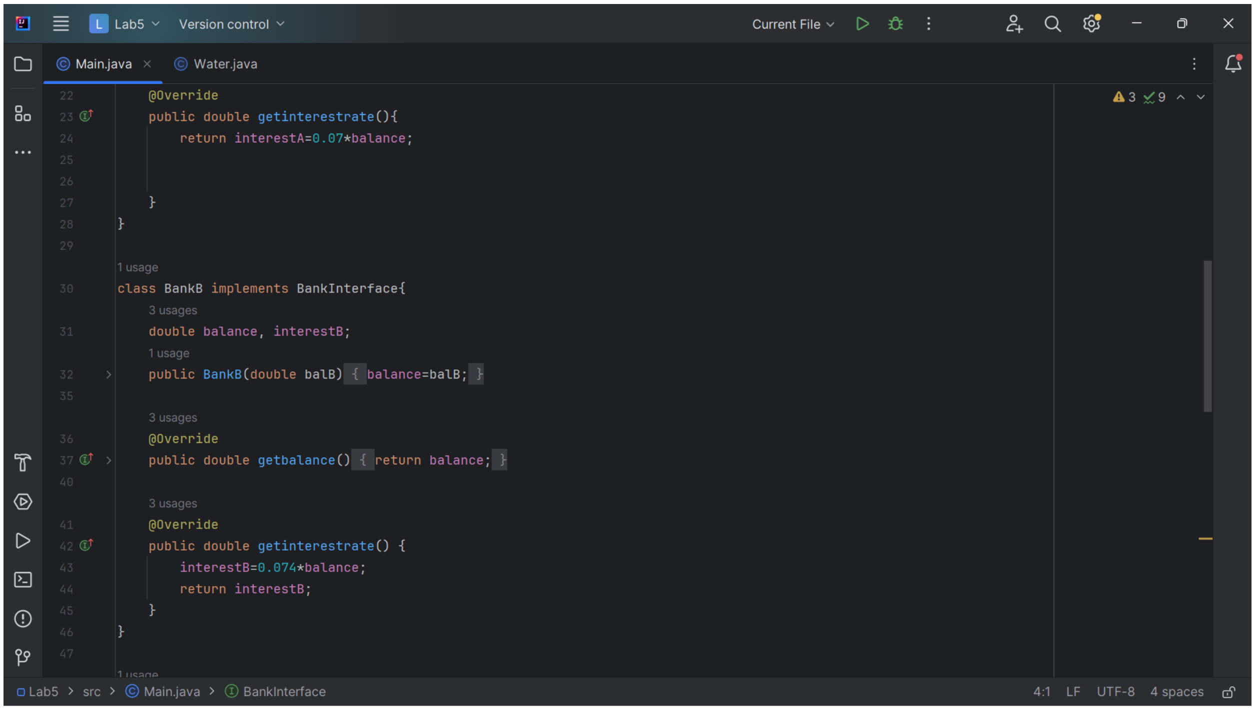
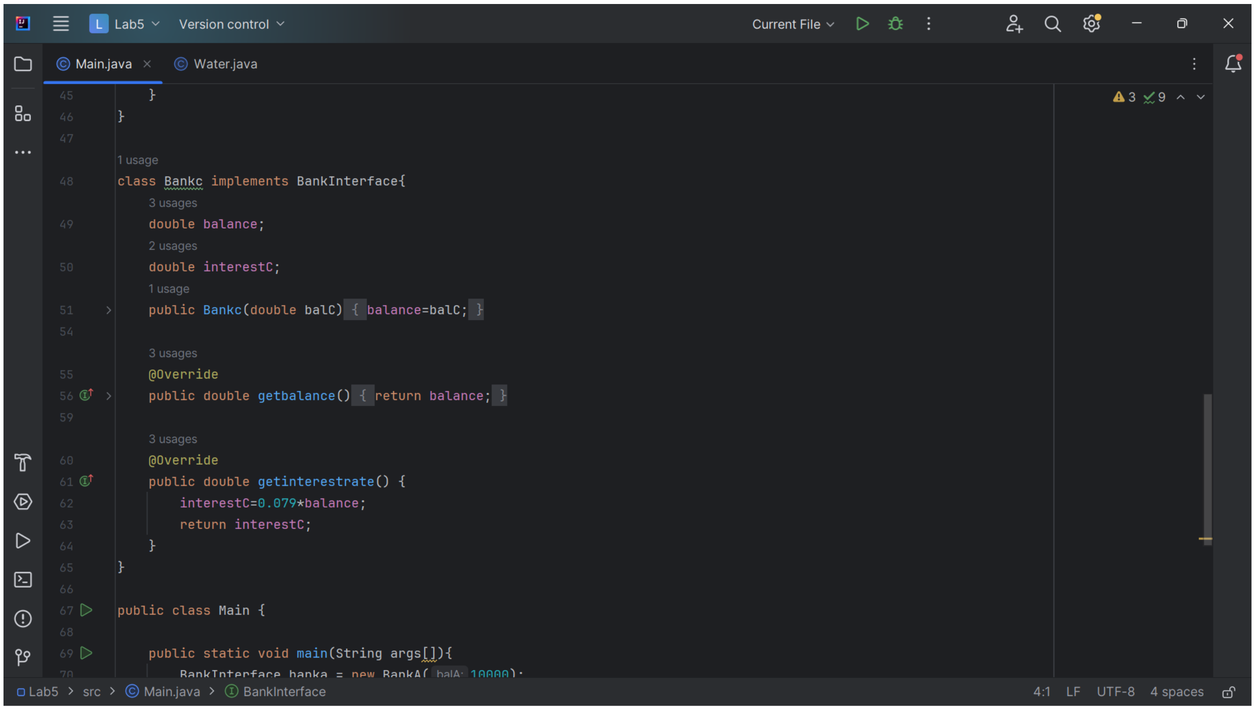
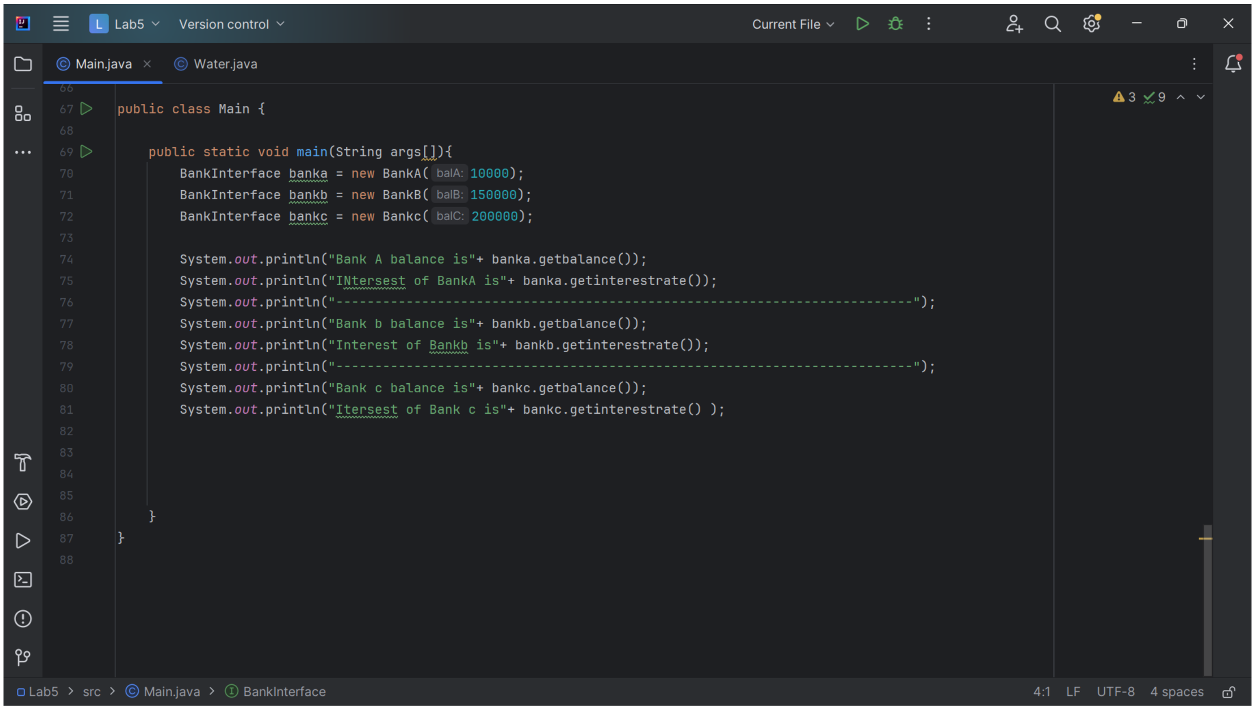
QUESTION 1



```
    @Override
    public double getinterestrate(){
        return interestA=0.07*balance;


    }
}

1 usage
class BankB implements BankInterface{
    3 usages
    double balance, interestB;
    1 usage
    public BankB(double balB) { balance=balB; }

    3 usages
    @Override
    public double getbalance() { return balance; }

    3 usages
    @Override
    public double getinterestrate() {
        interestB=0.074*balance;
        return interestB;
    }
}

1 usage
```

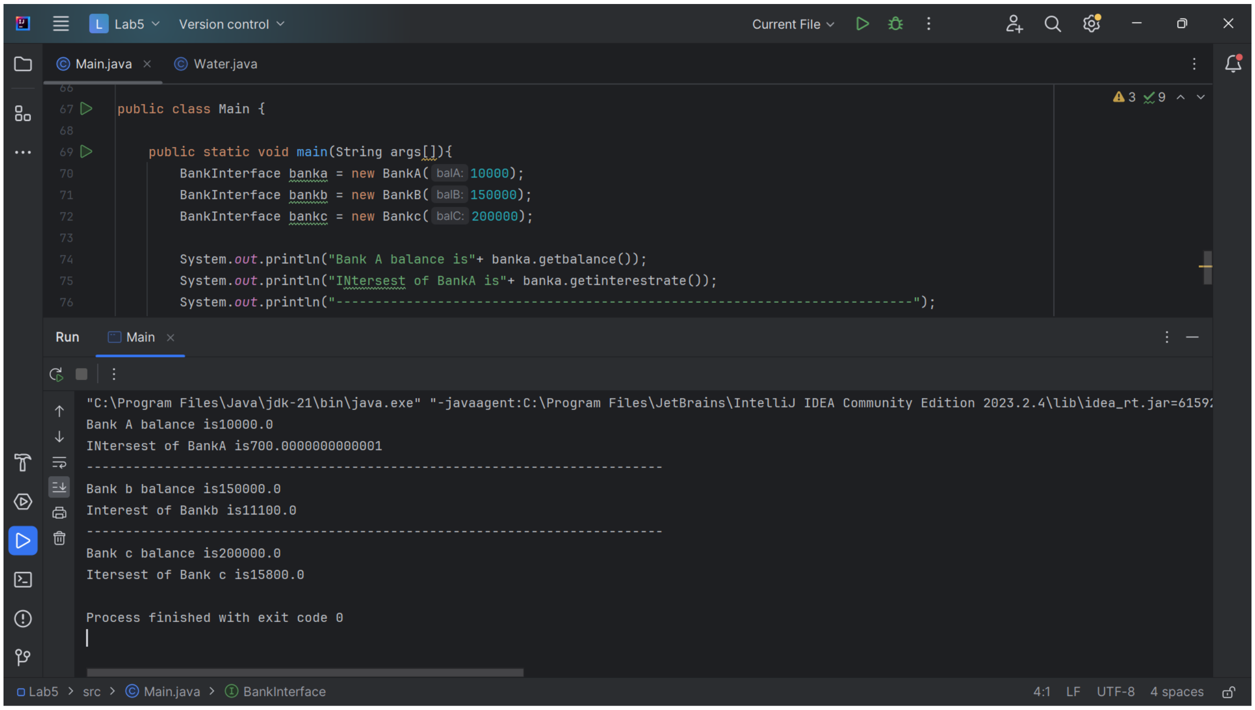


```
    }
}

1 usage
class Bankc implements BankInterface{
    3 usages
    double balance;
    2 usages
    double interestC;
    1 usage
    public Bankc(double balC) { balance=balC; }

    3 usages
    @Override
    public double getbalance() { return balance; }

    3 usages
    @Override
    public double getinterestrate() {
        interestC=0.079*balance;
        return interestC;
    }
}

public class Main {

    public static void main(String args[]){
        BankInterface banka = new BankA( balA: 10000);
```



```java
public class Main {

    public static void main(String args[]){
        BankInterface banka = new BankA( 10000);
        BankInterface bankb = new BankB( 150000);
        BankInterface bankc = new Bankc( 200000);

        System.out.println("Bank A balance is"+ banka.getbalance());
        System.out.println("INtersest of BankA is"+ banka.getinterestrate());
        System.out.println("--------------------------------------------------------------------------");
        System.out.println("Bank b balance is"+ bankb.getbalance());
        System.out.println("Interest of Bankb is"+ bankb.getinterestrate());
        System.out.println("--------------------------------------------------------------------------");
        System.out.println("Bank c balance is"+ bankc.getbalance());
        System.out.println("Itersest of Bank c is"+ bankc.getinterestrate() );




    }
}
```

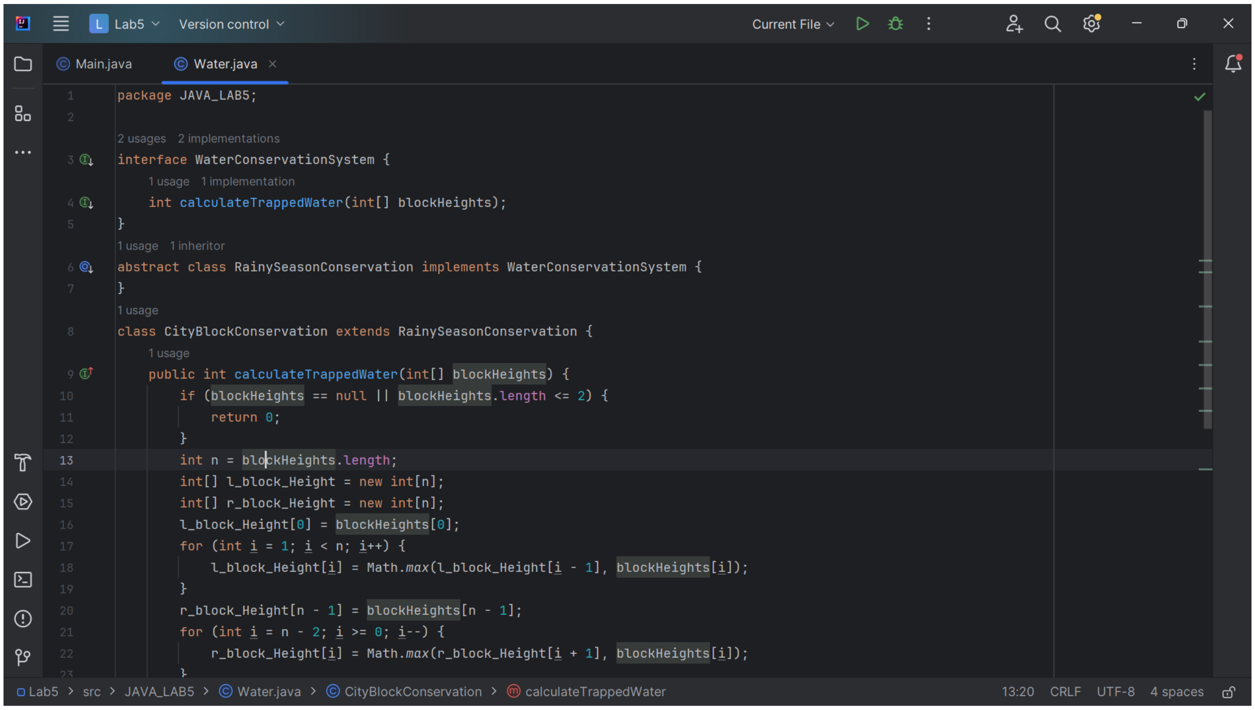
OUTPUT:



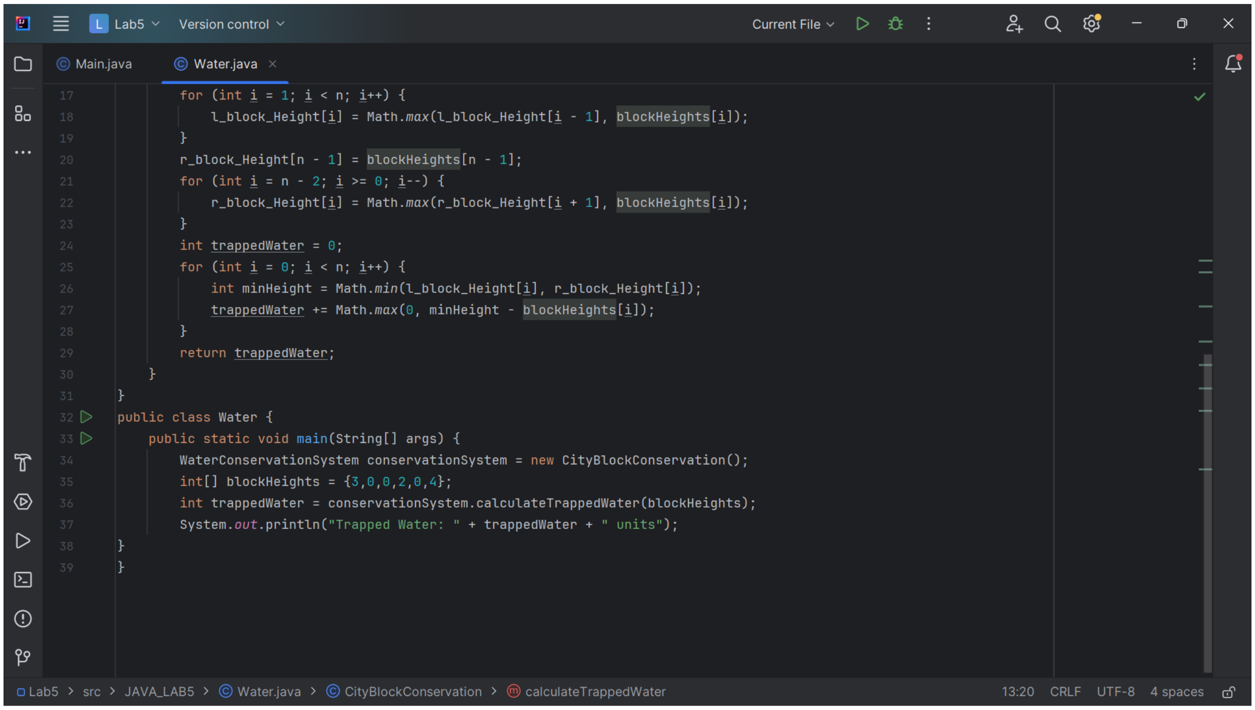
```java
public class Main {

    public static void main(String args[]){
        BankInterface banka = new BankA( 10000);
        BankInterface bankb = new BankB( 150000);
        BankInterface bankc = new Bankc( 200000);

        System.out.println("Bank A balance is"+ banka.getbalance());
        System.out.println("INtersest of BankA is"+ banka.getinterestrate());
        System.out.println("--------------------------------------------------------------------------");
```

```
"C:\Program Files\Java\jdk-21\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.2.4\lib\idea_rt.jar=6159
Bank A balance is10000.0
INtersest of BankA is700.0000000000001
--------------------------------------------------------------------------
Bank b balance is150000.0
Interest of Bankb is11100.0
--------------------------------------------------------------------------
Bank c balance is200000.0
Itersest of Bank c is15800.0

Process finished with exit code 0
```

QUESTION 2

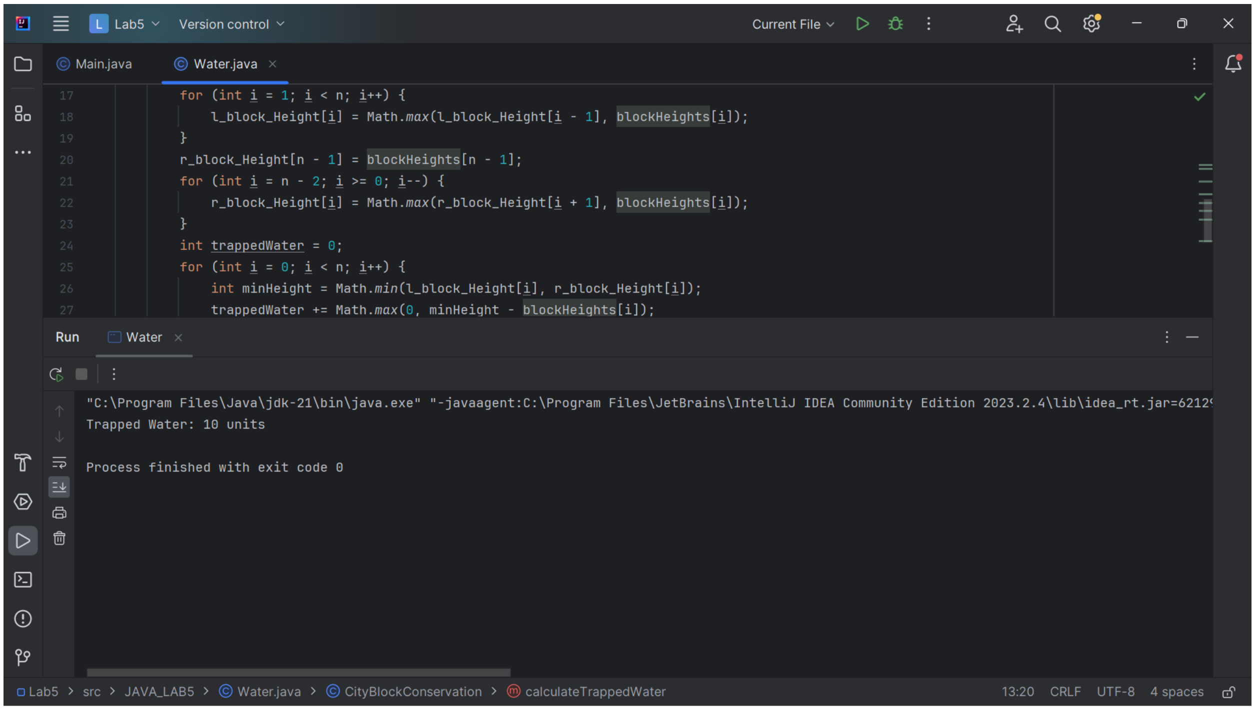

Lab5
Version control
Current File
Main.java
Water.java
2 usages   2 implementations
1 usage   1 implementation
1 usage   1 inheritor
1 usage
1 usage
Lab5 › src › JAVA_LAB5 › Water.java › CityBlockConservation › calculateTrappedWater
13:20   CRLF   UTF-8   4 spaces

```java
package JAVA_LAB5;

interface WaterConservationSystem {
    int calculateTrappedWater(int[] blockHeights);
}
abstract class RainySeasonConservation implements WaterConservationSystem {
}
class CityBlockConservation extends RainySeasonConservation {
    public int calculateTrappedWater(int[] blockHeights) {
        if (blockHeights == null || blockHeights.length <= 2) {
            return 0;
        }
        int n = blockHeights.length;
        int[] l_block_Height = new int[n];
        int[] r_block_Height = new int[n];
        l_block_Height[0] = blockHeights[0];
        for (int i = 1; i < n; i++) {
            l_block_Height[i] = Math.max(l_block_Height[i - 1], blockHeights[i]);
        }
        r_block_Height[n - 1] = blockHeights[n - 1];
        for (int i = n - 2; i >= 0; i--) {
            r_block_Height[i] = Math.max(r_block_Height[i + 1], blockHeights[i]);
        }
```


Lab5
Version control
Current File
Main.java
Water.java
Lab5 › src › JAVA_LAB5 › Water.java › CityBlockConservation › calculateTrappedWater
13:20   CRLF   UTF-8   4 spaces

```java
        for (int i = 1; i < n; i++) {
            l_block_Height[i] = Math.max(l_block_Height[i - 1], blockHeights[i]);
        }
        r_block_Height[n - 1] = blockHeights[n - 1];
        for (int i = n - 2; i >= 0; i--) {
            r_block_Height[i] = Math.max(r_block_Height[i + 1], blockHeights[i]);
        }
        int trappedWater = 0;
        for (int i = 0; i < n; i++) {
            int minHeight = Math.min(l_block_Height[i], r_block_Height[i]);
            trappedWater += Math.max(0, minHeight - blockHeights[i]);
        }
        return trappedWater;
    }
}
public class Water {
    public static void main(String[] args) {
        WaterConservationSystem conservationSystem = new CityBlockConservation();
        int[] blockHeights = {3,0,0,2,0,4};
        int trappedWater = conservationSystem.calculateTrappedWater(blockHeights);
        System.out.println("Trapped Water: " + trappedWater + " units");
}
}
```

OUTPUT:


Lab5
Version control
Current File
Main.java
Water.java
Run
Water
Lab5 › src › JAVA_LAB5 › Water.java › CityBlockConservation › calculateTrappedWater
13:20
CRLF
UTF-8
4 spaces

```java
        for (int i = 1; i < n; i++) {
            l_block_Height[i] = Math.max(l_block_Height[i - 1], blockHeights[i]);
        }
        r_block_Height[n - 1] = blockHeights[n - 1];
        for (int i = n - 2; i >= 0; i--) {
            r_block_Height[i] = Math.max(r_block_Height[i + 1], blockHeights[i]);
        }
        int trappedWater = 0;
        for (int i = 0; i < n; i++) {
            int minHeight = Math.min(l_block_Height[i], r_block_Height[i]);
            trappedWater += Math.max(0, minHeight - blockHeights[i]);
```

```
"C:\Program Files\Java\jdk-21\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.2.4\lib\idea_rt.jar=6212
Trapped Water: 10 units

Process finished with exit code 0
```