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Program No	13
Name	Shubham Sarang
Roll No	1345
Topic	Stacks
Title of Program	ListBasedStack

```cpp
/*

Name: Shubham Sarang

Roll no: 1345

Unit 3:Stacks

Program: List based Stack

*/


#include<iostream>

#include<conio.h>

using namespace std;


class SNode

{

        public:

                int data;
```

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```cpp
        SNode *next;
};


class LStack
{
    SNode *tos;
    public:
        LStack()
        {
            tos = NULL;
        }
        void Push(int x);
        void Pop();
        void Peek();
        void Display();
};

void LStack::Push(int x)
{
    SNode *t = new SNode();
    t->data = x;
```

```cpp
        t->next = NULL;

        if(tos == NULL)

        {

                tos = t;

        }

        else

        {

                t->next = tos;

                tos = t;

        }

}

void LStack::Pop()

{

        SNode *tmp = tos;

        cout<<tmp->data<<" popped";

        tos = tos->next;

        delete tmp;

}


void LStack::Peek()

{
```

```cpp
    if(tos == NULL)

    {

        cout<<"Empty Stack";

        return;

    }

    cout<<"Element at the top of stack: "<<tos->data;

}


void LStack::Display()

{

    SNode *cnt = tos;

    if(tos == NULL)

    {

        cout<<"Empty Stack";

        return;

    }

    cout<<"Display stack: \n";

    while(cnt != NULL)

    {

        cout<<cnt->data<<"\n";

        cnt = cnt->next;
```

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```cpp
        }
}

int main()
{
        int ch, num;
        LStack l;
        while(1)
        {
                system("cls");

                cout<<"****List Based Stack***"<<endl;

                cout<<"1. Push an element in stack \n";
                cout<<"2. Pop an element in stack \n";
                cout<<"3. Peek stack \n";
                cout<<"4. Display stack \n";
                cout<<"5. Exit \n";

                cout<<"Enter choice: ";
                cin>>ch;
```

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```cpp
switch(ch)

{
        case 1:

                cout<<"Push element: ";

                cin>>num;

                l.Push(num);

                getch();

                break;
        case 2:

                cout<<"Pop element: ";

                l.Pop();

                getch();

                break;
        case 3:

                cout<<"Peek element: ";

                l.Peek();

                getch();

                break;
        case 4:

                cout<<"Display stack: ";
```
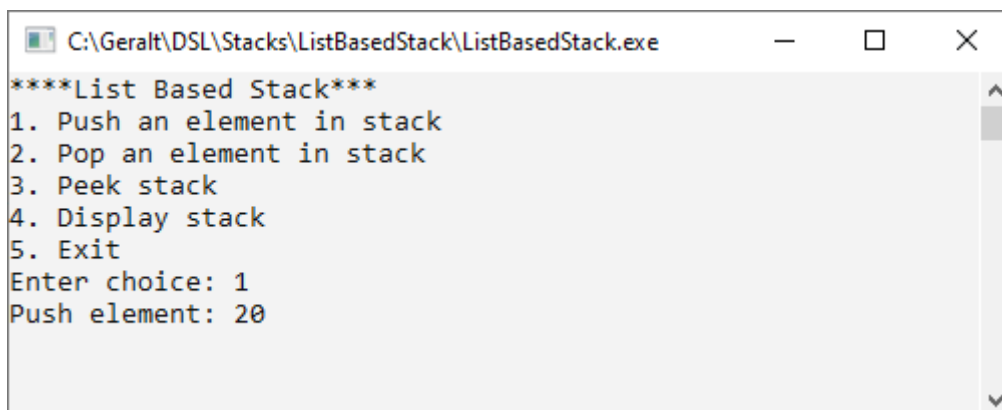
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```
            l.Display();

            getch();

            break;

        case 5:

            exit(1);

        default:

            cout<<"Wrong choice bruv";

            getch();

        }

    }
}
```

Output:

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```
C:\Geralt\DSL\Stacks\ListBasedStack\ListBasedStack.exe          —    □    ×
****List Based Stack***
1. Push an element in stack
2. Pop an element in stack
3. Peek stack
4. Display stack
5. Exit
Enter choice: 4
Display stack: Display stack:
28
26
24
22
```

```
C:\Geralt\DSL\Stacks\ListBasedStack\ListBasedStack.exe          —    □    ×
****List Based Stack***
1. Push an element in stack
2. Pop an element in stack
3. Peek stack
4. Display stack
5. Exit
Enter choice: 2
Pop element: 28 popped
```

```
C:\Geralt\DSL\Stacks\ListBasedStack\ListBasedStack.exe          —    □    ×
****List Based Stack***
1. Push an element in stack
2. Pop an element in stack
3. Peek stack
4. Display stack
5. Exit
Enter choice: 3
Peek element: Element at the top of stack: 26
```

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```
C:\Geralt\DSL\Stacks\ListBasedStack\ListBasedStack.exe        —    □    ×

****List Based Stack***
1. Push an element in stack
2. Pop an element in stack
3. Peek stack
4. Display stack
5. Exit
Enter choice: 4
Display stack: Display stack:
26
24
22
```