Lab Program-1

Write a program to simulate the working of stack using an array with the following :

a) Push b) Pop c) Display

The program should print appropriate messages for stack overflow, stack underflow

```
#include<stdio.h>
#include<stdlib.h>
int size;
int arr[25];
int top=-1;
int item;

void push();
int pop();
void display();

int main()
{
        int item_del;
        int ch;
        printf("Enter size of stack\n");
        scanf("%d",&size);
        for(;;)
```

```
    {
        printf("\n1.Push\n2.Pop\n3.Display\n0.Exit\n");fflush(stdin);
        scanf("%d",&ch);
        switch(ch)
        {
        case 1:     push();
                    break;
        case 2: item_del=pop();
                    if(item_del==-1)
                    printf("Stack is Empty(Underflow)\n");
                    else
                    printf("Item Deleted: %d\n",item_del);
                    break;
        case 3: display();
                    break;
        case 0: printf("Exiting\n");
                    exit(0);
                    break;
        default:printf("Invalid choice\n");
        }
    }
    return 0;
}
```

```
void push()
{
	if(top==size-1)
	printf("Stack is filled(Overflow)\n");
	else
	{
		printf("Enter Item to be inserted in Stack\n");fflush(stdin);
		scanf("%d",&item);
		arr[++top]=item;

	}
}
int pop()
{
	if(top==-1)
	{
		return -1;
	}
	else
	{
		return arr[top--];
	}
}
```

```
void display()
{
	int i;
	if(top==-1)
	{
		printf("Stack is Empty\n");
	}
	else
	for(i=0;i<=top;i++)
	{
		printf("Element %d: %d\n",i+1,arr[i]);
	}
}
```

```
Enter size of stack
5

1.Push
2.Pop
3.Display
0.Exit
1
Enter Item to be inserted in Stack
1

1.Push
2.Pop
3.Display
0.Exit
1
Enter Item to be inserted in Stack
2

1.Push
2.Pop
3.Display
0.Exit
1
Enter Item to be inserted in Stack
3

1.Push
2.Pop
3.Display
0.Exit
1
Enter Item to be inserted in Stack
4

1.Push
2.Pop
3.Display
0.Exit
1
Enter Item to be inserted in Stack
5

1.Push
2.Pop
3.Display
0.Exit
1
Stack is filled(Overflow)

1.Push
2.Pop
3.Display
0.Exit
3
Element 1: 1
Element 2: 2
Element 3: 3
Element 4: 4
Element 5: 5

1.Push
2.Pop
3.Display
0.Exit
2
Item Deleted: 5

1.Push
2.Pop
3.Display
0.Exit
2
```

```
2
Item Deleted: 4

1.Push
2.Pop
3.Display
0.Exit
2
Item Deleted: 3

1.Push
2.Pop
3.Display
0.Exit
2
Item Deleted: 2

1.Push
2.Pop
3.Display
0.Exit
2
Item Deleted: 1

1.Push
2.Pop
3.Display
0.Exit
2
Stack is Empty(Underflow)

1.Push
2.Pop
3.Display
0.Exit
2
Stack is Empty(Underflow)

1.Push
2.Pop
3.Display
0.Exit
3
Stack is Empty

1.Push
2.Pop
3.Display
0.Exit
0
Exiting

--------------------------------
```