main.c

```c
#include<stdio.h>
int stack[100],choice,n,top,x,i;

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

int main()
{
 top = -1;
 printf("\n Enter the size of STACK ( <= 100): ");
 scanf("%d",&n);
 printf("\nSTACK IMPLEMENTATION USING ARRAYS\n");
 do
 {
 printf("\n1.PUSH\n2.POP\n3.DISPLAY\n4.EXIT\n");
 printf("\nEnter the choice : ");
 scanf("%d",&choice);
 switch(choice)
 {
 case 1:
 {
 push();
 break;
 }
 case 2:
```

---

main.c

```c
 case 2:
 {
 pop();
 break;
 }
 case 3:
 {
 display();
 break;
 }
 case 4:
 {
 break;
 }
 default:
 {
 printf ("\nInvalid Choice\n");
 }}}
 while(choice!=4);
 return 0;
}

void push()
{
 if(top >= n - 1)
 {
 printf("\nSTACK OVERFLOW\n");

 }
 else
```

```c
else
{
printf("Enter a value to be pushed : ");
scanf("%d",&x);
top++;
stack[top] = x;
}}

void pop()
{
 if(top <= -1)
 {
printf("\nSTACK UNDERFLOW\n");
 }
 else
 {
printf("\nThe popped element is %d",stack[top]);
top--;
}}

void display()
{
 if(top >= 0)
 {
printf("\nELEMENTS IN THE STACK\n\n");
 for(i = top ; i >= 0 ; i--)
printf("%d\t",stack[i]);
 }
 else
```

Language C | ❓ ⚙

main.c

```c
57    printf("Enter a value to be pushed : ");
58    scanf("%d",&x);
59    top++;
60    stack[top] = x;
61    }}
62
63    void pop()
64    {
65    if(top <= -1)
66    {
67    printf("\nSTACK UNDERFLOW\n");
68    }
69    else
70    {
71    printf("\nThe popped element is %d",stack[top]);
72    top--;
73    }}
74
75    void display()
76    {
77    if(top >= 0)
78    {
79    printf("\nELEMENTS IN THE STACK\n\n");
80    for(i = top ; i >= 0 ; i--)
81    printf("%d\t",stack[i]);
82    }
83    else
84    {
85    printf("\nSTACK IS EMPTY\n");
86    }}
```

input

```
Enter the size of STACK ( <= 100): 3

STACK IMPLEMENTATION USING ARRAYS


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

Enter the choice : 3

STACK IS EMPTY


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

Enter the choice : 1
Enter a value to be pushed : 9


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

Enter the choice : 2
```

input

```
Enter the choice : 2

STACK UNDERFLOW

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

Enter the choice : 1
Enter a value to be pushed : 8

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

Enter the choice : 1
Enter a value to be pushed : 7

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

Enter the choice : 1
Enter a value to be pushed : 3

1.PUSH
```

input

```
Enter a value to be pushed : 7

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

Enter the choice : 1
Enter a value to be pushed : 3

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

Enter the choice : 1

STACK OVERFLOW

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

Enter the choice : 4


...Program finished with exit code 0
Press ENTER to exit console.
```

Write a program to stimulate 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.


```
#include <stdio.h>
int stack [100], choice, n, top, x, i;

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

int main()
{ top=-1;
printf("\n Enter the size of STACK (<=100): ");
scanf("%d", &n);
printf("\n STACK IMPLEMENTATION USING ARRAYS");
do
{ printf("\n 1. PUSH \n 2. POP \n 3. DISPLAY
\n 4. EXIT \n");
printf("\n Enter the choice : ");
scanf("%d", & choice);
switch (choice)
```

Expt. No. _____

```
        { case 1:
            { push ();
              break; }

        case 2:
            { pop ();
              break; }

        case 3: {
              display ();
              break; }
        default:
            { printf ("|n Invalid choice |n");
            3 3 3
        while (choice b=4);
              return 0;
        3


void push ()
{ if ( top >= n-1)
    { printf ("|n STACK OVERFLOW|n");
    3
else
    { printf (" Enter a value to be pushed : ");
    scanf ("%d", &n);
    top ++;
    stack [top] = n;
    3 3
```

```
void  pop ()
 { if ( top <= -1)
  { printf ("\n STACK UNDERFLOW \n");
  }
  else
   { printf ("\n The popped element is %d",
                                        stack[top]);
   top--;
  }}


void display ()
 { if ( top >= 0)
  { printf ("\n ELEMENTS IN THE STACK \n\n");
  for ( i= top ; i >= 0 ; 0--)
  printf (" %d \t ", stack [i]);
  }
  else
   { printf ("\n STACK IS EMPTY\n");
  } }
```