INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY

DATASTRUCTURE (LAB)

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Subject:- (CS-305)

Semester:- B.E. Third Semester

REFERENCE

• Object oriented programming with C++ ,E. Balaguruswamy, McGraw Hill Education; Seventh edition, 20 September 2017 .

• Let Us C++,Yashavant Kanetkar's ,3rd Revised , BPB Publication , Sep 26, 2019.

•Object oriented programming in c++, Robert Lafore, sep. 28,2019.

•The complete reference c++,Herbert Schildt,Second edition,22sep 2016.

•A tour of c++ ,Second Edition, Bjarne Stroustrup.

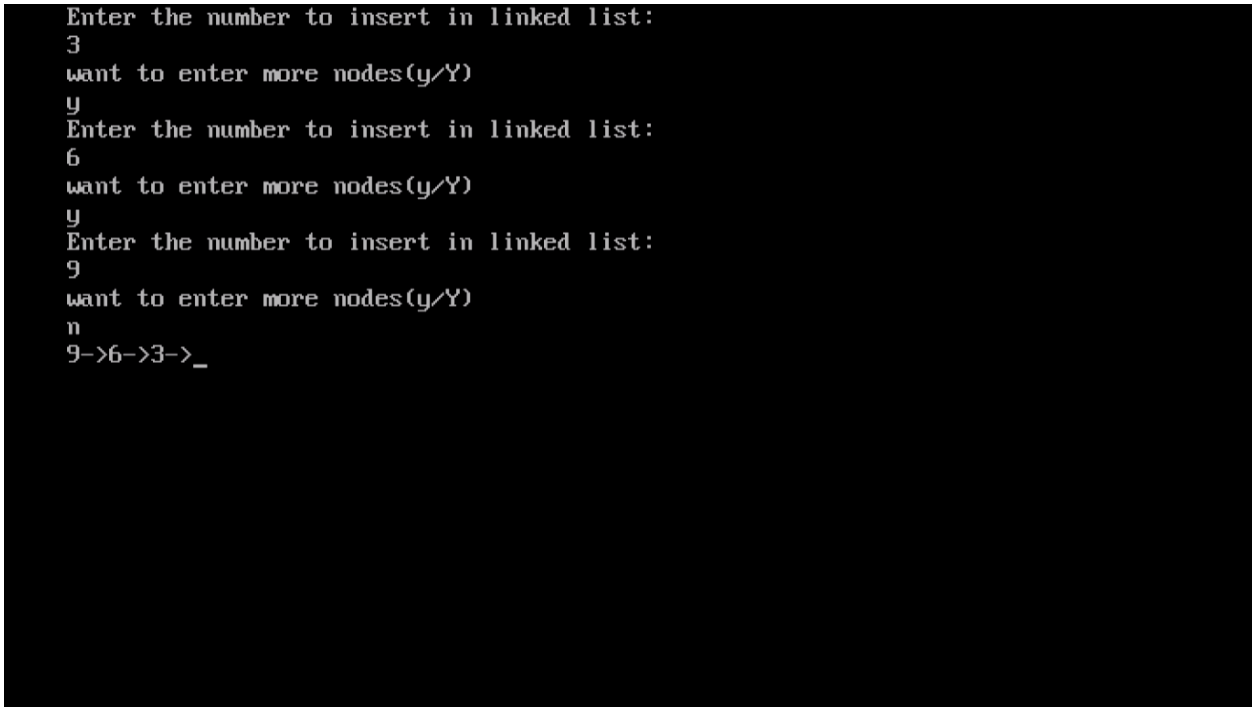
•Data structure through c++ Yashavant Kanetkar's,3rd Editin,Nov 12 ,2019

//Program for Linked list

```
#include<iostream.h>
#include<conio.h>
struct node
{
int data;
node *next;
}*save;
class linked_list
{
private:
node *head,*tail;
public:
linked_list()
{
head=NULL;
tail=NULL;
}
void add_node(int i)
{
```

```
node *tmp=new node;
tmp->data=i;
tmp->next=NULL;
if(head==NULL)
{
head=tmp;
tail=tmp;
}
else
{
save=head;
head=tmp;
tmp->next=save;
}
}
void display()
{
node *tmp;
tmp=head;
while(tmp!=NULL)
{
cout<<tmp->data<<"->";
tmp=tmp->next;
```

```
}
}
};
int main()
{
int i;
linked_list a;
char ch='y';
while(ch=='y'||ch=='Y')
{
cout<<"Enter the number to insert in linked list:"<<endl;
cin>>i;
a.add_node(i);
cout<<"want to enter more nodes(y/Y)"<<endl;
cin>>ch;
}
a.display();
getch();
return 0;
}
```



//program for queue using linked list

```
#include<iostream.h>
#include<stdlib.h>
#include<conio.h>
struct node
{
int data;
node *next;
};
class queue
{
public:
node *front,*rear;
```

```
queue()
{
front=rear=NULL;
}
void insert(int x)
{
node *temp=new node;
if(temp==NULL)
{
cout<<"overflow"<<endl;
return;
}
temp->data=x;
temp->next=NULL;
if(front==NULL)
{
front=rear=temp;
}
else
{
rear->next=temp;
rear=temp;
}
```

```
}
void del()
{
if(front==NULL)
{
cout<<"underflow"<<endl;
return;
}
if(front==rear)
front=rear=NULL;
else
front=front->next;
}
void display()
{
        if(front==NULL)
        {
        cout<<"underflow"<<endl;
        return;
        }

node *temp=front;
while(temp)
```

```
        {
        cout<<temp->data<<endl;
        temp=temp->next;
        }
}
};
int main()
{
int ch;
int item;
queue
q;
while(1)
{
cout<<"\n 1.insert 2 delete 3 display 4 exit \n Enter your choice";
cin>>ch;
switch(ch)
{
case 1:
cout<<"enter the element:"<<endl;
cin>>item;
q.insert(item);
break;
```

```
case 2: q.del();
break;
case 3:
q.display();
break;
case 4:
exit(0);
}
}
getch();
return 0;
}
```

Output for insert element and display

```
 1.insert 2 delete 3 display 4 exit
 Enter your choice1
enter the element:
3

 1.insert 2 delete 3 display 4 exit
 Enter your choice1
enter the element:
8

 1.insert 2 delete 3 display 4 exit
 Enter your choice1
enter the element:
9

 1.insert 2 delete 3 display 4 exit
 Enter your choice3
3
8
9

 1.insert 2 delete 3 display 4 exit
 Enter your choice
```

Output for delete element and display

```
 Enter your choice1
enter the element:
8

 1.insert 2 delete 3 display 4 exit
 Enter your choice1
enter the element:
9

 1.insert 2 delete 3 display 4 exit
 Enter your choice3
3
8
9

 1.insert 2 delete 3 display 4 exit
 Enter your choice2

 1.insert 2 delete 3 display 4 exit
 Enter your choice3
8
9

 1.insert 2 delete 3 display 4 exit
 Enter your choice_
```

Thanks