***//Assignment-6 Data Structures Lab***

***//Perform Stack operations using Linked List implementation***

#include<iostream>

using namespace std;

struct node

{

int data;

struct node \*next;

};

// Creating a class STACK

class stack

{

struct node \*top;

public:

stack() // constructor

{

top=NULL;

}

void push(); // to insert an element

void pop(); // to delete an element

void show(); // to show the stack

};

// PUSH Operation

void stack::push()

{

int value;

struct node \*ptr;

cout<<"Enter a number to insert: ";

cin>>value;

ptr=new node;

ptr->data=value;

ptr->next=NULL;

if(top!=NULL)

ptr->next=top;

top=ptr;

}

// POP Operation

void stack::pop()

{

struct node \*temp;

if(top==NULL)

{

cout<<"\nThe stack is empty!!!";

}

temp=top;

top=top->next;

cout<<"\nPoped value is "<<temp->data;

delete temp;

}

// Show stack

void stack::show()

{

struct node \*ptr1=top;

cout<<"\nThe stack is\n";

while(ptr1!=NULL)

{

cout<<ptr1->data<<" -> ";

ptr1=ptr1->next;

}

cout<<"NULL\n";

}

// Main function

int main()

{

stack s;

int choice;

while(1)

{

cout<<"1:PUSH\n2:POP\n3:DISPLAY STACK\n4:EXIT";

cout<<"\nEnter your choice: ";

cin>>choice;

switch(choice)

{

case 1:

s.push();

s.show();

break;

case 2:

s.pop();

s.show();

break;

case 3:

s.show();

break;

case 4:

return 0;

break;

default:

cout<<"\nPlease enter correct choice(1-4)!!";

break;

}

}

return 0;

}

**OUTPUT:**

1:PUSH

2:POP

3:DISPLAY STACK

4:EXIT

Enter your choice: 1

Enter a number to insert: 10

The stack is

10 -> NULL

1:PUSH

2:POP

3:DISPLAY STACK

4:EXIT

Enter your choice: 1

Enter a number to insert: 20

The stack is

20 -> 10 -> NULL

1:PUSH

2:POP

3:DISPLAY STACK

4:EXIT

Enter your choice: 1

Enter a number to insert: 30

The stack is

30 -> 20 -> 10 -> NULL

1:PUSH

2:POP

3:DISPLAY STACK

4:EXIT

Enter your choice: 2

Poped value is 30

The stack is

20 -> 10 -> NULL

1:PUSH

2:POP

3:DISPLAY STACK

4:EXIT

Enter your choice: 3

The stack is

20 -> 10 -> NULL

1:PUSH

2:POP

3:DISPLAY STACK

4:EXIT

Enter your choice: 4

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Process exited after 37.34 seconds with return value 0

Press any key to continue . . .