LINKED LIST STACK IMPLEMENTATION

```
#include <stdio.h>
#include <stdlib.h>
struct node
{
int Element;
struct node *Next;
}*List = NULL;
typedef struct node Stack;
int IsEmpty();
void Push(int e);
void Pop();
void Top();

void Display();
int main()
{
int ch, e;
do
{
printf("1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT");
printf("\nEnter your choice : ");
scanf("%d", &ch);
switch(ch)
{
case 1:
printf("Enter the element : ");
scanf("%d", &e);
Push(e);
break;
case 2:
Pop();
break;
case 3:
Top();
break;
case 4:
Display();
break;
}
} while(ch <= 4);
return 0;
}
int IsEmpty()
{
if(List == NULL)
return 1;
else
return 0;
}
void Push(int e)
{
Stack *NewNode = malloc(sizeof(Stack));
NewNode->Element = e;
if(IsEmpty())
NewNode->Next = NULL;
else
NewNode->Next = List;
List = NewNode;
}
```

```
void Pop()
{
if(IsEmpty())
printf("Stack is Underflow...!\n");
else
{
Stack *TempNode;
TempNode = List;
List = List->Next;
printf("%d\n", TempNode->Element);
free(TempNode);
}
}
void Top()
{
if(IsEmpty())
printf("Stack is Underflow...!\n");
else
printf("%d\n", List->Element);
}
void Display()
{
if(IsEmpty())
printf("Stack is Underflow...!\n");
else
{
Stack *Position;
Position = List;
while(Position != NULL)
{
printf("%d\t", Position->Element);
Position = Position->Next;
}
printf("\n");
}
}
```

Output

```
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 1
Enter the element : 10
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 1
Enter the element : 20
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 1
Enter the element : 30
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT

Enter your choice : 1
Enter the element : 40
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 1
Enter the element : 50
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 4
50 40 30 20 10
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 3
50
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
```

Enter your choice : 2
50
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 2
40
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 2
30
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 2
20
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 2
10
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 2
Stack is Underflow...!
1.PUSH 2.POP 3.TOP 4.DISPLAY 5.EXIT
Enter your choice : 5