

# OST LAB

## Week 4

Udeet Mittal

CSE C3

Roll Number 64

1.

### filename: stack.h

```
#define MAX 30
#define true 1
#define false 0
```

```
typedef struct stack
{
int item[MAX];
int top;
}stack;
```

```
void push(stack *ptr,int x);
int pop(stack *ptr);
int isEmpty(stack *ptr);
int isFull(stack *ptr);
void display(stack *ptr);
```

### filename: stack.c

```
#include <stdio.h>
#include "stack.h"
```

```
void push(stack *ptr,int x)
{
if(!isFull(ptr))
{
ptr->top++;
ptr->item[ptr->top]=x;
}
}
```

```
int pop(stack *ptr)
{
if(!isEmpty(ptr))
```

```

{
return ptr->item[ptr->top--];
}
}

```

```

int isEmpty(stack *ptr)
{
if(ptr->top==-1)
return true;
else
return false;
}

```

```

int isFull(stack *ptr)
{
if(ptr->top==MAX-1)
return 1;
return 0;
}

```

```

void display(stack *ptr)
{
for(int i=ptr->top; i>=0;i--)
{
printf("%d ",ptr->item[i]);
}
printf("\n");
}

```

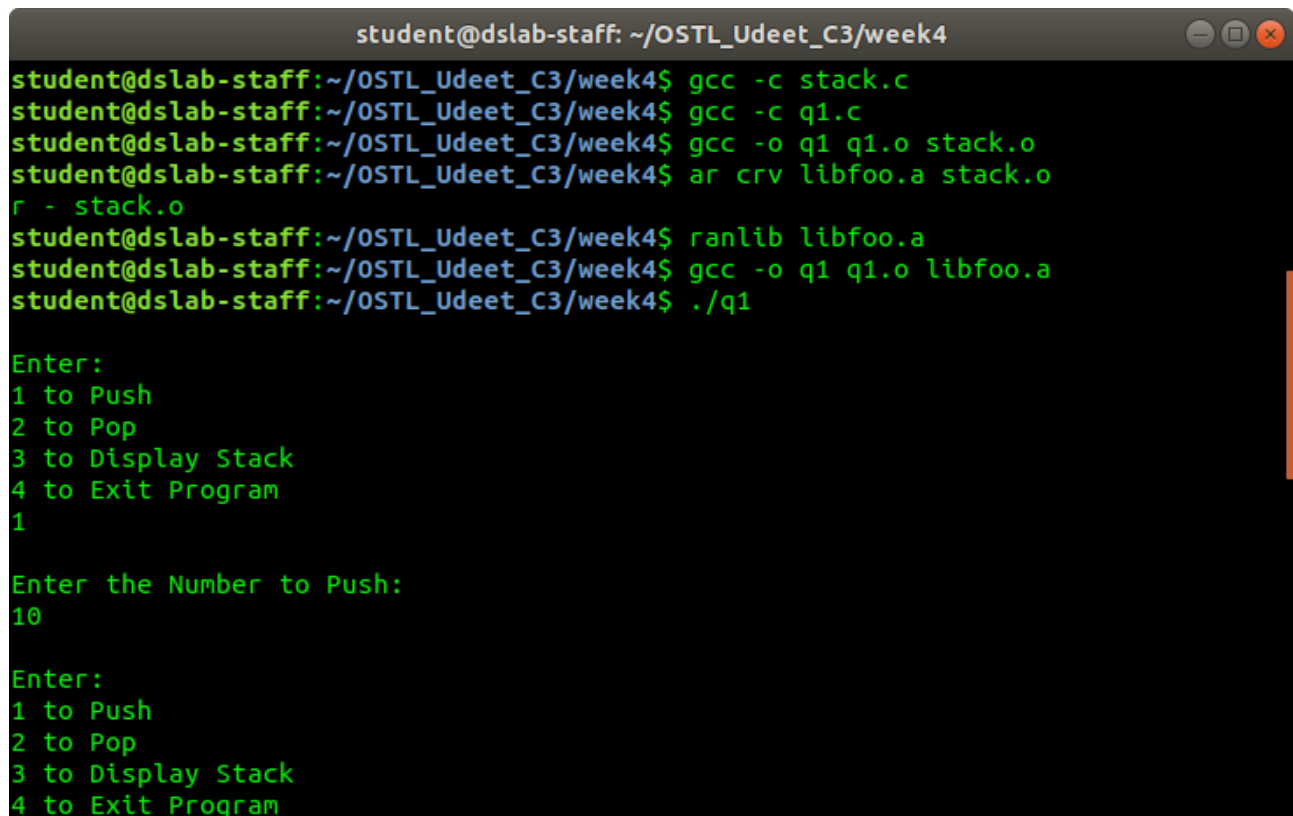
**filename: q1.c**

```

#include <stdlib.h>
#include "stack.h"
int main()
{
stack s;
stack* st = &s;
st->top = -1;
int f = 1;
do
{
printf("\nEnter:\n1 to Push \n2 to Pop \n3 to Display Stack \n4 to Exit Program \n");
int choice;
scanf("%d", &choice);
switch (choice)
{
case 1: {
int c;
printf("\nEnter the Number to Push:\n");
scanf("%d", &c);

```

```
push(st, c);}
break;
case 2:{
int c = pop(st);
printf("\nThe Popped Number is: %d\n", c);
}break;
case 3:
display(st);
break;
case 4:
f = 0;
break;
default:
printf("Invalid choice\n");
}
}while (f);
return 0;
}
```



```
student@dslab-staff: ~/OSTL_Udeet_C3/week4
student@dslab-staff:~/OSTL_Udeet_C3/week4$ gcc -c stack.c
student@dslab-staff:~/OSTL_Udeet_C3/week4$ gcc -c q1.c
student@dslab-staff:~/OSTL_Udeet_C3/week4$ gcc -o q1 q1.o stack.o
student@dslab-staff:~/OSTL_Udeet_C3/week4$ ar crv libfoo.a stack.o
r - stack.o
student@dslab-staff:~/OSTL_Udeet_C3/week4$ ranlib libfoo.a
student@dslab-staff:~/OSTL_Udeet_C3/week4$ gcc -o q1 q1.o libfoo.a
student@dslab-staff:~/OSTL_Udeet_C3/week4$ ./q1

Enter:
1 to Push
2 to Pop
3 to Display Stack
4 to Exit Program
1

Enter the Number to Push:
10

Enter:
1 to Push
2 to Pop
3 to Display Stack
4 to Exit Program
```

```
student@dslab-staff: ~/OSTL_Udeet_C3/week4
4 to Exit Program
1
Enter the Number to Push:
20
Enter:
1 to Push
2 to Pop
3 to Display Stack
4 to Exit Program
1
Enter the Number to Push:
30
Enter:
1 to Push
2 to Pop
3 to Display Stack
4 to Exit Program
2
The Popped Number is: 30
```

```
student@dslab-staff: ~/OSTL_Udeet_C3/week4
Enter:
1 to Push
2 to Pop
3 to Display Stack
4 to Exit Program
2
The Popped Number is: 30
Enter:
1 to Push
2 to Pop
3 to Display Stack
4 to Exit Program
3
20 10
Enter:
1 to Push
2 to Pop
3 to Display Stack
4 to Exit Program
4
student@dslab-staff:~/OSTL_Udeet_C3/week4$ _
```