```
// IMPLEMENTATION OF STACK
#include <stdio.h>
#include <stdlib.h>
#define MAX 50   //Max size of stack
int stack[MAX];    //Defining stack
int top;                 //Defining top

//Function declaration
void initialize();
int isEmpty();
int isFull();
int size();
void push(int );
void pop(int*);
void peek();
void display();

int main() {
   int num, elem;
   int popped, peeked;
   initialize();
   //Enter choices
   while(1) {
      printf("\n");
      printf("* 1 -> PUSH");
      printf("\n* 2 -> POP");
      printf("\n* 3 -> PEEK");
```

```
        printf("\n* 4 -> DISPLAY");
        printf("\n* 5 -> SIZE");
        printf("\n* 6 -> EXIT\n");
        scanf("%d", &num);
        printf("\n\t");
        if(num == 1) { //PUSH
            printf("\n--Enter a number to push--   ");
            scanf("%d", &elem);
            push(elem);
        } else if(num == 2) { //POP
            pop(&popped);
        } else if(num == 3) { //PEEK
            peek(&peeked);
        } else if(num == 4) { //DISPLAY
            display();
        } else if (num == 5) { //SIZE
            printf("\n--Currently, size of stack is  =>  %d", size());
        } else if (num == 6) { //QUIT
            printf("\n\n**********************\n");
            break;
        } else { //DEFAULT
            printf("\nINVALID INPUT");
        }
    }
    return 0;
}
```

```
void initialize() {
   top = -1;
}

int isEmpty() {
   if (top == -1)
      return 1;
   return 0;
}

int size() {
   return top+1;
}

int isFull() {
   if (top == MAX-1)
      return 1;
   return 0;
}

void push(int elem) {
   if(isFull()) {
      printf("\nOVERFLOW");
      return;
   }
   top++;
   stack[top] = elem;
```

```
}

void pop(int* popped) {
   if(isEmpty()) {
      printf("\nUNDERFLOW");
      return;
   }
   *popped = stack[top];
   top--;
   printf("--Popped element is  =>  %d", *popped);
   return;
}

void peek(int* peeked) {
   if(isEmpty()) {
      printf("\nUNDERFLOW");
      return;
   }
   *peeked = stack[top];
   printf("--Top value is  =>  %d", *peeked);
   return;
}

void display() {
   int i;
   if(isEmpty()) {
      printf("\nEMPTY");
```

```
    } else {
        printf("\nElements in Stack are :  ");
        for (i=0 ; i<=top ; i++) {
            printf("%d\t", stack[i]);
        }
    }
}
```

****

//OUTPUT

```
* 1 -> PUSH
* 2 -> POP
* 3 -> PEEK
* 4 -> DISPLAY
* 5 -> SIZE
* 6 -> EXIT
1


--Enter a number to push--   42

* 1 -> PUSH
* 2 -> POP
* 3 -> PEEK
* 4 -> DISPLAY
* 5 -> SIZE
* 6 -> EXIT
1


--Enter a number to push--   50

* 1 -> PUSH
* 2 -> POP
* 3 -> PEEK
* 4 -> DISPLAY
* 5 -> SIZE
* 6 -> EXIT
2

        --Popped element is  =>  50
* 1 -> PUSH
* 2 -> POP
* 3 -> PEEK
* 4 -> DISPLAY
* 5 -> SIZE
* 6 -> EXIT
3

        --Top value is  =>  42
```

```
* 1 -> PUSH
* 2 -> POP
* 3 -> PEEK
* 4 -> DISPLAY
* 5 -> SIZE
* 6 -> EXIT
4


Elements in Stack are :  42
* 1 -> PUSH
* 2 -> POP
* 3 -> PEEK
* 4 -> DISPLAY
* 5 -> SIZE
* 6 -> EXIT
5


--Currently, size of stack is  =>  1
* 1 -> PUSH
* 2 -> POP
* 3 -> PEEK
* 4 -> DISPLAY
* 5 -> SIZE
* 6 -> EXIT
6



************************
```