//Stack program to push(),pop(),peek() and to check ifEmpty

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import java.util.Scanner;

public class MyStack {

private int maxSize;

private int[] stackArray;

private int top;

// Constructor

public MyStack(int size) {

maxSize = size;

stackArray = new int[maxSize];

top = -1; // Indicates empty stack

}

// Push() operation

public void push(int value) {

if (top == maxSize - 1) {

System.out.println("Stack Overflow! Cannot push " + value);

} else {

stackArray[++top] = value;

System.out.println("Pushed: " + value);

}

}

// Pop() operation

public int pop() {

if (isEmpty()) {

System.out.println("Stack Underflow! Cannot pop.");

return -1;

} else {

return stackArray[top--];

}

}

// Peek() operation

public int peek() {

if (isEmpty()) {

System.out.println("Stack is empty. Nothing to peek.");

return -1;

} else {

return stackArray[top];

}

}

// isEmpty operation

public boolean isEmpty() {

return top == -1;

}

// Main method to test stack

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

MyStack stack = new MyStack(5);

while (true) {

System.out.println("\n STACK OPERATIONS ");

System.out.println("1. Push");

System.out.println("2. Pop");

System.out.println("3. Peek");

System.out.println("4. Check if Empty");

System.out.println("5. Exit");

System.out.print("Select from above options to proceed! ");

int choice = scanner.nextInt();

switch (choice) {

case 1:

System.out.print("Enter value to push: ");

int val = scanner.nextInt();

stack.push(val);

break;

case 2:

int popped = stack.pop();

if (popped != -1) {

System.out.println("Popped: " + popped);

}

break;

case 3:

int peeked = stack.peek();

if (peeked != -1) {

System.out.println("Top element: " + peeked);

}

break;

case 4:

System.out.println("Stack is " + (stack.isEmpty() ? "empty." : "not empty."));

break;

case 5:

System.out.println("Exited program...");

scanner.close();

return;

default:

System.out.println("Invalid choice.");

}

}

}

}