

//Savannah Swan

/*Class CS1450

* Due: March 5, 2025

* Assignment 5

*This assignment goes through an array of numbers and puts them onto a stack.

*Then, it replaces the 0's with 10's. Next, the method reads from four files.

*2 int files and 2 string files. It places them into a separate stack. Then,

*it sorts the arrays. Then, it merges the sorted arrays.

*/

import java.io.IOException;

import java.util.Collections;

import java.util.Iterator;

import java.util.Stack;

import java.io.File;

import java.util.ArrayList;

import java.util.Collection;

import java.io.IOException;

import java.util.Scanner;

public class SwanSavannahAssignment5 {

public static void main(String[] args) **throws** IOException {

System.**out**.println("Stack Values after replacing 0's with 10");

System.**out**.println("-----");

int[] numbers = {0, 0, 4, 3, 0, 0, 2, 1, 0, 0};

Stack<Integer> intStack = **new** Stack<>();

for (**int** i = 0; i < numbers.length; i++) {
 intStack.push(numbers[i]);
}

replaceZerosWithTen (intStack);

```
GenericStack<Integer> intStack1 = new GenericStack<>();  
GenericStack<Integer> intStack2 = new GenericStack<>();
```

```
final String INTEGERS_ONE = "integers1.txt";
```

```
File integersOne = new File(INTEGERS_ONE);
```

```
Scanner integer1 = new Scanner (integersOne);
```

```
while (integer1.hasNext()) {
```

```
int number = integer1.nextInt();
```

```
intStack1.push(number);
```

```
}
```

```
System.out.println("\nInteger1 Stack: filled with values from  
file: integers1.txt");
```

```
System.out.println("-----");  
printStack (intStack1);
```

```
final String INTEGERS_TWO = "integers2.txt";
```

```
File integersTwo = new File(INTEGERS_TWO);
```

```
Scanner integer2 = new Scanner (integersTwo);
```

```
while (integer2.hasNext()) {
```

```
int numberTwo = integer2.nextInt();
```

```
intStack2.push(numberTwo);
```

```
}
```

```
System.out.println("\nInteger2 Stack: filled with values from  
file: integers2.txt");
```

```
System.out.println("-----");  
printStack (intStack2);
```

```
GenericStack<String> stringStack1 = new GenericStack<>();  
GenericStack<String> stringStack2 = new GenericStack<>();
```

```
final String STRING_ONE = "strings1.txt";
```

```
File stringOne = new File(STRING_ONE);
```

```
Scanner string1 = new Scanner (stringOne);
```

```
while (string1.hasNext()) {
```

```
String name = string1.next();
```

```
stringStack1.push(name);
```

```
}
```

```
System.out.println("\nString1 Stack: filled with values from file:  
string1.txt");
```

```
System.out.println("-----");  
printStack (stringStack1);
```

```
final String STRING_TWO = "strings2.txt";
```

```
File stringTwo = new File(STRING_TWO);
```

```
Scanner string2 = new Scanner (stringTwo);
```

```
    while (string2.hasNext()) {  
  
        String name = string2.next();  
  
        stringStack2.push(name);  
  
    }  
    System.out.println("\nString2 Stack: filled with values from file:  
string2.txt");  
  
    System.out.println("-----");  
    printStack (stringStack2);  
  
    System.out.println("Sorted stack integers1: ");  
  
    System.out.println("-----");  
    sortStack (intStack1);  
    System.out.println("Sorted stack integers2: ");  
  
    System.out.println("-----");  
    sortStack (intStack2);  
    System.out.println("Sorted stack strings1: ");  
  
    System.out.println("-----");  
    sortStack (stringStack1);  
    System.out.println("Sorted stack strings2: ");  
  
    System.out.println("-----");  
    sortStack (stringStack1);  
  
    System.out.println("\nMerged String Stacks");  
  
    System.out.println("-----");
```

```

        System.out.println(mergeStacks (stringStack1, stringStack2));

    }//main
    public static <E extends Comparable<E>> GenericStack<E>
mergeStacks (GenericStack<E> stack1, GenericStack<E> stack2) {

        GenericStack<E> tempStack = new GenericStack<>();

        E value1 = stack1.peek();
        E value2 = stack2.peek();

        while (stack1.isEmpty() != true) {
            tempStack.push(value1);
            stack1.pop();
        }
        while (stack2.isEmpty() != true) {
            tempStack.push(value2);
            stack2.pop();
        }
        return tempStack;

    }

    public static <E extends Comparable<E> > void sortStack
(GenericStack<E> aStack) {

        Stack<E> tempStack = new Stack<>();

        while (aStack.isEmpty() != true) {

            E current = aStack.peek();

            while (!tempStack.isEmpty() &&
(aStack.peek()).compareTo(current) > 0) {

```

```

        aStack.push(tempStack.pop());
    }
    tempStack.push(current);
}
while (!tempStack.isEmpty()) {
    aStack.push(tempStack.pop());
}

printStack(aStack);
}

```

```

public static <E> void printStack (GenericStack<E> stack) {

```

```

    GenericStack<E> tempStack = new GenericStack<>();

```

```

    while (stack.isEmpty() != true) {
        System.out.println(stack.peek());
        tempStack.push(stack.peek());
        stack.pop();
    }

```

```

    while (tempStack.isEmpty() != true) {
        stack.push(tempStack.peek());
        tempStack.pop();
    }

```

```

}
public static void replaceZerosWithTen (Stack<Integer> intStack) {

```

```

    Stack<Integer> tempStack = new Stack<>();

```

```

    while (intStack.isEmpty() != true) {

```

```

        if (intStack.peek() == 0) {

```

```
        intStack.pop();
        tempStack.push(10);
    }
    else if(intStack.peek() == 1) {
        intStack.pop();
        tempStack.push(1);
    }
    else if (intStack.peek() == 2) {
        intStack.pop();
        tempStack.push(2);
    }
    else if (intStack.peek() == 3) {
        intStack.pop();
        tempStack.push(3);
    }
    else if (intStack.peek() == 4) {
        intStack.pop();
        tempStack.push(4);
    }
}
while (tempStack.isEmpty() != true) {

    if (tempStack.peek() == 10) {
        tempStack.pop();
        intStack.push(10);
    }
    else if (tempStack.peek() == 1) {
        tempStack.pop();
        intStack.push(1);
    }
    else if (tempStack.peek() == 2) {
        tempStack.pop();
        intStack.push(2);
    }
    else if (tempStack.peek() == 3) {
```

```

        tempStack.pop();
        intStack.push(3);
    }
    else if (tempStack.peek() == 4) {
        tempStack.pop();
        intStack.push(4);
    }
}
System.out.println("Stack: " + intStack);
}

```

//SwanSavannahAssignment5

```

class GenericStack <E> {

    private ArrayList<E> list1 = new ArrayList<>();

    public GenericStack() {

    }

    public boolean isEmpty() {

        return list1.isEmpty();
    }

    public int getSize() {
        return list1.size();
    }
    public E peek() {
        return list1.get(getSize()-1);
    }

    public E pop() {
        E value = list1.remove(getSize() -1);
        return value;
    }
}

```



```
}  
    public void push(E value) {  
        list1.add(value);  
    }  
}
```