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ESTRUCTURA DE DATOS

GRUPO:1360(2025-1)

TAREA 9 - EVALUACIÓN DE BALANCEO
DE PARENTESIS Y LLAVES

21 DE SEPTIEMBRE DEL 2024

```
import java.util.LinkedList;

public class StackADT<E> {
    private LinkedList<E> data;
    private long maxLength=Integer.MAX_VALUE;

    public StackADT(){
        this.data=new LinkedList<>();
    }
    public StackADT(int x){
        this.data=new LinkedList<>();
        this.maxLength=x;
    }

    public boolean isEmpty(){
        boolean res = false;
        if (this.data.size() == 0){
            res = true;
        }
        return res;
    }

    public int length(){
        return this.data.size();
    }

    public E pop(){
        if(this.length()==0){
            System.out.println("No hay elementos para sacar");
            return null;
        }

        return data.removeFirst();
    }

    public E peek(){
        if(this.length()==0){
            System.out.println("Ya no hay elementos");
            return null;
        }
        return data.peekFirst();
    }
}
```

```

    }

    public void push(E valor){
        if(this.length()==this.maxLength){
            System.out.println("Maxima longitud alcanzada, no se pueden
almacenar mas elementos");
        }else{
            data.addFirst(valor);
        }
    }

    public boolean isFull(){
        if(this.length()==this.maxLength){
            return false;
        }
        return true;
    }

    @Override
    public String toString() {
        return "StackADT{" +
            "data=" + data +
            '}';
    }
}

```

```

import java.nio.file.Files;
import java.nio.file.Paths;

public class Main {

    public static void main(String[] args) {
        String codigo="";
        try {
            codigo = new
String(Files.readAllBytes(Paths.get("C:/Users/arn/Estructuras-de-
Datos/txtprueba.txt")));

        } catch (Exception e) {
            e.printStackTrace();
        }
        System.out.println(revisionBalanceo(codigo));
    }

    public static boolean revisionBalanceo(String texto){
        StackADT parenthesis = new StackADT<>();
        StackADT llaves = new StackADT<>();
        boolean p=true;
        boolean l=true;

        for(int i=0;i<texto.length();i++){
            char c=texto.charAt(i);

            switch (c) {
                case '(':
                    parenthesis.push(c);
                    break;
                case ')':
                    if(parenthesis.isEmpty()){
                        System.out.println("un parentesis de mas en la
posicion: " + i);
                        p=false;
                    }else{
                        parenthesis.pop();
                    }

                    break;
                case '{':
                    llaves.push(c);
                    break;
            }
        }
    }
}

```

```

        case '}':
            if(llaves.isEmpty()){
                System.out.println("una llave de mas en la posicion:
" + i);
                l=false;
            }else{
                llaves.pop();
            }
            break;
        }
    }

    if(p && !parentesis.isEmpty()){
        System.out.println("hay parentesis sin cerrar");
        p=false;
    }

    if(l && !llaves.isEmpty()){
        System.out.println("hay parentesis sin cerrar");
        l=false;
    }

    if(p && l){
        System.out.println("Balanceo de parentesis y llaves correcto");
    }else{
        System.out.println("El codigo no esta balanceado");
    }
    return p && l;
}
}

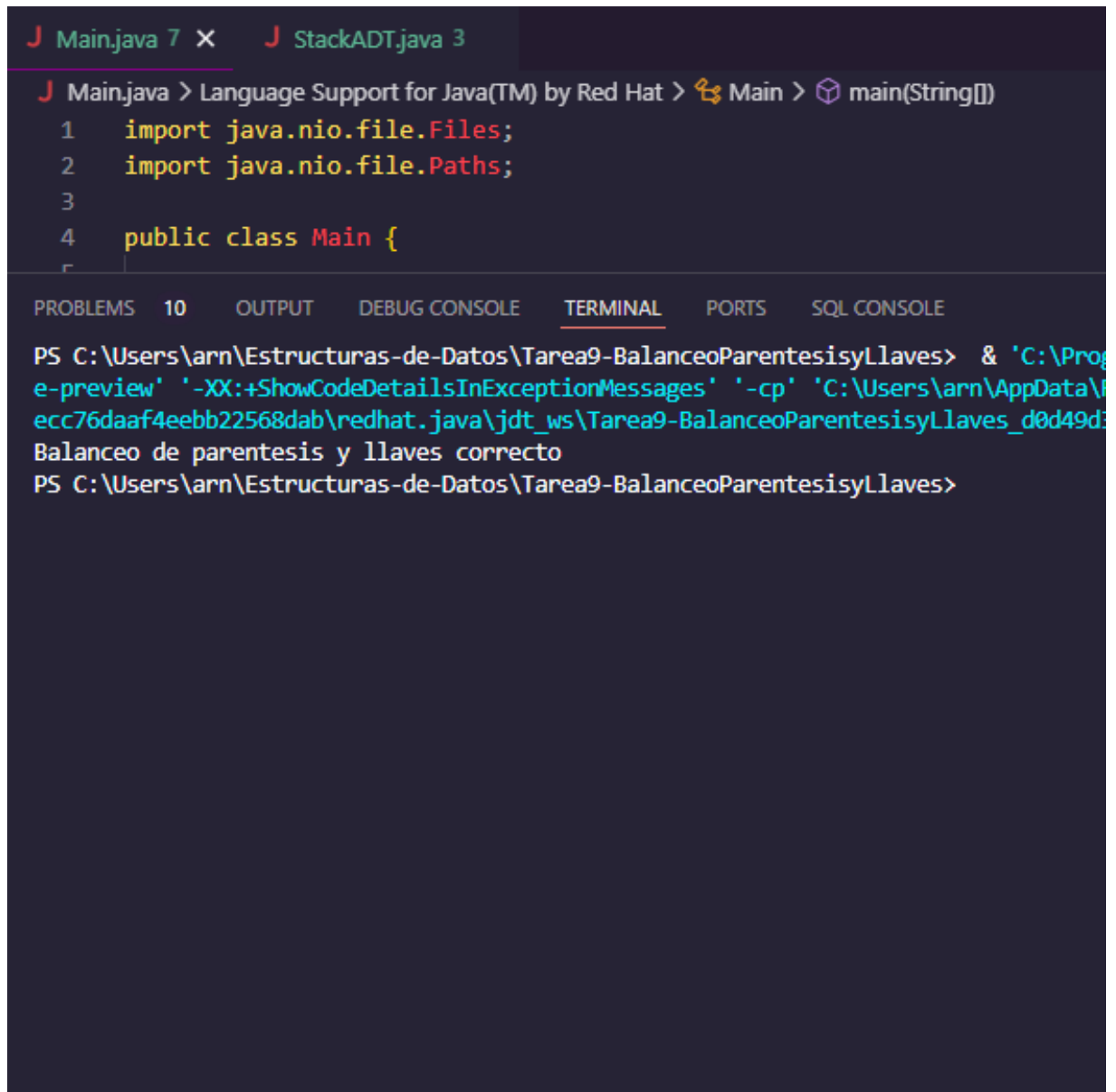
```

Lo probamos con un código incompleto:

```
J Main.java 7 X J StackADT.java 3
J Main.java > Language Support for Java(TM) by Red Hat > Main > main(String[])
1 import java.nio.file.Files;
2 import java.nio.file.Paths;
3
4 public class Main {

PROBLEMS 10 OUTPUT DEBUG CONSOLE TERMINAL PORTS SQL CONSOLE
PS C:\Users\arn\Estructuras-de-Datos\Tarea9-BalanceoParentesisyLlaves> & 'C:\Program Files\Java\jdk-11.0.2\bin\java.exe' -e-preview' -XX:+ShowCodeDetailsInExceptionMessages' -cp 'C:\Users\arn\AppData\Local\Programs\Microsoft Java Virtual Machine Tools\jdk-11.0.2\bin\java.exe' ecc76daaf4eebb22568dab\redhat.java\jdt_ws\Tarea9-BalanceoParentesisyLlaves_d0
un parentesis de mas en la posicion: 381
una llave de mas en la posicion: 798
El codigo no esta balanceado
PS C:\Users\arn\Estructuras-de-Datos\Tarea9-BalanceoParentesisyLlaves>
```

Lo intentamos con el código de StackADT.java:



The screenshot shows an IDE with two tabs: 'Main.java 7' and 'StackADT.java 3'. The 'Main.java' tab is active, displaying the following code:

```
1 import java.nio.file.Files;
2 import java.nio.file.Paths;
3
4 public class Main {
```

Below the code editor, there is a toolbar with tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL', 'PORTS', and 'SQL CONSOLE'. The 'TERMINAL' tab is selected, showing the following command and output:

```
PS C:\Users\arn\Estructuras-de-Datos\Tarea9-BalanceoParentesisyLlaves> & 'C:\Program Files\Java\jdk-11.0.10\bin\java.exe' -XX:+ShowCodeDetailsInExceptionMessages -cp 'C:\Users\arn\AppData\Local\Temp\1\jdt_ws\Tarea9-BalanceoParentesisyLlaves_d0d49d3' Balanceo de parentesis y llaves correcto
PS C:\Users\arn\Estructuras-de-Datos\Tarea9-BalanceoParentesisyLlaves>
```

Lo probamos con la misma clase Main:

Main.java 7 X StackADT.java 3

Main.java > Language Support for Java(TM) by Red Hat > Main > main(String[])

1 import java.nio.file.Files;
2 import java.nio.file.Paths;
3
4 public class Main {
5

PROBLEMS 10 OUTPUT DEBUG CONSOLE TERMINAL PORTS SQL CONSOLE

PS C:\Users\arn\Estructuras-de-Datos\Tarea9-BalanceoParentesisyLlaves> & 'C:\Pr
e' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\
paceStorage\e35747d61cecc76daaf4eebb22568dab\redhat.java\jdt_ws\Tarea9-BalanceoP
n'
Balanceo de parentesis y llaves correcto
PS C:\Users\arn\Estructuras-de-Datos\Tarea9-BalanceoParentesisyLlaves>