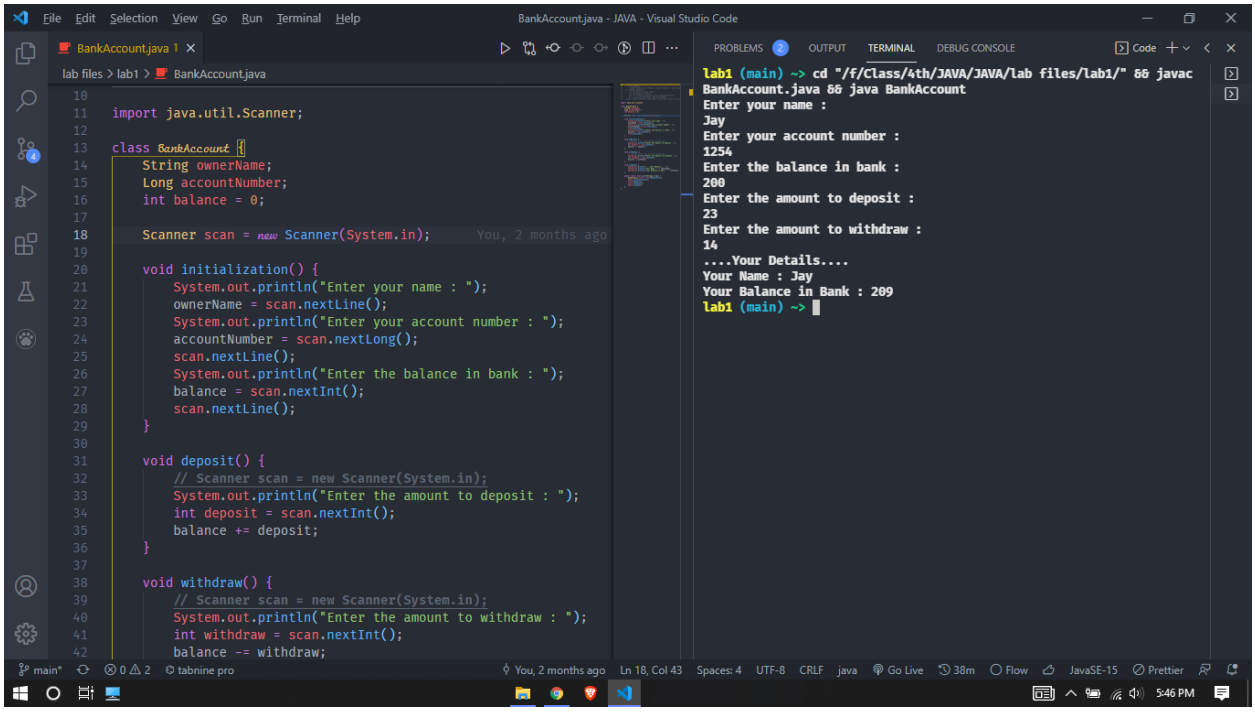
LAB 1

BANK ACCOUNT

```
import java.util.Scanner;

class BankAccount {
    String ownerName;
    Long accountNumber;
    int balance = 0;

    Scanner scan = new Scanner(System.in);

    void initialization() {
        System.out.println("Enter your name : ");
        ownerName = scan.nextLine();
        System.out.println("Enter your account number : ");
        accountNumber = scan.nextLong();
        scan.nextLine();
        System.out.println("Enter the balance in bank : ");
        balance = scan.nextInt();
        scan.nextLine();
    }

    void deposit() {
        // Scanner scan = new Scanner(System.in);
        System.out.println("Enter the amount to deposit : ");
        int deposit = scan.nextInt();
        balance += deposit;
    }

    void withdraw() {
        // Scanner scan = new Scanner(System.in);
        System.out.println("Enter the amount to withdraw : ");
        int withdraw = scan.nextInt();
        balance -= withdraw;
    }
```

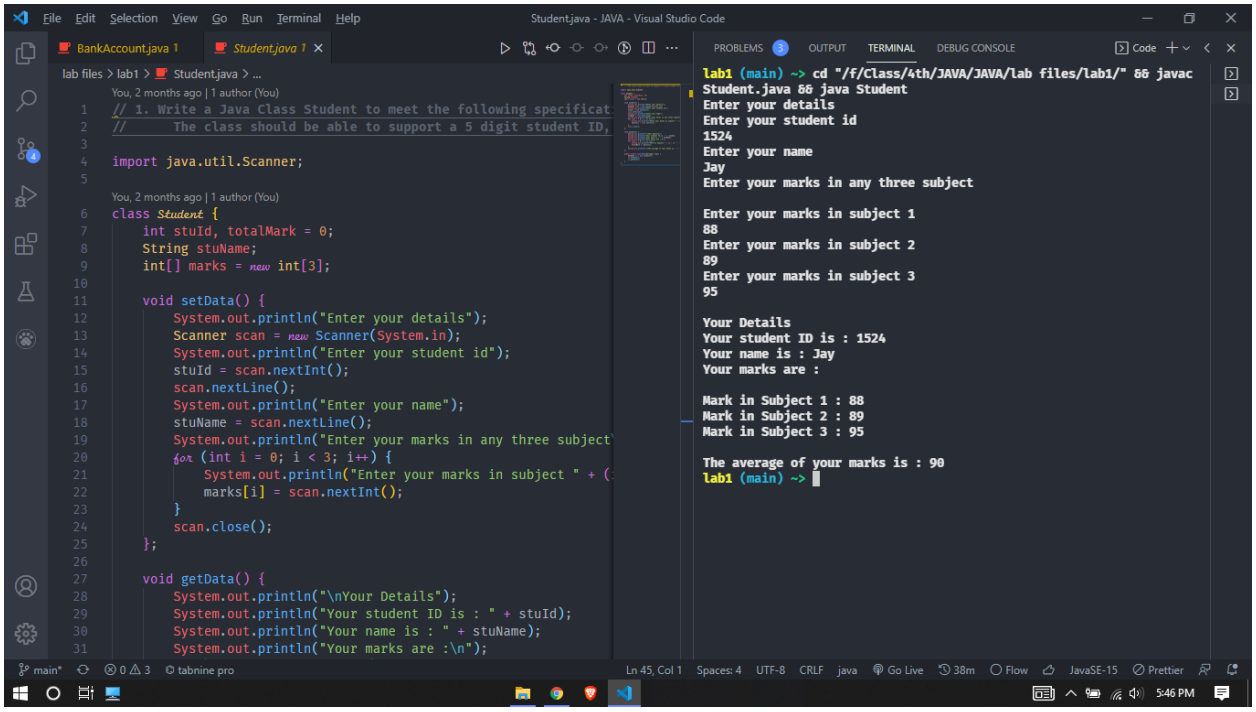
```
    void display() {
        System.out.println("....Your Details.... ");
        System.out.println("Your Name : " + ownerName);
        System.out.println("Your Balance in Bank : " + balance);
    }

    public static void main(String[] args) {
        BankAccount user1 = new BankAccount();
        user1.initialization();
        user1.deposit();
        user1.withdraw();
        user1.display();
    }
}
```



STUDENT.JAVA

```
import java.util.Scanner;

class Student {
    int stuId, totalMark = 0;
    String stuName;
    int[] marks = new int[3];

    void setData() {
        System.out.println("Enter your details");
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter your student id");
        stuId = scan.nextInt();
        scan.nextLine();
        System.out.println("Enter your name");
        stuName = scan.nextLine();
        System.out.println("Enter your marks in any three subject\n");
        for (int i = 0; i < 3; i++) {
            System.out.println("Enter your marks in subject " + (i + 1));
            marks[i] = scan.nextInt();
        }
        scan.close();
    };

    void getData() {
        System.out.println("\nYour Details");
        System.out.println("Your student ID is : " + stuId);
        System.out.println("Your name is : " + stuName);
        System.out.println("Your marks are :\n");
        for (int i = 0; i < 3; i++) {
            System.out.println("Mark in Subject " + (i + 1) + " : " +
marks[i]);
            totalMark += marks[i];
        }
        System.out.println("\nThe average of your marks is : " +
(totalMark / 3));
    };
```

```
    public static void main(String[] args) {
        Student s1 = new Student();
        s1.setData();
        s1.getData();
    }
}
```

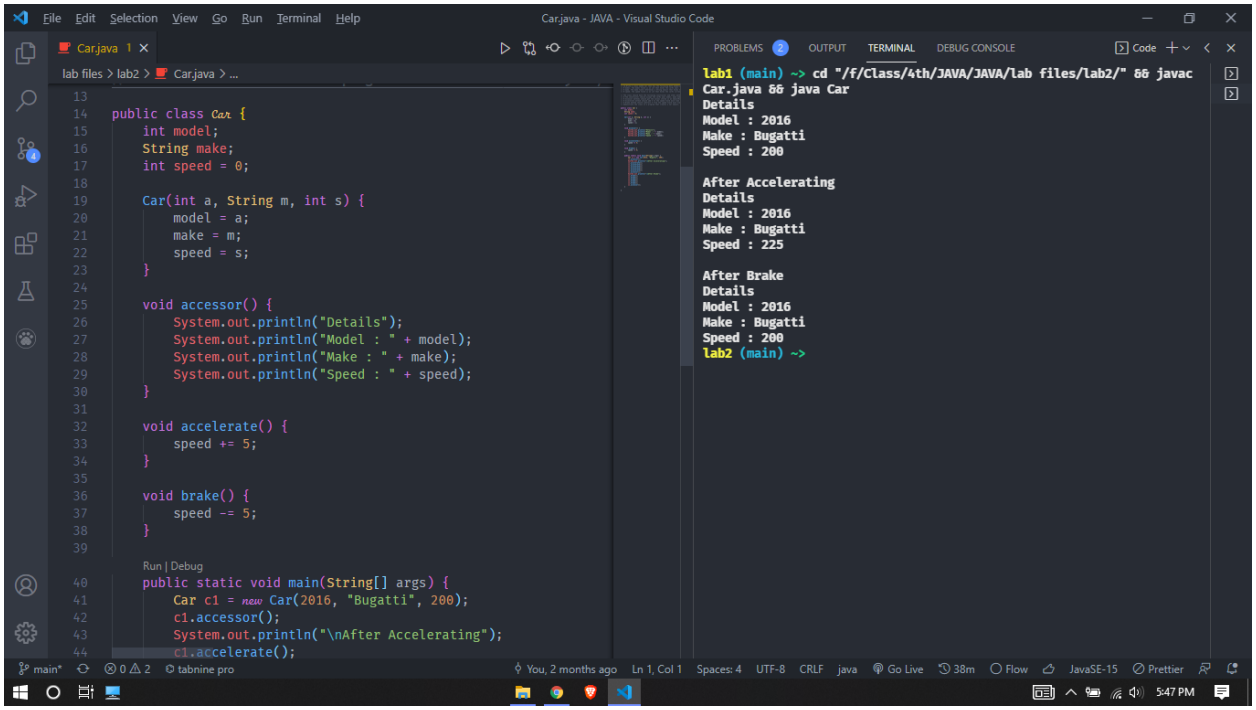


LAB 2

CAR.JAVA

```
public class Car {
    int model;
    String make;
    int speed = 0;

    Car(int a, String m, int s) {
        model = a;
        make = m;
```

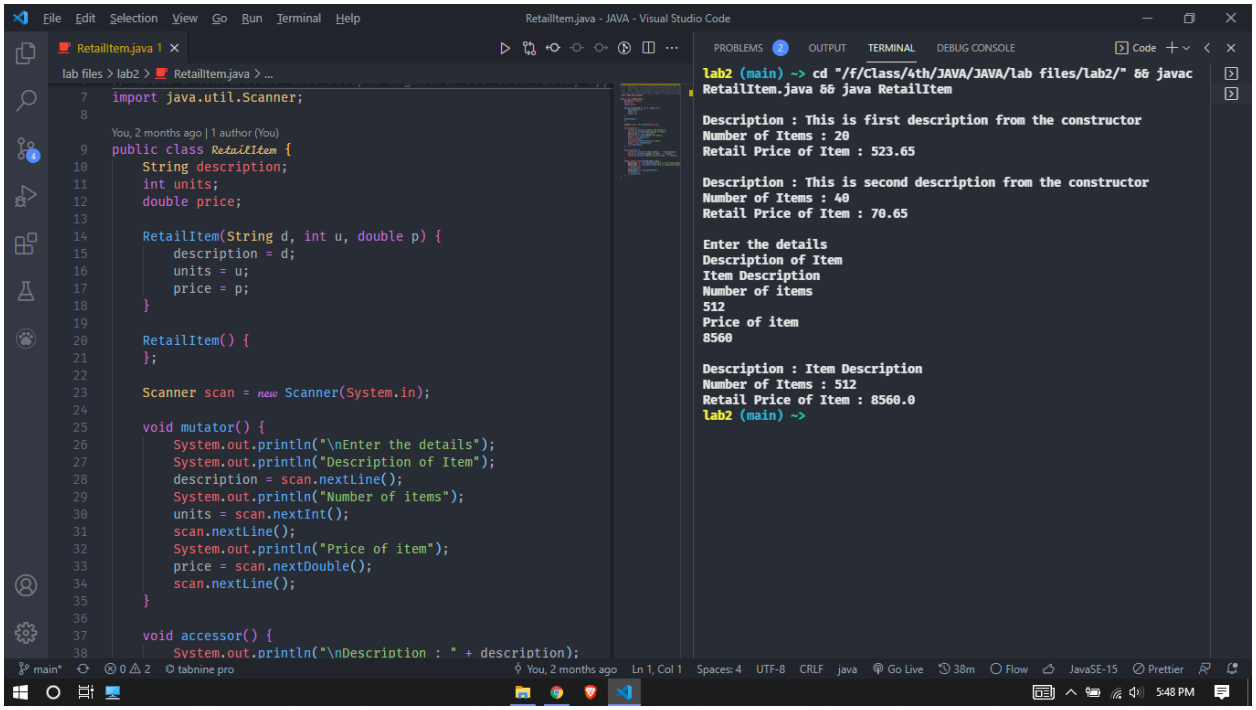
```
        speed = s;
    }

    void accessor() {
        System.out.println("Details");
        System.out.println("Model : " + model);
        System.out.println("Make : " + make);
        System.out.println("Speed : " + speed);
    }

    void accelerate() {
        speed += 5;
    }

    void brake() {
        speed -= 5;
    }

    public static void main(String[] args) {
        Car c1 = new Car(2016, "Bugatti", 200);
        c1.accessor();
        System.out.println("\nAfter Accelerating");
        c1.accelerate();
        c1.accelerate();
        c1.accelerate();
        c1.accelerate();
        c1.accelerate();
        c1.accessor();
        System.out.println("\nAfter Brake");
        c1.brake();
        c1.brake();
        c1.brake();
        c1.brake();
        c1.brake();
        c1.accessor();
    }

}
```



RETAIL.JAVA

```
import java.util.Scanner;

public class RetailItem {
    String description;
    int units;
    double price;

    RetailItem(String d, int u, double p) {
        description = d;
        units = u;
        price = p;
    }

    RetailItem() {
    };

    Scanner scan = new Scanner(System.in);

    void mutator() {
        System.out.println("\nEnter the details");
```

```
        System.out.println("Description of Item");
        description = scan.nextLine();
        System.out.println("Number of items");
        units = scan.nextInt();
        scan.nextLine();
        System.out.println("Price of item");
        price = scan.nextDouble();
        scan.nextLine();
    }

    void accessor() {
        System.out.println("\nDescription : " + description);
        System.out.println("Number of Items : " + units);
        System.out.println("Retail Price of Item : " + price);
    }

    public static void main(String[] args) {
        RetailItem r1 = new RetailItem("This is first description from the
constructor", 20, 523.65);
        RetailItem r2 = new RetailItem("This is second description from
the constructor", 40, 70.65);
        r1.accessor();
        r2.accessor();
        RetailItem r3 = new RetailItem();
        r3.mutator();
        r3.accessor();
    }
}
```



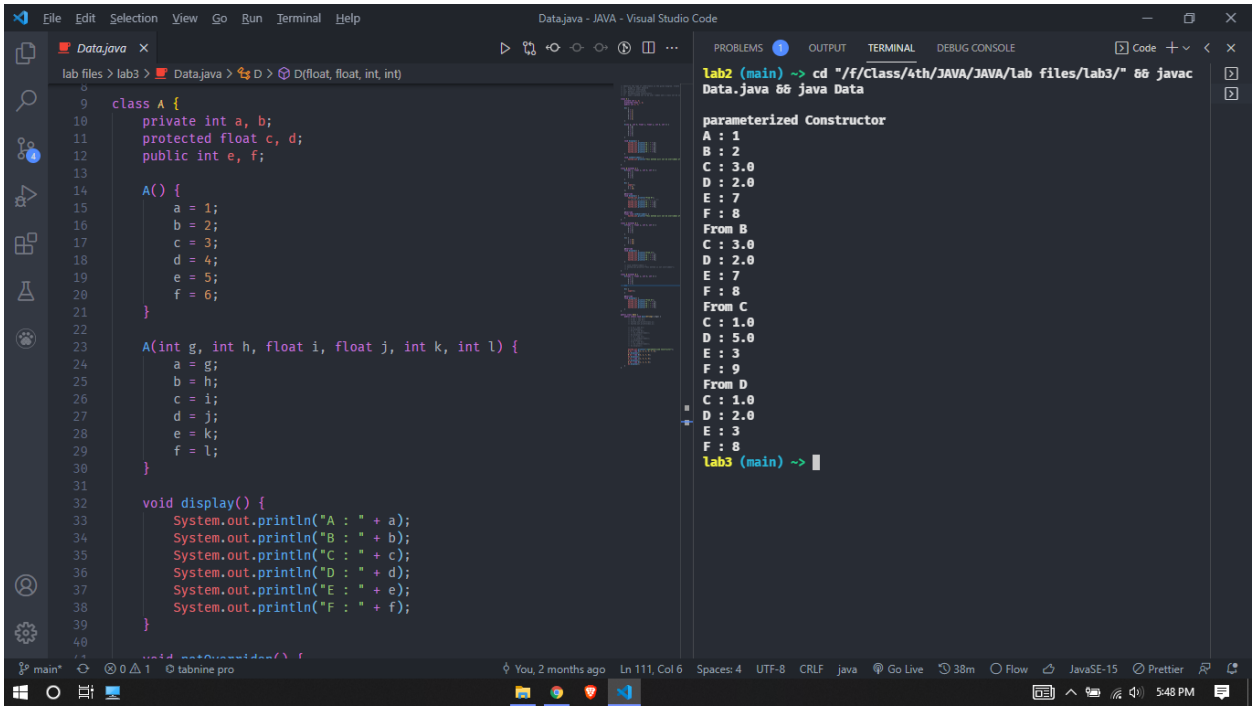
LAB 3

INHERITANCE.JAVA

```java
class A {
    private int a, b;
    protected float c, d;
    public int e, f;

    A() {
        a = 1;
        b = 2;
        c = 3;
        d = 4;
        e = 5;
        f = 6;
    }

    A(int g, int h, float i, float j, int k, int l) {
        a = g;
        b = h;
        c = i;
        d = j;
        e = k;
```

```
        f = l;
    }

    void display() {
        System.out.println("A : " + a);
        System.out.println("B : " + b);
        System.out.println("C : " + c);
        System.out.println("D : " + d);
        System.out.println("E : " + e);
        System.out.println("F : " + f);
    }

    void notOverriden() {
        System.out.println("This method will not be overridden after B");
    }

}

class B extends A {
    B(float i, float j, int k, int l) {
        c = i;
        d = j;
        e = k;
        f = l;
    }

    B() {
        super();
        e = 9;
        f = 10;
    };

    @Override
    void display() {
        System.out.println("From B");
        // System.out.println("C : " + a);
        System.out.println("C : " + c);
        System.out.println("D : " + d);
        System.out.println("E : " + e);
        System.out.println("F : " + f);
    }

    @Override
    final void notOverriden() {
        System.out.println("This method will not be overridden after B");
    }
}

class C extends B {
    C(float i, float j, int k, int l) {
        c = i;
        d = j;
        e = k;
        f = l;
    }

    C() {
        c = 25;
```

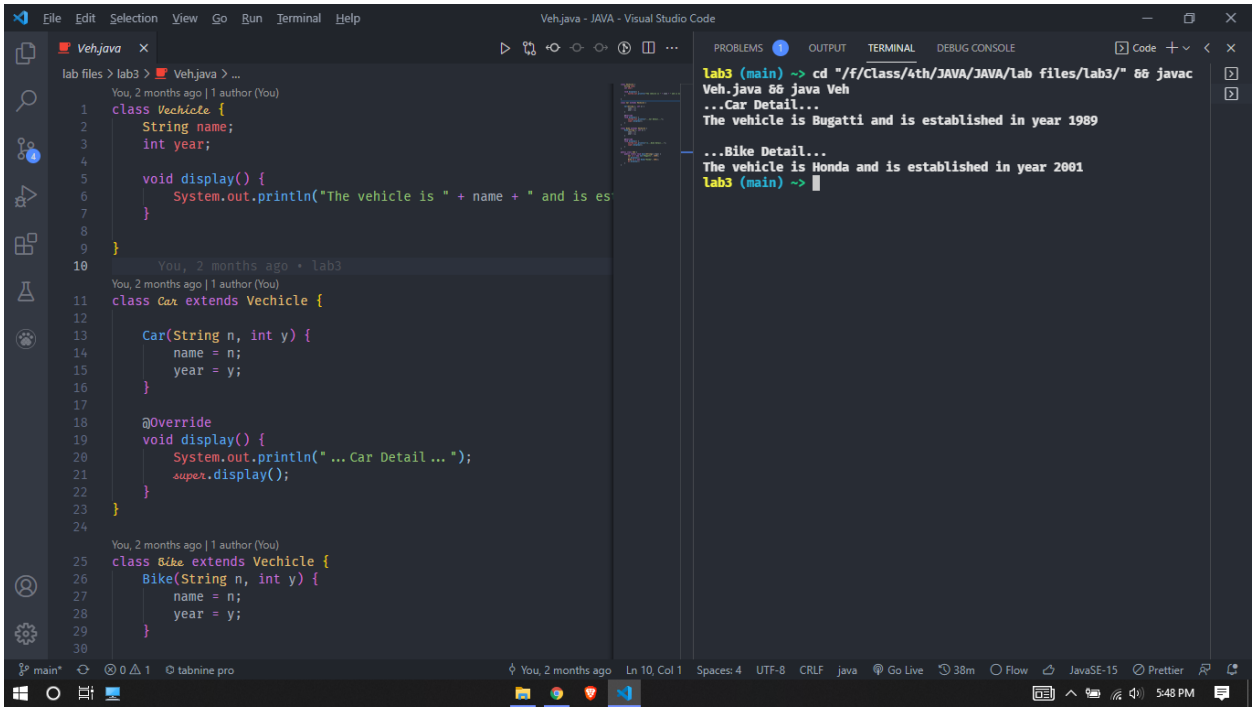
```
        e = 15;
        f = 10;
    }

    @Override
    void display() {
        System.out.println("From C");
        System.out.println("C : " + c);
        System.out.println("D : " + d);
        System.out.println("E : " + e);
        System.out.println("F : " + f);
    }

    // void notOverriden() {
    // System.out.println("This method is not overridden");
    // }
}

class D extends B {
    D(float i, float j, int k, int l) {
        c = i;
        d = j;
        e = k;
        f = l;
    }

    D() {
        super();
    }

    @Override
    void display() {
        System.out.println("From D");
        System.out.println("C : " + c);
        System.out.println("D : " + d);
        System.out.println("E : " + e);
        System.out.println("F : " + f);
    }
}

public class Data {
    public static void main(String[] args) {

        System.out.println("\nparameterized Constructor");
        A a2 = new A(1, 2, 3, 2, 7, 8);
        a2.display();
        B b2 = new B(3, 2, 7, 8);
        b2.display();
        C c2 = new C(1, 5, 3, 9);
        c2.display();
        D d2 = new D(1, 2, 3, 8);
        d2.display();
    }
}
```



VEHICLE.JAVA

```
class Vechicle {
    String name;
    int year;

    void display() {
        System.out.println("The vehicle is " + name + " and is established in year " + year);
    }

}

class Car extends Vechicle {

    Car(String n, int y) {
        name = n;
        year = y;
    }

    @Override
    void display() {
```

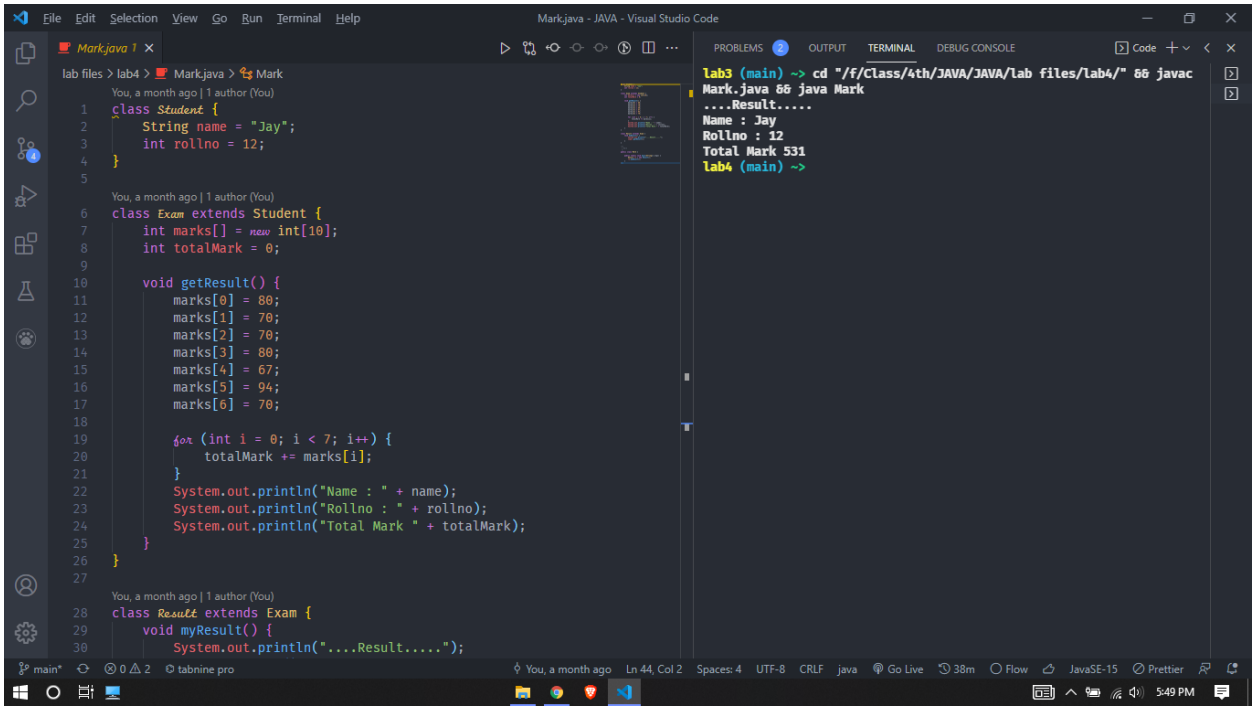
```java
        System.out.println("...Car Detail...");
        super.display();
    }
}

class Bike extends Vechicle {
    Bike(String n, int y) {
        name = n;
        year = y;
    }

    @Override
    void display() {
        System.out.println("\n...Bike Detail...");
        super.display();
    }
}

public class Veh {
    public static void main(String[] args) {
        Car c1 = new Car("Bugatti", 1989);
        c1.display();
        Bike b1 = new Bike("Honda", 2001);
        b1.display();
    }
}
```



LAB 4

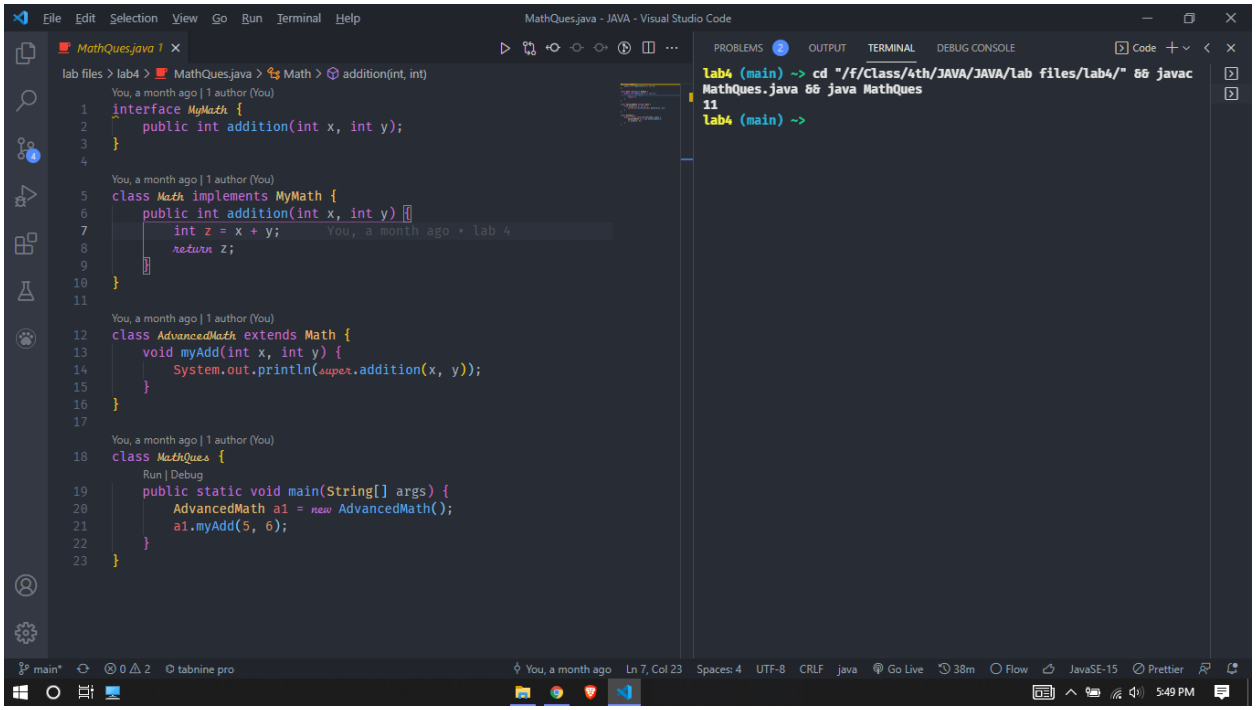
MARK.JAVA

```java
class Student {
    String name = "Jay";
    int rollno = 12;
}

class Exam extends Student {
    int marks[] = new int[10];
    int totalMark = 0;

    void getResult() {
        marks[0] = 80;
        marks[1] = 70;
        marks[2] = 70;
        marks[3] = 80;
        marks[4] = 67;
        marks[5] = 94;
        marks[6] = 70;

        for (int i = 0; i < 7; i++) {
            totalMark += marks[i];
        }
        System.out.println("Name : " + name);
        System.out.println("Rollno : " + rollno);
        System.out.println("Total Mark " + totalMark);
    }
}

class Result extends Exam {
    void myResult() {
        System.out.println("....Result.....");
        super.getResult();
    }
}

/**
 * Mark
 */
public class Mark {

    public static void main(String[] args) {
        Result r1 = new Result();
        r1.myResult();
    }
}
```



MATH.JAVA

```
interface MyMath {
    public int addition(int x, int y);
}

class Math implements MyMath {
    public int addition(int x, int y) {
        int z = x + y;
        return z;
    }
}

class AdvancedMath extends Math {
    void myAdd(int x, int y) {
        System.out.println(super.addition(x, y));
    }
}

class MathQues {
    public static void main(String[] args) {
        AdvancedMath a1 = new AdvancedMath();
        a1.myAdd(5, 6);
    }
}
```

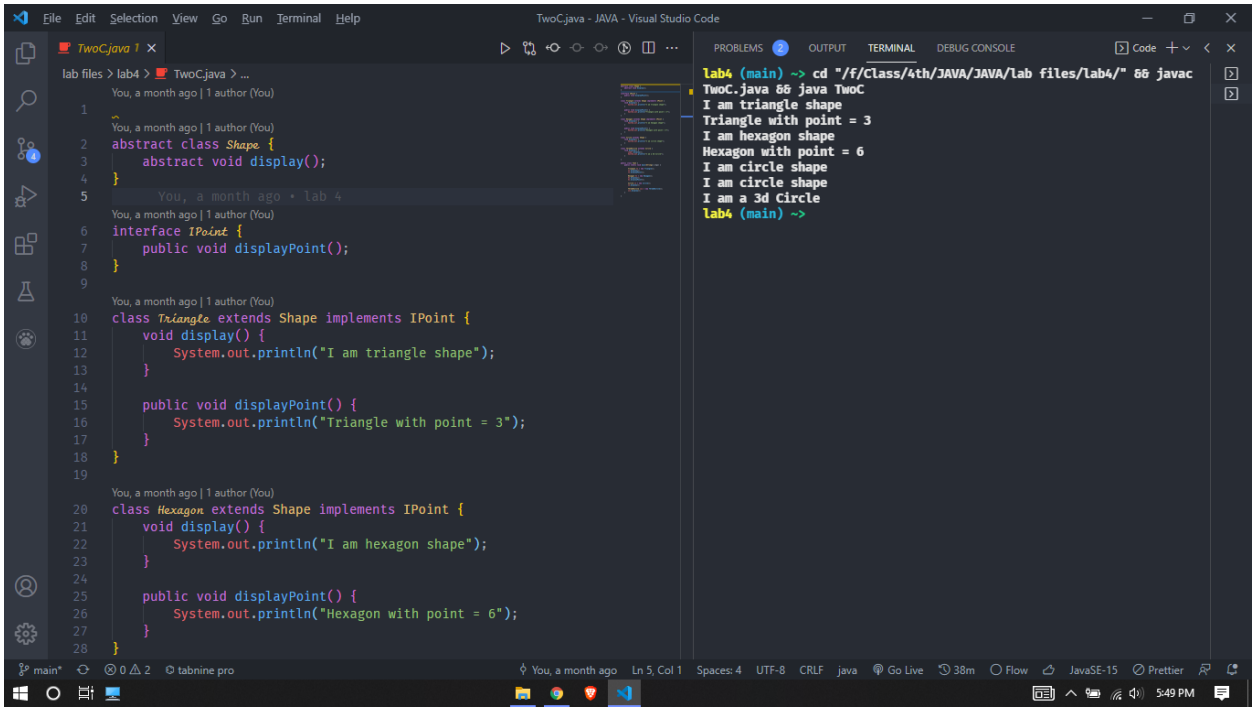


SHAPE.JAVA

```
abstract class Shape {
    abstract void display();
}

interface IPoint {
    public void displayPoint();
}

class Triangle extends Shape implements IPoint {
    void display() {
        System.out.println("I am triangle shape");
    }

    public void displayPoint() {
        System.out.println("Triangle with point = 3");
```

```
    }
}

class Hexagon extends Shape implements IPoint {
    void display() {
        System.out.println("I am hexagon shape");
    }

    public void displayPoint() {
        System.out.println("Hexagon with point = 6");
    }
}

class Circle extends Shape {
    void display() {
        System.out.println("I am circle shape");
    }
}

class ThreeDCircle extends Circle {
    void display() {
        super.display();
        System.out.println("I am a 3d Circle");
    }

}

public class TwoC {
    public static void main(String[] args) {

        Triangle t1 = new Triangle();
        t1.display();
        t1.displayPoint();

        Hexagon h1 = new Hexagon();
        h1.display();
        h1.displayPoint();

        Circle c1 = new Circle();
        c1.display();
```

```
        ThreeDCircle cc1 = new ThreeDCircle();
        cc1.display();
    }

}
```

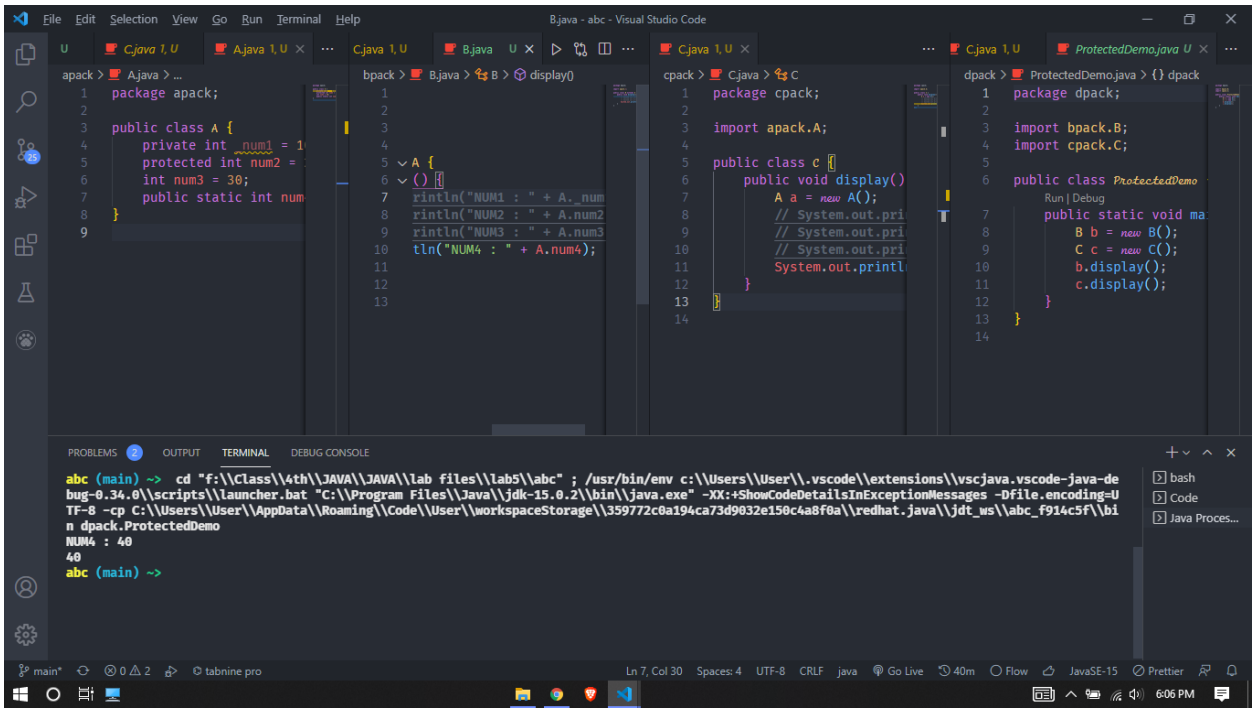


LAB 5

PACKAGE.JAVA

```
package dpack;

import bpack.B;
import cpack.C;
```

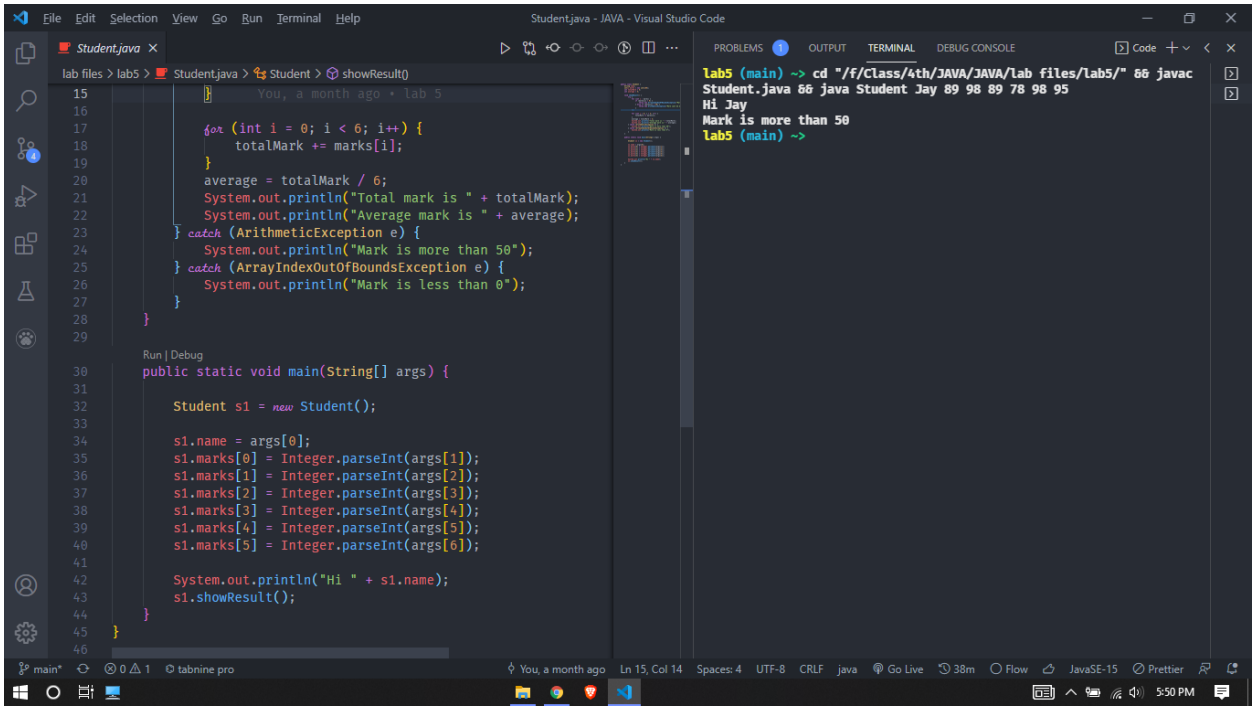
```java
public class ProtectedDemo {
    public static void main(String[] args) {
        B b = new B();
        C c = new C();
        b.display();
        c.display();
    }
}
```



STUDENT.JAVA

```java
public class Student {
    String name;
    int[] marks = new int[100];
    int totalMark = 0;
    int average = 0;

    void showResult() {
        try {
            for (int i : marks) {
                if (marks[i] < 0) {
```

```
                    throw new ArrayIndexOutOfBoundsException("Mark greater than
0 is expected");
                } else if (marks[i] > 50) {
                    throw new ArithmeticException("Mark cant be more than 50");
                }
            }

            for (int i = 0; i < 6; i++) {
                totalMark += marks[i];
            }
            average = totalMark / 6;
            System.out.println("Total mark is " + totalMark);
            System.out.println("Average mark is " + average);
        } catch (ArithmeticException e) {
            System.out.println("Mark is more than 50");
        } catch (ArrayIndexOutOfBoundsException e) {
            System.out.println("Mark is less than 0");
        }
    }

    public static void main(String[] args) {

        Student s1 = new Student();

        s1.name = args[0];
        s1.marks[0] = Integer.parseInt(args[1]);
        s1.marks[1] = Integer.parseInt(args[2]);
        s1.marks[2] = Integer.parseInt(args[3]);
        s1.marks[3] = Integer.parseInt(args[4]);
        s1.marks[4] = Integer.parseInt(args[5]);
        s1.marks[5] = Integer.parseInt(args[6]);

        System.out.println("Hi " + s1.name);
        s1.showResult();
    }
}
```

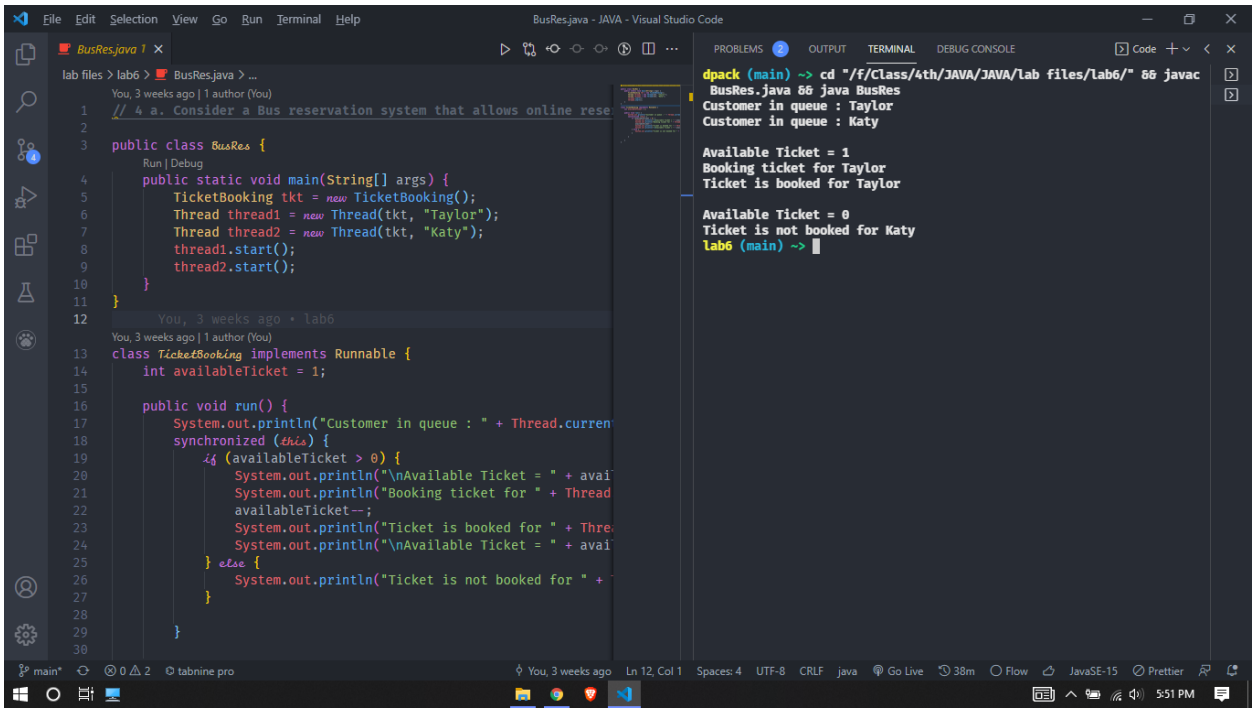


LAB 6

BUSRES.JAVA

```
public class BusRes {
    public static void main(String[] args) {
        TicketBooking tkt = new TicketBooking();
        Thread thread1 = new Thread(tkt, "Taylor");
        Thread thread2 = new Thread(tkt, "Katy");
        thread1.start();
        thread2.start();
    }
}

class TicketBooking implements Runnable {
    int availableTicket = 1;

    public void run() {
        System.out.println("Customer in queue : " +
Thread.currentThread().getName());
        synchronized (this) {
            if (availableTicket > 0) {
                System.out.println("\nAvailable Ticket = " + availableTicket);
```

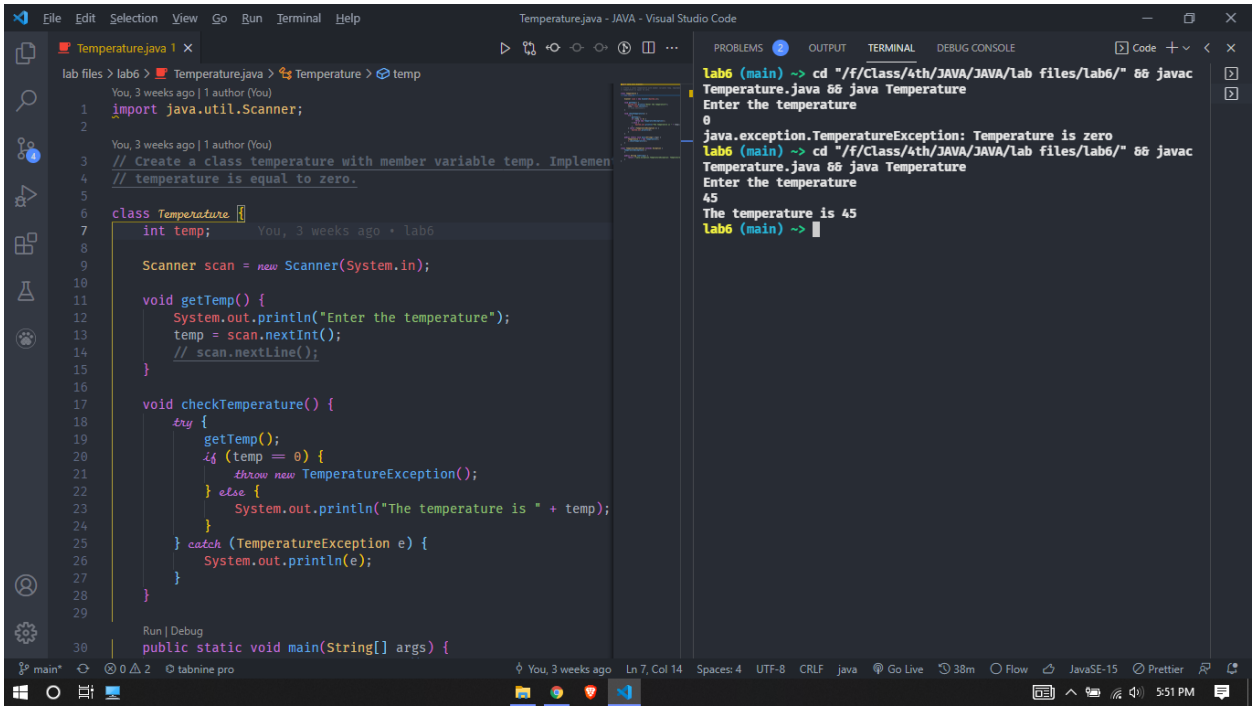
```
                System.out.println("Booking ticket for " +
Thread.currentThread().getName());
                availableTicket--;
                System.out.println("Ticket is booked for " +
Thread.currentThread().getName());
                System.out.println("\nAvailable Ticket = " + availableTicket);
            } else {
                System.out.println("Ticket is not booked for " +
Thread.currentThread().getName());
            }

        }

    }
}
```



TEMPERATURE.JAVA

```
import java.util.Scanner;

// Create a class temperature with member variable temp. Implement exception
handling to test if
// temperature is equal to zero.
```

```
class Temperature {
    int temp;

    Scanner scan = new Scanner(System.in);

    void getTemp() {
        System.out.println("Enter the temperature");
        temp = scan.nextInt();
        // scan.nextLine();
    }

    void checkTemperature() {
        try {
            getTemp();
            if (temp == 0) {
                throw new TemperatureException();
            } else {
                System.out.println("The temperature is " + temp);
            }
        } catch (TemperatureException e) {
            System.out.println(e);
        }
    }

    public static void main(String[] args) {
        Temperature t = new Temperature();
        t.checkTemperature();
    }
}

class TemperatureException extends Exception {
    TemperatureException() {
    }

    public String toString() {
        return ("java.exception.TemperatureException: Temperature is zero");
    }
}
```

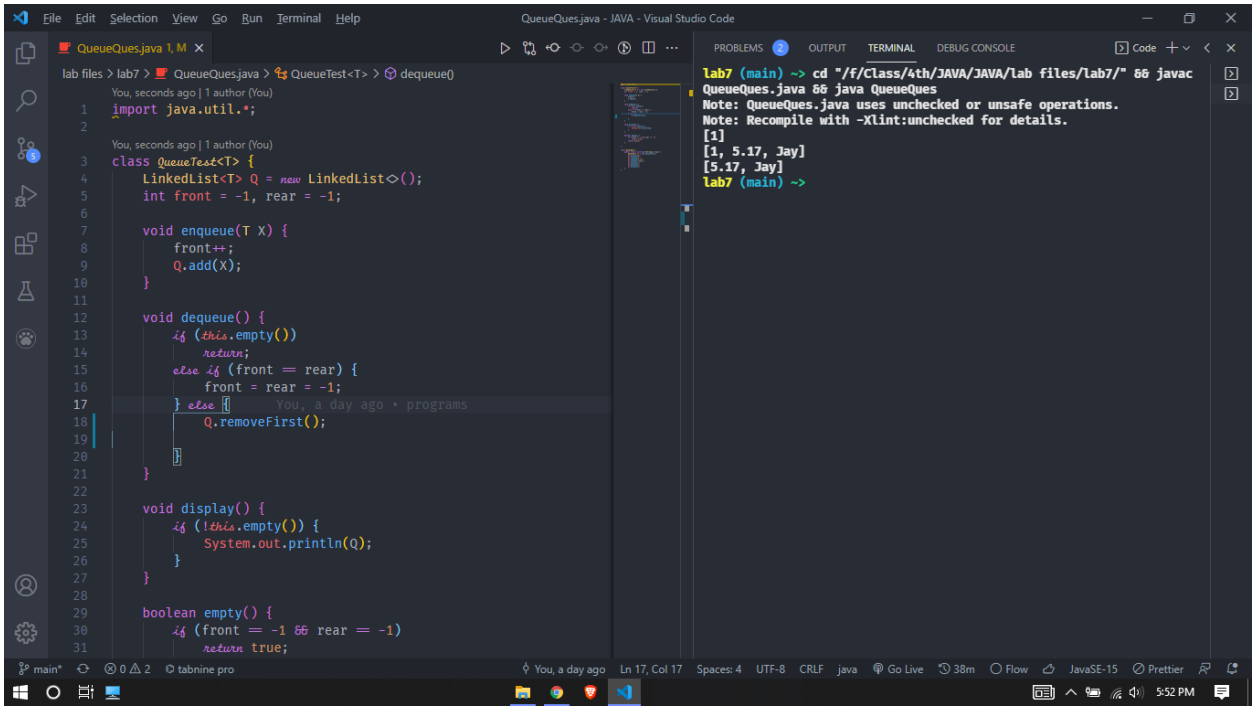


LAB 7

QUEUE.JAVA

```java
import java.util.*;

class QueueTest<T> {
    LinkedList<T> Q = new LinkedList<>();
    int front = -1, rear = -1;

    void enqueue(T X) {
        front++;
        Q.add(X);
    }

    void dequeue() {
        if (this.empty())
            return;
        else if (front == rear) {
            front = rear = -1;
        } else {
            Q.removeFirst();
```

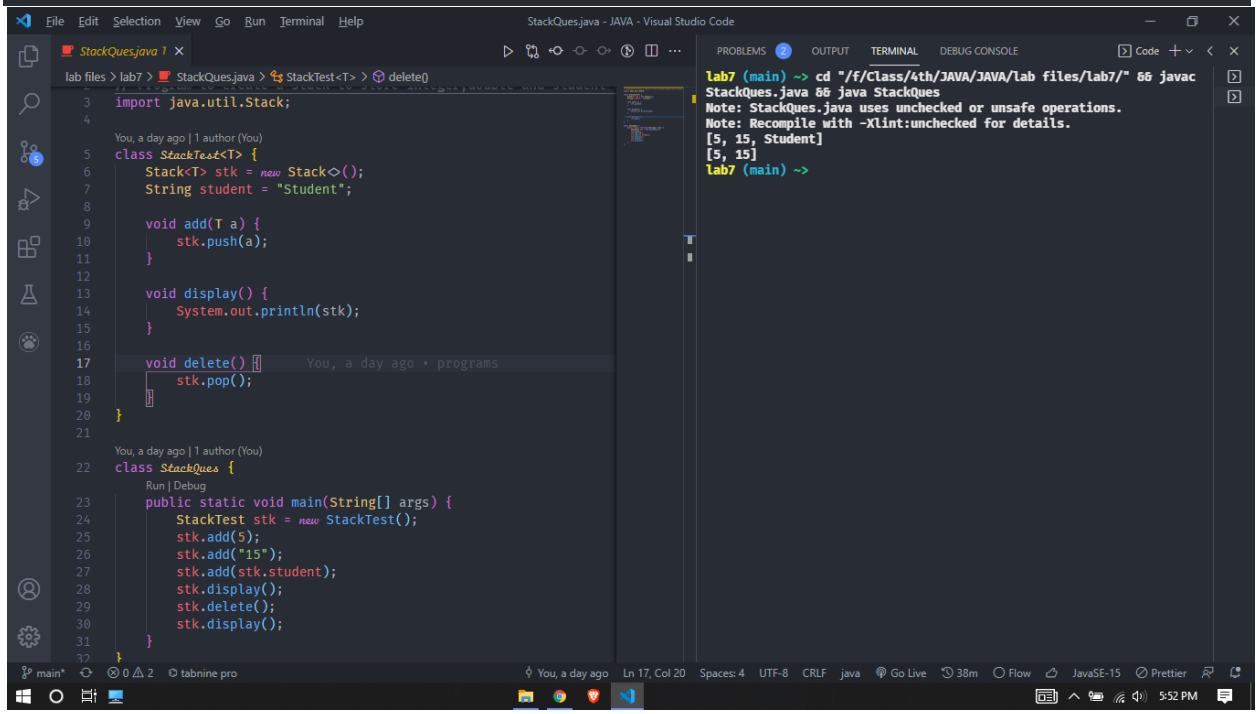
```
        }
    }

    void display() {
        if (!this.empty()) {
            System.out.println(Q);
        }
    }

    boolean empty() {
        if (front == -1 && rear == -1)
            return true;
        return false;
    }

}

class QueueQues {
    public static void main(String[] args) {
        QueueTest q1 = new QueueTest();
        q1.enqueue(1);
        q1.display();
        q1.enqueue(5.17);
        q1.enqueue("Jay");
        q1.display();
        q1.dequeue();
        q1.display();
    }
}
```



STACK.JAVA

```java
// Program to create a stack to store integer,double and student objects
using generics.
import java.util.Stack;

class StackTest<T> {
    Stack<T> stk = new Stack<>();
    String student = "Student";

    void add(T a) {
        stk.push(a);
    }
```

```
    void display() {
        System.out.println(stk);
    }

    void delete() {
        stk.pop();
    }
}

class StackQues {
    public static void main(String[] args) {
        StackTest stk = new StackTest();
        stk.add(5);
        stk.add("15");
        stk.add(stk.student);
        stk.display();
        stk.delete();
        stk.display();
    }
}
```

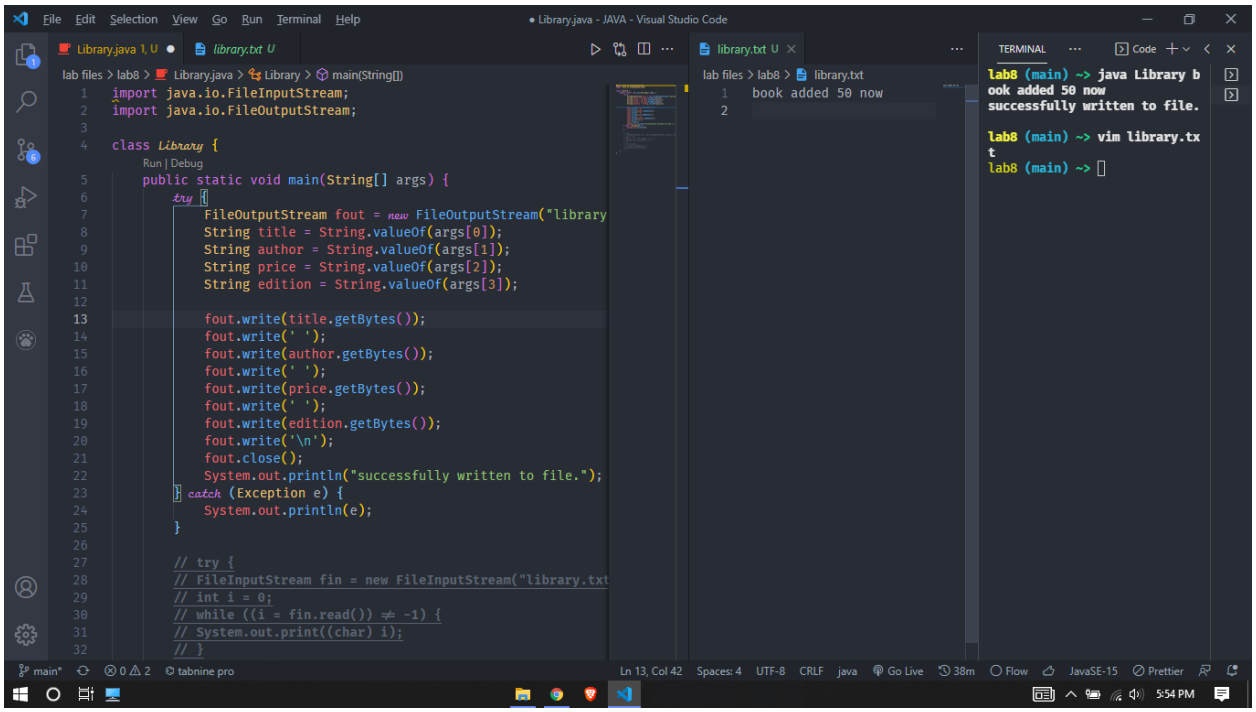


LAB 8

LIBRARY.JAVA

```
import java.io.FileInputStream;
import java.io.FileOutputStream;

class Library {
    public static void main(String[] args) {
        try {
            FileOutputStream fout = new FileOutputStream("library.txt",
false);
            String title = String.valueOf(args[0]);
            String author = String.valueOf(args[1]);
            String price = String.valueOf(args[2]);
            String edition = String.valueOf(args[3]);

            fout.write(title.getBytes());
            fout.write(' ');
            fout.write(author.getBytes());
            fout.write(' ');
            fout.write(price.getBytes());
            fout.write(' ');
            fout.write(edition.getBytes());
            fout.write('\n');
            fout.close();
            System.out.println("successfully written to file.");
        } catch (Exception e) {
            System.out.println(e);
        }

        // try {
        // FileInputStream fin = new FileInputStream("library.txt");
        // int i = 0;
        // while ((i = fin.read()) != -1) {
```

```
            // System.out.print((char) i);
            // }
            // fin.close();
            // } catch (Exception e) {
            // System.out.println(e);
            // }
        }
}
```

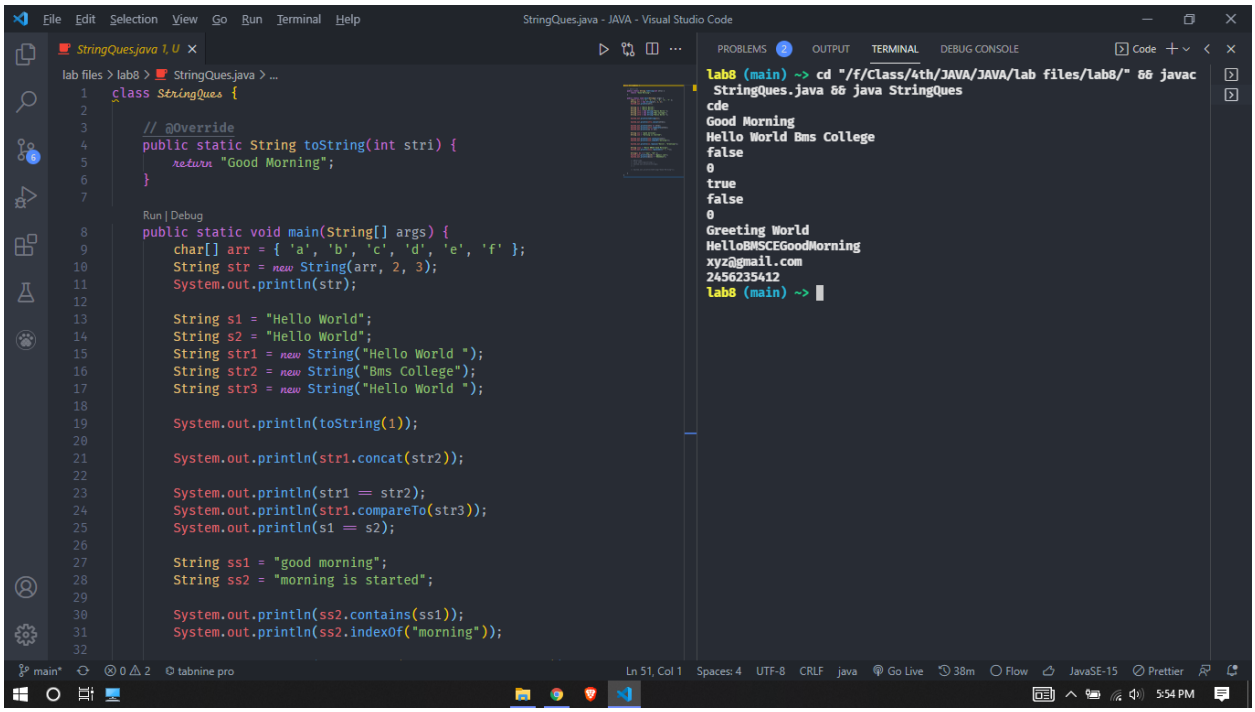


STRING.JAVA

```
class StringQues {

    // @Override
    public static String toString(int stri) {
        return "Good Morning";
    }
```

```java
public static void main(String[] args) {
    char[] arr = { 'a', 'b', 'c', 'd', 'e', 'f' };
    String str = new String(arr, 2, 3);
    System.out.println(str);

    String s1 = "Hello World";
    String s2 = "Hello World";
    String str1 = new String("Hello World ");
    String str2 = new String("Bms College");
    String str3 = new String("Hello World ");

    System.out.println(toString(1));

    System.out.println(str1.concat(str2));

    System.out.println(str1 == str2);
    System.out.println(str1.compareTo(str3));
    System.out.println(s1 == s2);

    String ss1 = "good morning";
    String ss2 = "morning is started";

    System.out.println(ss2.contains(ss1));
    System.out.println(ss2.indexOf("morning"));

    System.out.println(s1.replace("Hello", "Greeting"));

    String sss1 = "Hello BMSCE Good Morning";
    System.out.println(sss1.replaceAll(" ", ""));

    String[] d1 = { "xyz", "24" };
    System.out.println(d1[0] + "@gmail.com");
    System.out.println(d1[1] + "56235412");

    // @Override
    // void toString(string) {
    // System.out.println(string);
    // }
```

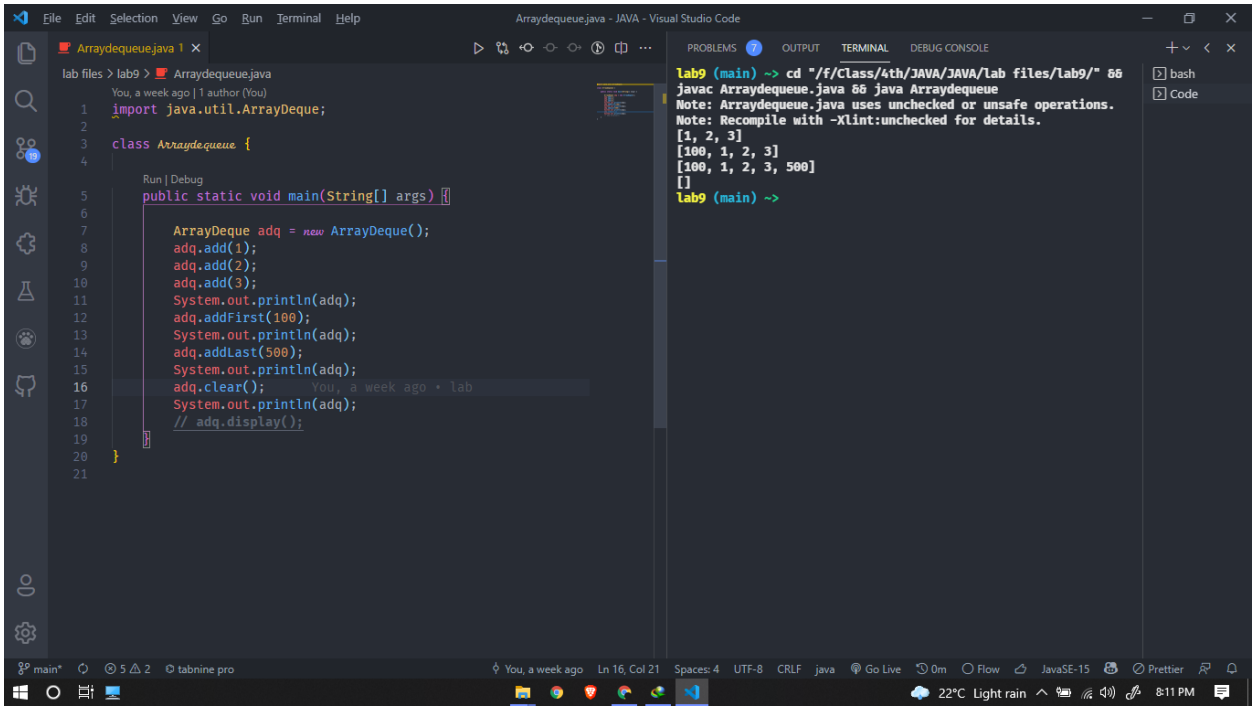
```
        // System.out.println(toString("Good Morning"));


    }
}
```



LAB 9

Arraydequeue.JAVA

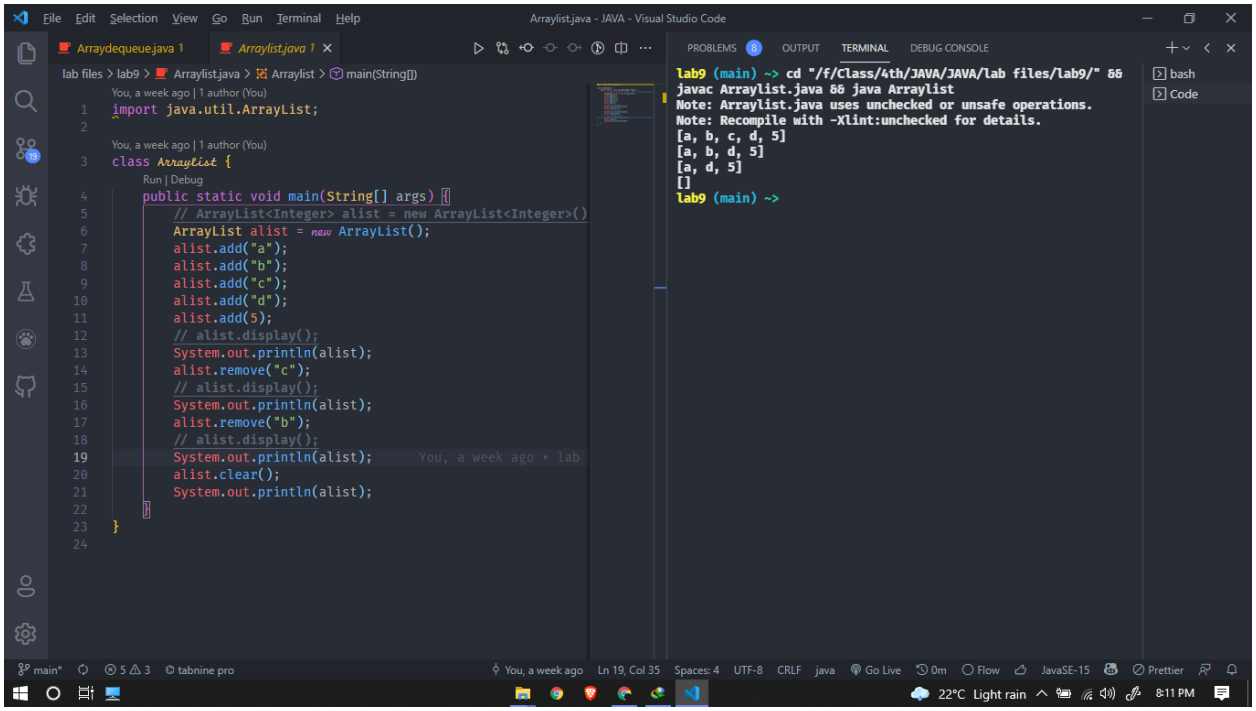
```java
import java.util.ArrayDeque;

class Arraydequeue {

    public static void main(String[] args) {

        ArrayDeque adq = new ArrayDeque();
        adq.add(1);
        adq.add(2);
        adq.add(3);
        System.out.println(adq);
        adq.addFirst(100);
        System.out.println(adq);
        adq.addLast(500);
        System.out.println(adq);
        adq.clear();
        System.out.println(adq);
        // adq.display();
    }
}
```



ArrayList.JAVA

```java
import java.util.ArrayList;

class Arraylist {
    public static void main(String[] args) {
        // ArrayList<Integer> alist = new ArrayList<Integer>();
        ArrayList alist = new ArrayList();
        alist.add("a");
        alist.add("b");
        alist.add("c");
        alist.add("d");
        alist.add(5);
        // alist.display();
        System.out.println(alist);
        alist.remove("c");
        // alist.display();
        System.out.println(alist);
        alist.remove("b");
```

```
        // alist.display();
        System.out.println(alist);
        alist.clear();
        System.out.println(alist);
    }
}
```

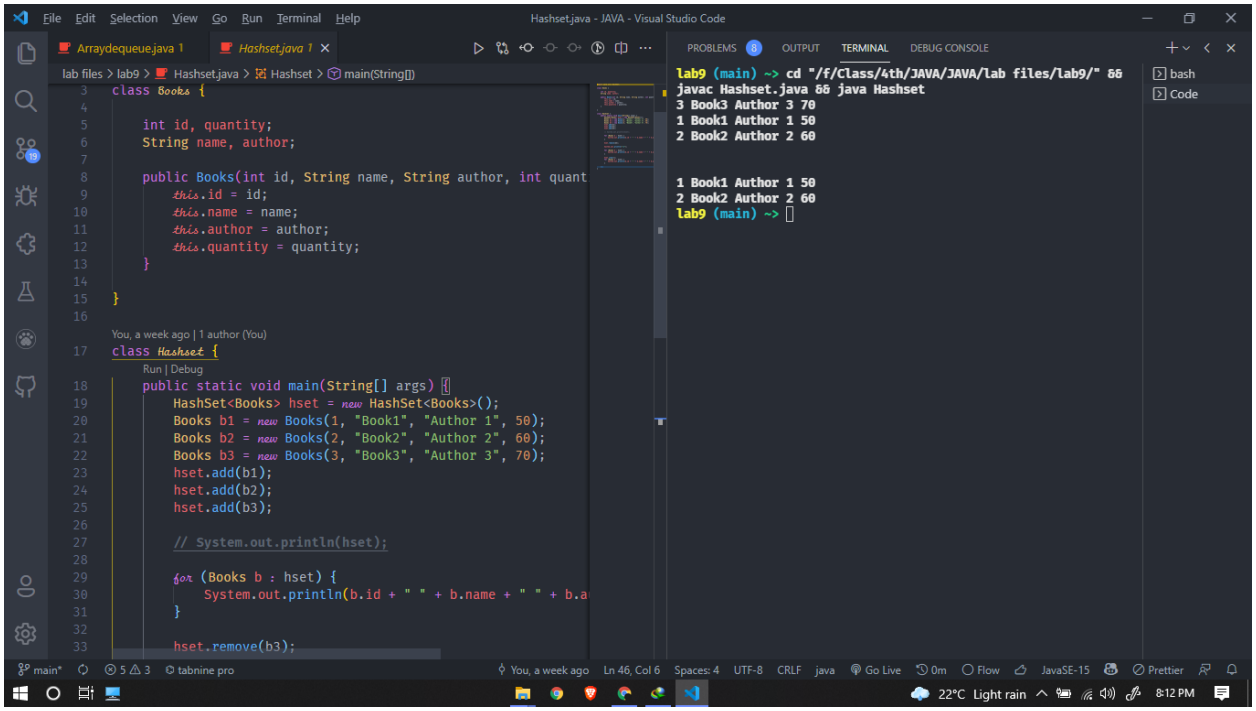


Hashset.JAVA

```
import java.util.HashSet;

class Books {

    int id, quantity;
    String name, author;

    public Books(int id, String name, String author, int quantity) {
```

```
        this.id = id;
        this.name = name;
        this.author = author;
        this.quantity = quantity;
    }

}

class Hashset {
    public static void main(String[] args) {
        HashSet<Books> hset = new HashSet<Books>();
        Books b1 = new Books(1, "Book1", "Author 1", 50);
        Books b2 = new Books(2, "Book2", "Author 2", 60);
        Books b3 = new Books(3, "Book3", "Author 3", 70);
        hset.add(b1);
        hset.add(b2);
        hset.add(b3);

        // System.out.println(hset);

        for (Books b : hset) {
            System.out.println(b.id + " " + b.name + " " + b.author + " "
+ b.quantity);
        }

        hset.remove(b3);

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

        for (Books b : hset) {
            System.out.println(b.id + " " + b.name + " " + b.author + " "
+ b.quantity);
        }

        hset.clear();
        for (Books b : hset) {
            System.out.println(b.id + " " + b.name + " " + b.author + " "
+ b.quantity);
        }
```

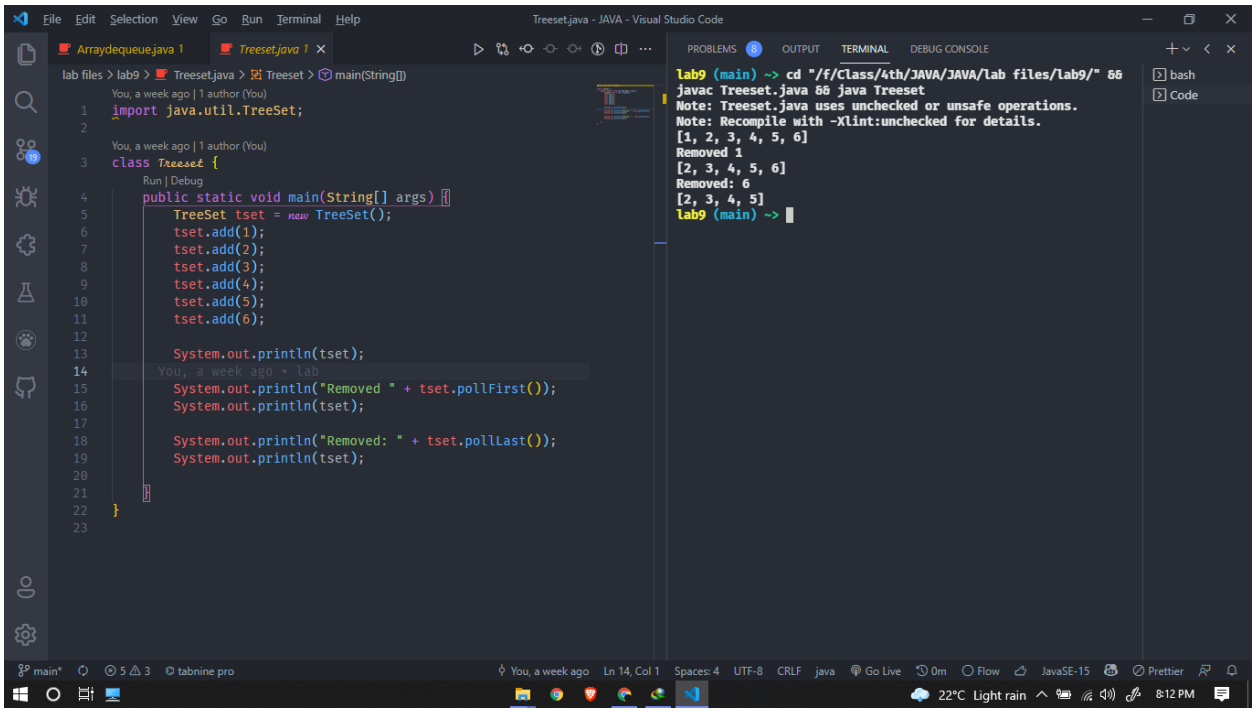
```
    }
}
```



Treeset.JAVA

```java
import java.util.TreeSet;

class Treeset {
    public static void main(String[] args) {
        TreeSet tset = new TreeSet();
        tset.add(1);
        tset.add(2);
        tset.add(3);
        tset.add(4);
        tset.add(5);
        tset.add(6);

        System.out.println(tset);
```

```
        System.out.println("Removed " + tset.pollFirst());
        System.out.println(tset);

        System.out.println("Removed: " + tset.pollLast());
        System.out.println(tset);

    }
}
```



THANK YOU