=cur->next;

        }

        temp=new linklist;

        temp->pre=cur;

        temp->next=start;

        cur->next=temp;

        temp->data=n;

        start->pre=temp;

    }

}

void search(int d)

{

    cur=start;

    int c=1;
```

```
while(cur->data!=d)

{  c++;

    cur=cur->next;

    if(cur->next==start)

    {

        if(cur->data!=d)

        {

            cout<<"DATA  NOT FOUND"<<endl;

            return ;}

        }

    }

    cout<<"\tDATA  FOUND AT NO. "<<c<<endl;

}

void print()

{

    cout<<"_____ "<<endl<<endl;

    cout<<"_____DATA  IN LINKLIST IS _____ "<<endl<<endl;

    cur=start;

    int c=1;

    while(cur->next!=start)

    {
```

```
        cout<<"data "<<c<<" = "<<cur->data<<endl;

        c++;

        cur=cur->next;

    }

    cout<<"data "<<c<<" = "<<cur->data<<endl;

    cout<<"_____TRAVERSE_____ "<<endl;

    temp=cur;

    while(temp->pre!=cur)

    {

        cout<<"data "<<c<<" = "<<temp->data<<endl;

        c--;

        temp=temp->pre;

    }

    cout<<"data "<<c<<" = "<<temp->data<<endl;

}

};

int main()

{

    nodes l1;

    int c,no;

    cout<<"HOW MANY NODES YOU WANT TO CREATE"<<endl;
```

```
cin>>no;

    cout<<"_____CREATE NODES_____"<<endl<<endl;

for(int i=1;i<=no;i++)

{

    cout<<"enter data "<<i<<":\t ";

    cin>>c;

    l1.create_nodes(c);

}

int s;

cout<<"_____SEARCHING_____"<<endl<<endl;

cout<<"enter data you want to search from list"<<endl;

cin>>s;

l1.search(s);

l1.print();

}
```

Output:

```
HOW MANY NODES YOU WANT TO CREATE
5
      CREATE NODES
enter data 1: 1
enter data 2: 2
enter data 3: 3
enter data 4: 4
enter data 5: 5
      SEARCHING
enter data you want to search from list
5
      DATA FOUND AT NO. 5
      DATA IN LINKLIST IS
data 1 = 1
data 2 = 2
data 3 = 3
data 4 = 4
data 5 = 5
      TRAVERSE
data 5 = 5
data 4 = 4
data 3 = 3
data 2 = 2
data 1 = 1
```

Task 5

Traverse data in circular double linklist.

Code:

```
#include<iostream>
```

```
using namespace std;
```

```
struct linklist
```

```
{
```

```
    int data;
```

```
    linklist*pre,*next;
```

```
    linklist()
```

```
{
```

```
        pre=next=NULL;

    }

};

class nodes
{
    linklist*start,*cur,*temp;

    public:

        nodes()
        {
            start=NULL;
        }

        void create_nodes(int n)
        {
            if(start==NULL)
            {
                start=new linklist;
                start->pre=start;
                start->next=start;

                start->data=n;

                //cout<<"adress"<<start<<endl;
            }
        }
    }
```

```
else
{
    cur=start;

    while(cur->next!=start)
    {
        cur=cur->next;
    }

    temp=new linklist;

    temp->pre=cur;

    temp->next=start;

    cur->next=temp;

    temp->data=n;

    start->pre=temp;

    //cout<<"adress"<<temp->pre<<endl;

}

}

void print()
{

    cout<<"_____ "<<endl<<endl;

    cout<<"_____DATA IN LINKLIST IS _____ "<<endl<<endl;

    cur=start;
```

```
int c=1;

while(cur->next!=start)

{

    cout<<"data "<<c<<" = "<<cur->data<<endl;

    c++;

    cur=cur->next;

}

    cout<<"data "<<c<<" = "<<cur->data<<endl;

cout<<"_____TRAVERSE_____"<<endl;

    temp=cur;

while(temp->pre!=cur)

{

    cout<<"data "<<c<<" = "<<temp->data<<endl;

    c--;

    temp=temp->pre;

}

    cout<<"data "<<c<<" = "<<temp->data<<endl;

}

};
```

```
int main()
{
    nodes l1;

    int c;

    for(int i=1;i<=10;i++)
    {
        cout<<"enter data "<<i<<":\t ";

        cin>>c;

        l1.create_nodes(c);
    }

    l1.print();
}
```

Output:

```
enter data 1: 1
enter data 2: 2
enter data 3: 3
enter data 4: 4
enter data 5: 5
enter data 6: 6
enter data 7: 7
enter data 8: 8
enter data 9: 9
enter data 10: 0
```

DATA IN LINKLIST IS

```
data 1 = 1
data 2 = 2
data 3 = 3
data 4 = 4
data 5 = 5
data 6 = 6
data 7 = 7
data 8 = 8
data 9 = 9
data 10 = 0
```

TRAVERSE

```
data 10 = 0
data 9 = 9
data 8 = 8
data 7 = 7
data 6 = 6
data 5 = 5
data 4 = 4
data 3 = 3
data 2 = 2
data 1 = 1
```

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