```c
#include <stdio.h>
#include <stdlib.h>
#define MAX 3
int top=-1,stack[MAX];
void push();
void pop();
void display();

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

    switch(ch)
    {
     case 1:push();
        break;

     case 2: pop();
        break;
     case 3: display();
        break;
     case 4: exit(0);
     default: printf("\nWrong choice");
     }
    }
    return 0;
    }
    void push()
    {
     int val;
    if(top==MAX-1)

    {
    printf("\n STACK OVERFLOW");
    }
```

```c
38    {
39    printf("\n STACK OVERFLOW");
40    }
41    else
42    { printf("\n ENTER ELEMENTS TO PUSH:");
43    scanf("%d",&val);
44    top=top+1;
45    stack[top]=val;
46    }
47    }
48    void pop()
49    {
50     if(top==-1)
51
52    {|
53    printf("\n STACK UNDERFLOW");
54     }
55     else
56    { printf("\nDELETED ELEMENT IS %d",
      stack[top]);
57     top=top-1;
58    }
59    }
60    void display()
61    { int i;
62    if(top==-1)
63    { printf("\n STACK IS EMPTY");
64    }
65     else
66    { printf("\n STACK IS...");
67     for(i=top;i>=0;--i)
68     printf("%d\n",stack[i]);
69    }
70    }
```

▶

Tab | { | } | : | ; | " |

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

ENTER YOUR CHOICE(1-4):1

 ENTER ELEMENTS TO PUSH:10


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

ENTER YOUR CHOICE(1-4):1

 ENTER ELEMENTS TO PUSH:20


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

ENTER YOUR CHOICE(1-4):1

 ENTER ELEMENTS TO PUSH:30


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

ENTER YOUR CHOICE(1-4):1

 STACK OVERFLOW

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

ENTER YOUR CHOICE(1-4):3

 STACK IS...30
20
10


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

ENTER YOUR CHOICE(1-4):2

DELETED ELEMENT IS 30

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

```
 ENTER ELEMENTS TO PUSH:30


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

ENTER YOUR CHOICE(1-4):1

 STACK OVERFLOW

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

ENTER YOUR CHOICE(1-4):3

 STACK IS...30
20
10


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

ENTER YOUR CHOICE(1-4):2

DELETED ELEMENT IS 30

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

ENTER YOUR CHOICE(1-4):2

DELETED ELEMENT IS 20

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

ENTER YOUR CHOICE(1-4):2

DELETED ELEMENT IS 10

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

ENTER YOUR CHOICE(1-4):2

 STACK UNDERFLOW

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

ENTER YOUR CHOICE(1-4):
```

Lab Program - 1

1. Write a program to stimulate the working of stack using an array with the following Push, Pop, & display. The program should Print appropriate Message for stack underflow & overflow

```c
→  # include <stdio.h>
   # include <stdlib.h>
   # define MAX 3
   int top = -1, stack[MAX];
   void push();
   void pop();
   void display();

   int main()
   {

   int ch;
   while(1)
   {
   printf("\n 1. PUSH \n 2. POP \n 3. DISPLAY \n. 4. EXIT");
   printf("\n Enter Your choice (1-4): ");
   scanf("%d", &ch);
```

```c
switch (ch)
{
case 1 : push ();
          break;

case 2 : pop ();
          break;

case 3 : display ();
          break;

case 4 :   exit (0);

deafault : printf (" \n wrong choice");
}
}
return 0;
}
void push ()
{
int val;
if (top = = MAX-1)
 { printf (" \n Stack  is full Overflow");
 }
```

```c
else
{ printf ("\n Enter Elements to Push:");
scanf ("%d", &val);
top = top + 1;
stack [top] = val;
}
}

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 Underflow");
}
else {
```

```c
printf("\n Stack is : ");
for (P = top; i >= 0; --i)
    printf("%d", stack[i]);
}
}
```

Output

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

ENTER YOUR CHOICE (1-4): 1

ENTER ELEMENTS TO PUSH : 10

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

ENTER YOUR CHOICE (1-4): 1

ENTER ELEMENTS TO PUSH : 20

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

ENTER YOUR CHOICE (1-4): 1

ENTER ELEMENTS TO PUSH: 30

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

ENTER YOUR CHOICE (1-4): 1

STACK OVERFLOW

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

ENTER YOUR CHOICE (1-4): 3
```

STACK IS... 30
20
10

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

ENTER YOUR CHOICE (1-4): 2

DELETED ELEMENT IS 30

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

ENTER YOUR CHOICE (1-4): 2

DELETED ELEMENT IS 20

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

ENTER YOUR CHOICE (1-4): 2

DELETED ELEMENT IS 10

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

ENTER YOUR CHOICE (1-4): 2

STACK UNDERFLOW