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 message for stack overflow, stack underflow.

```c
#include <stdio.h>
#include <stdlib.h>
#define MAX 10
int top = -1, stack[MAX];
void push();
void pop();
void display();

int main()
{
    int ch;
    while (1)
    {
        printf("n\ *** STACK MENU***");
        printf("\n\n1.PUSH\n2.POP\n3.DISPLAY\n4.EXIT");
        printf("\n\n ENTER YOUR CHOICE (1-4) :");
        scanf("%d", &ch);
```

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```
switch (ch)
{

  case 1 : push();
       break;
  case 2 : pop();
     break;
  case 3 : display();
       break;
   case 4 : exit(0);
   default : printf ("\n Wrong choice");
     }
  }

  return 0;
  }

  void push()
  {

   int val;
  if (top == MAX-1)
    {
   printf ("\n STACK IS FULL");
    }

   else
   {

   printf ("\n ENTER ELEMENTS TO PUSH:");
   scanf ("%d, &val);
     top= top +1;
     stack [top] = val ;
     }
  }
```

```c
void pop()
{
if (top == -1)
{
  printf ("\n STACK IS EMPTY");
}
else
{
printf("\n DELETED ELEMENT IS %d", stack [top]);
top = top - 1;
}
}

void display ()
{
  int i;
  if (top == -1)
  {
    printf ("\n STACK IS EMPTY");
  }
  else
  {
    printf (" \n STACK IS ...");
    for (i = top; i) = 0; --i)
    printf ("%d \n", stack [i]);
  }
}
```

OUTPUT:-

*** STACK MENU ***
1. PUSH
2. POP
3. DISPLAY
4. EXIT

ENTER YOUR CHOICE (1-4): 2
STACK IS EMPTY
*** STACK MENU ***

1. PUSH
2. POP
3. DISPLAY
4. EXIT

ENTER YOUR CHOICE (1-4): 1
ENTER ELEMENTS TO PUSH: 5

*** STACK MENU ***

1. PUSH
2. POP
3. DISPLAY
4. EXIT

ENTER YOUR CHOICE (1-4): 1
ENTER ELEMENTS TO PUSH: 67
*** STACK MENU ***
1. PUSH
2. POP
3. DISPLAY
4. EXIT

ENTER YOUR CHOICE (1-4): 3

    STACK IS... 67

    5

*** STACK MENU ***

1. PUSH
2. POP
3. DISPLAY
4. EXIT

ENTER YOUR CHOICE (1-4): 2

DELETED ELEMENT IS 67

*** STACK MENU ***

1. PUSH
2. POP
3. DISPLAY
4. EXIT

ENTER YOUR CHOICE (1-4): 3

    STACK IS... 5

*** STACK MENU ***

1. PUSH
2. POP
3. DISPLAY
4. EXIT

ENTER YOUR CHOICE (1-4): 4