# include <iostream>

# include <stdlib.h>

# define MAX 10

# define INVALID INT\_MAX

using namespace std;

template <typename p>

class stack {

private:

p array[MAX];

p top;

public:

stack() {

top = -1;

}

void push (int ele) {

if (!isFull())

array[++top] = ele;

else

cout << endl << "Stack Overflow!";

}

p pop () {

if (!isEmpty()) {

return array[top--];

}

else

cout << endl << "Stack Underflow!";

}

p topel () {

if (top != -1)

return array[top];

else

return INVALID;

}

p returnTop () {

return top;

}

p returnEle(int val) {

return array[val];

}

bool isEmpty () {

if (top == -1)

return true;

else

return false;

}

bool isFull () {

if (top == MAX-1)

return true;

else

return false;

}

};

int main () {

stack<int> s1;

char chr;

do {

int ch = 0, ele = 0, top = 0;

cout << endl << "> 1. Push onto stack";

cout << endl << "> 2. Pop from stack";

cout << endl << "> 3. Print the stack";

cout << endl << "> 4. QUIT";

cout << endl << "Enter your choice: ";

cin >> ch;

switch (ch) {

case 1 : cout << endl << "Enter element to push onto stack: ";

cin >> ele;

s1.push(ele);

break;

case 2 : ele = s1.pop();

cout << endl << ele << " has been successfully popped from the stack!";

break;

case 3 : top = s1.returnTop();

while (top != -1) {

cout << s1.returnEle(top) << ele;

--top;

}

break;

case 4 : exit(0);

default : cout << "Unfortunately your input can not be processed any longer";

break;

}

cout << endl << "Do you want to enter more? (Y/N): ";

cin >> chr;

} while (chr == 'Y' | chr == 'y');

return 0;

}