#include <stdio.h>

#include <stdlib.h>

#define MAX\_SIZE 100

typedef struct {

int items[MAX\_SIZE];

int top;

} Stack;

void initialize(Stack \*stack) {

stack->top = -1;

}

int isEmpty(Stack \*stack) {

return stack->top == -1;

}

int isFull(Stack \*stack) {

return stack->top == MAX\_SIZE - 1;

}

void push(Stack \*stack, int value) {

if (isFull(stack)) {

printf("Stack Overflow\n");

return;

}

stack->items[++stack->top] = value;

}

int pop(Stack \*stack) {

if (isEmpty(stack)) {

printf("Stack Underflow\n");

return -1;

}

return stack->items[stack->top--];

}

int peek(Stack \*stack) {

if (isEmpty(stack)) {

printf("Stack is empty\n");

return -1;

}

return stack->items[stack->top];

}

int main() {

Stack stack;

initialize(&stack);

push(&stack, 1);

push(&stack, 2);

push(&stack, 3);

printf("Top element: %d\n", peek(&stack));

printf("Popped element: %d\n", pop(&stack));

printf("Popped element: %d\n", pop(&stack));

printf("Popped element: %d\n", pop(&stack));

printf("Is the stack empty? %s\n", isEmpty(&stack) ? "Yes" : "No");

return 0;

}

A screenshot of a computer program

Description automatically generated