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OST Lab 4 (Week 4)

Q1)

stack.h

```
#include<stdbool.h>
#define MAX 4

typedef struct {
	char data[MAX];
	int top;
} stack;

bool isFull(stack* s);
void push(stack *s, char c);
bool isEmpty(stack* s);
char pop(stack *s);
void display(stack* s);
```

push.c

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

bool isFull(stack* s){
	if(s->top == MAX-1){
		return true;
	}
	else
		return false;
}

void push(stack *s,char c)
{
	if(isFull(s)){
		printf("Stack is Full\n");
		return;
	}
	s->top++;
	s->data[s->top] = c;
}
```

pop.c

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

bool isEmpty(stack* s){
```

```
	if(s->top == -1){
		return true;
	}
	else
		return false;
}

char pop(stack *s)
{
	if(!isEmpty(s)){
		return(s->data[s->top--]);
	}
}
```

display.c

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

void display(stack* s){
	if(isEmpty(s)){
		printf("Stack is empty\n");
		return;
	}
	int count = s->top;
	while(count>-1){
		printf("%c\n",s->data[count--]);
	}
}
```

program.c

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

void main(){
	stack st;
	stack* s = &st;
	s->top = -1;
	push(s,'a');
	push(s,'b');
	push(s,'c');
	push(s,'d');
	push(s,'e');
	printf("\n");
	display(s);
	pop(s);
	pop(s);
	printf("\n");
	display(s);
	pop(s);
```

```
        pop(s);
        pop(s);
        printf("\n");
        display(s);
}
```

Terminal commands

```
gcc -c push.c pop.c display.c
ar crv stack.a display.o pop.o push.o
ranlib stack.a
gcc -c program.c
gcc -o program program.o stack.a
./program
```