Lab Program - 1

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.

```
// Array implementation of STACK
#include <stdio.h>
#define SIZE 10
int arr[SIZE];
int top = -1;

void push(int x) {
    if (top == SIZE-1) {
        printf("Error : The stack is full.\n");
        return;
    }
    arr[++top] = x;
}

void pop() {
    if (top == -1) {
        printf("Error: There's no element
                in the stack to pop.\n");
        return;
    }
    top = top - 1;
}

void display() {
    if (top == -1) {
        printf("There is no element left in
                the stack to display.\n");
    }
```

```
    else {
        printf ("Stack is as follows: \n");
        for (int i=0; i<=top; i++) {
            printf ("%d\n", arr[i]);
        }
    }
    return;
}

int main() {
    int n, ele, i;
    while (i!=1) {
        printf ("Select the required option:
                \n 1.Push \n 2.Pop \n
                3. Display \n 4.Exit \n");
        scanf ("%d", &n);
        if (n==1) {
            printf ("Enter the element to
                    be pushed / added to the
                    stack \n");
            scanf ("%d", &ele);
            push (ele);
        }
        else if (n==2) {
            pop();
        }
        else if (n==3) {
            display();
        }
        else if (n==4) {
            i=-1;
    }
    return 0;
}
```