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KELAS : B
BAB : 4 - Encapsulation
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1. Data dan Analisis hasil percobaan

A. Encapsulation 1

1. Lakukan percobaan diatas dan benahi jika menemukan kesalahan!

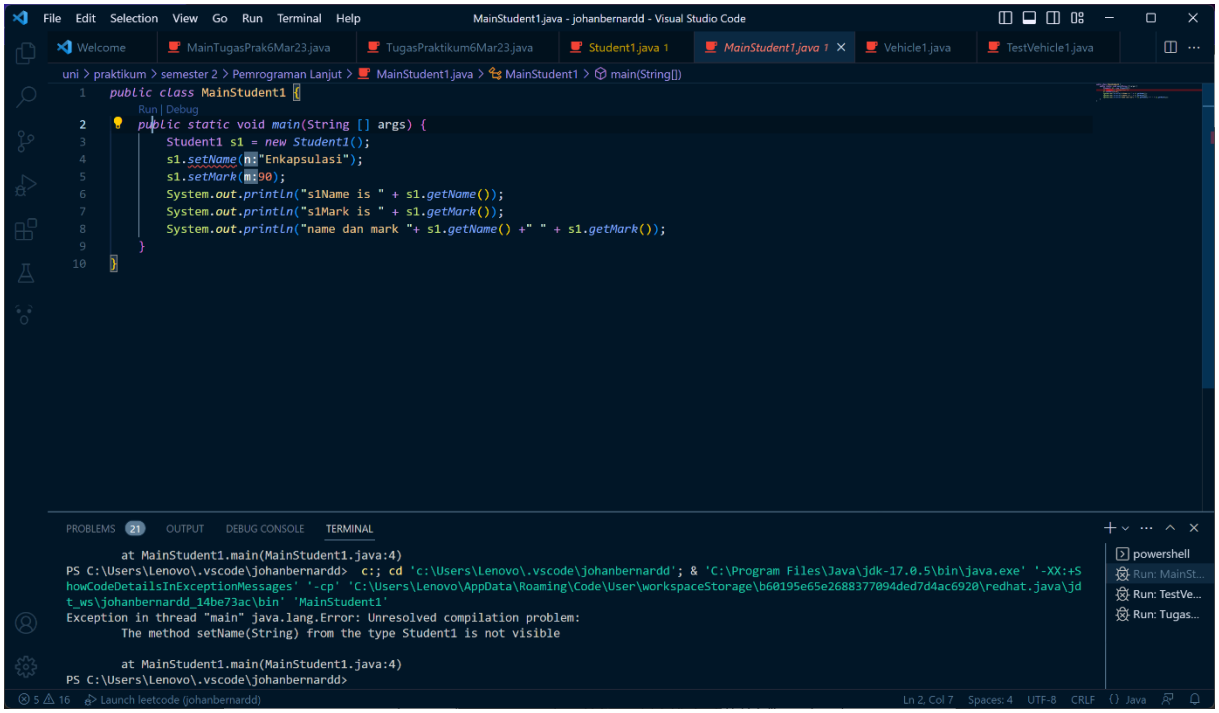
```
1  public class MainStudent1 {
2      public static void main(String [] args) {
3          Student1 s1 = new Student1();
4          s1.setName("Enkapsulasi");
5          s1.setMark(90);
6          System.out.println("s1Name is " + s1.getName());
7          System.out.println("s1Mark is " + s1.getMark());
8          System.out.println("name dan mark "+ s1.getName() +" " + s1.getMark());
9      }
10 }
```

2. Jika pada baris 6 s1.setName diubah menjadi s1.getName apa yang terjadi? jelaskan!

- Yang terjadi adalah program akan dijalankan tanpa error karena method getName mengembalikan value dari method itu sendiri yakni value nama. Method getName mengembalikan value nama yang telah diinisialisasikan dari variabel awalnya yang memiliki access modifier private.

3. Setelah diperbaiki, ubahlah hak akses pada baris 4 (pada class Student) menjadi private apa yang terjadi jika class Test dijalankan? Jelaskan!

- Yang terjadi adalah class Test mengalami error dikarenakan access modifier private yang diberikan pada method void setName. Method void setName tersebut tidak dapat dijalankan karena access private yang hanya dapat berfungsi jika dijalankan pada class yang sama.



4. Jika kedua kelas diatas terdapat dalam package yang sama apakah konsep enkapsulasi tetap berfungsi? jelaskan!

- Konsep enkapsulasi tetap berfungsi karena method-method yang ada pada class Student memiliki access modifier public yang dapat diakses oleh class Test jika kedua kelas tersebut masih terdapat dalam package yang sama.

B. Encapsulation 2

1. Method apakah yang menjadi accessor (getter) ?

- Method getLoad() dan method getMaxLoad().

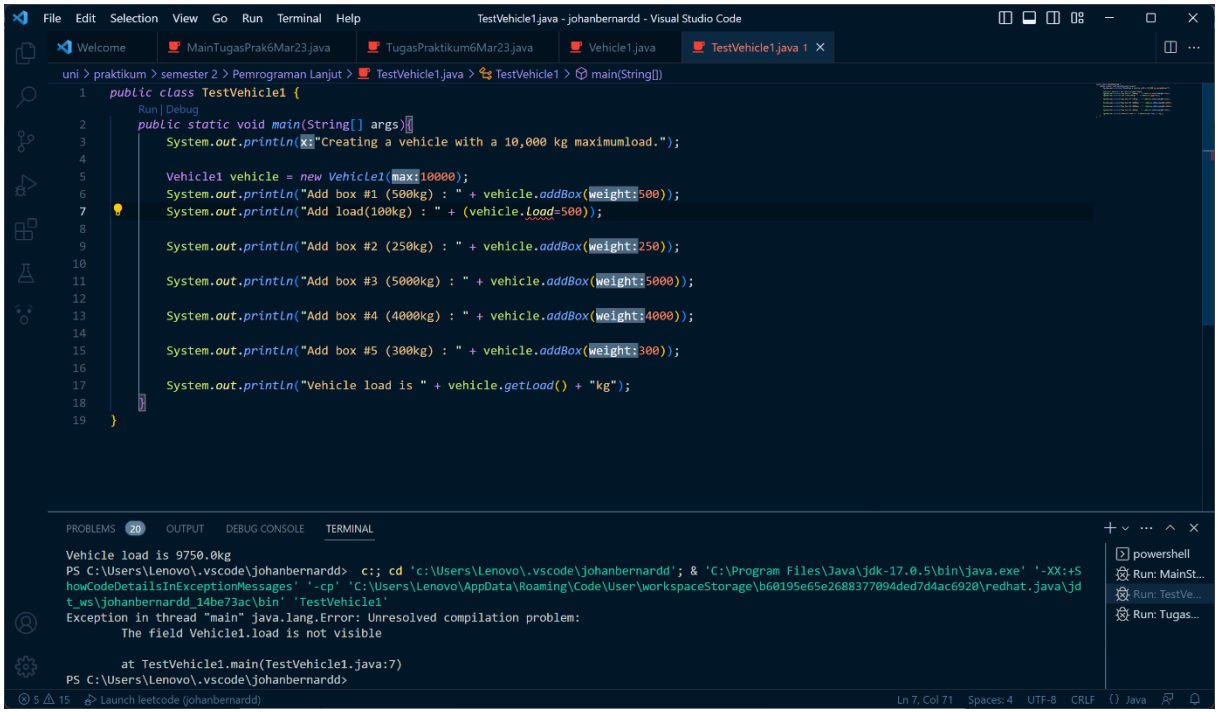
2. Tambahkan source code berikut dibawah baris ke 6 pada class TestVehicle1.

System.out.println("Add load(100kg) : " + (vehicle.load=500));

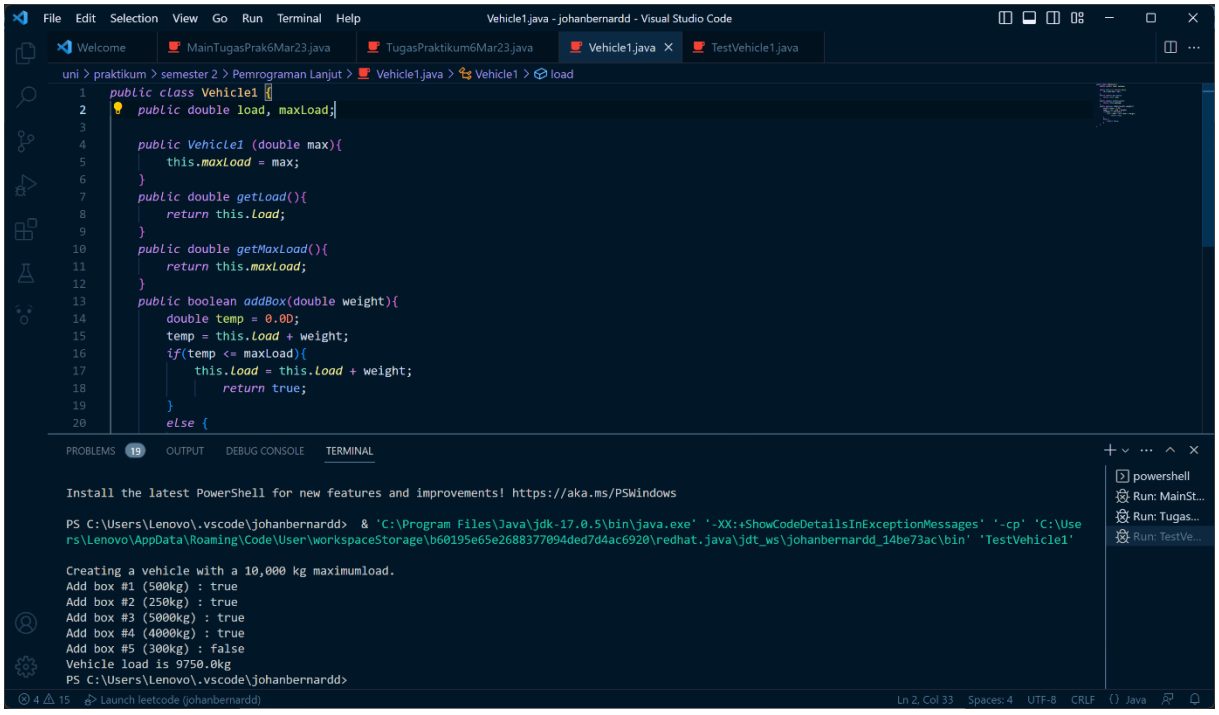
Jalankan program, apakah output dari program tersebut?

Kembalikan program seperti semula.

- Output dari programnya adalah “The field Vehicle1.load is not visible”.



3. Ubahlah tipe data pada atribut load dan maxload pada class Vehicle1 menjadi public. Jalankan program, apakah output dari program tersebut?

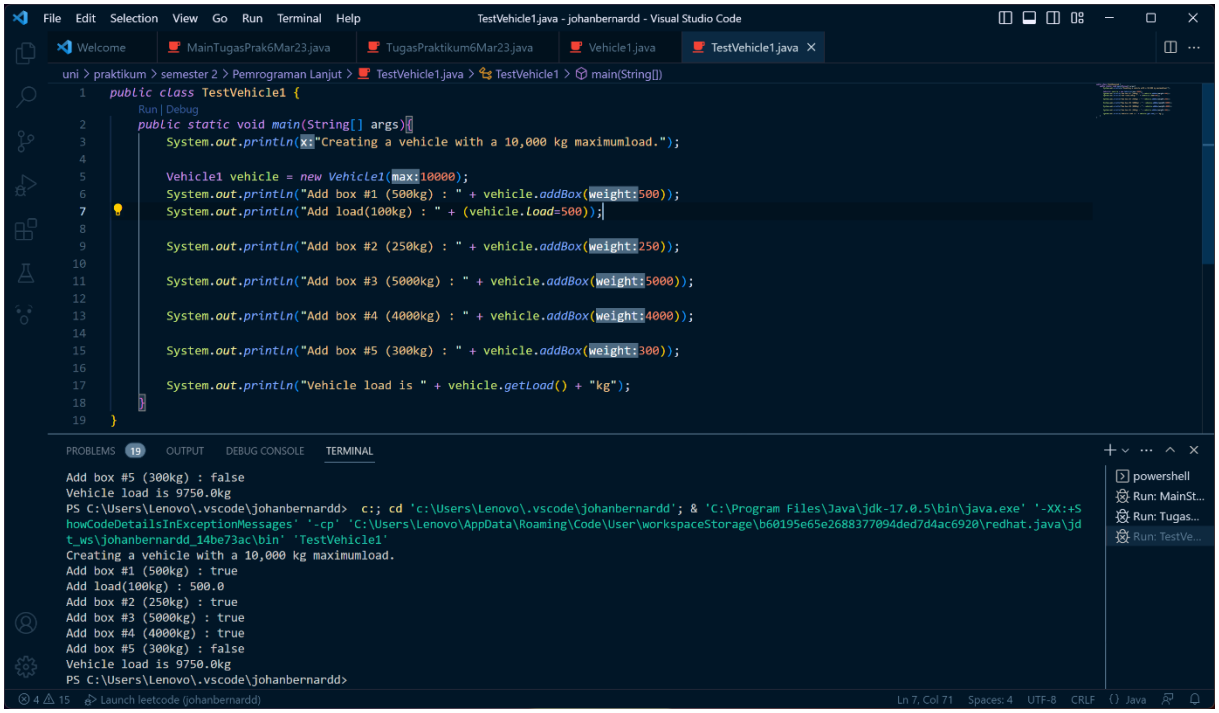


a. Tambahkan source kode berikut dibawah baris ke 6 pada class TestVehicle1.

System.out.println("Add load(100kg) : " + (vehicle.load=500));

Jalankan program, apakah output dari program tersebut?

Kembalikan program seperti semula.

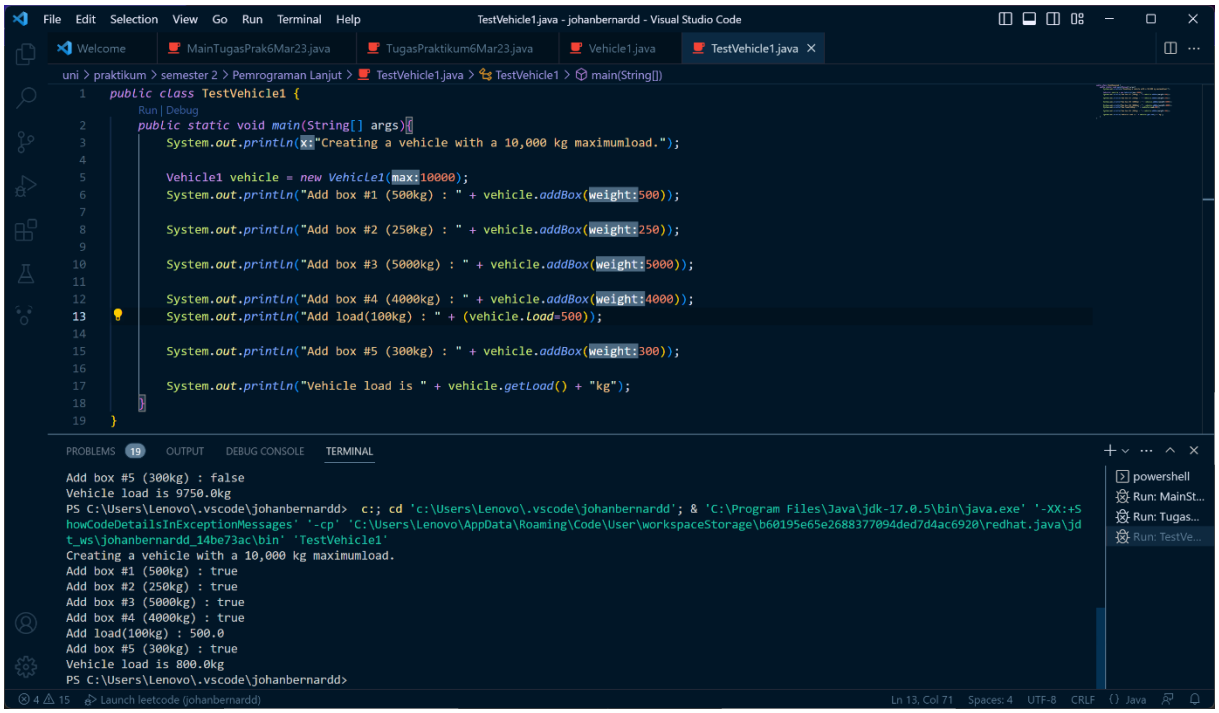


b. Tambahkan source kode berikut dibawah baris ke 12 pada class TestVehicle1.

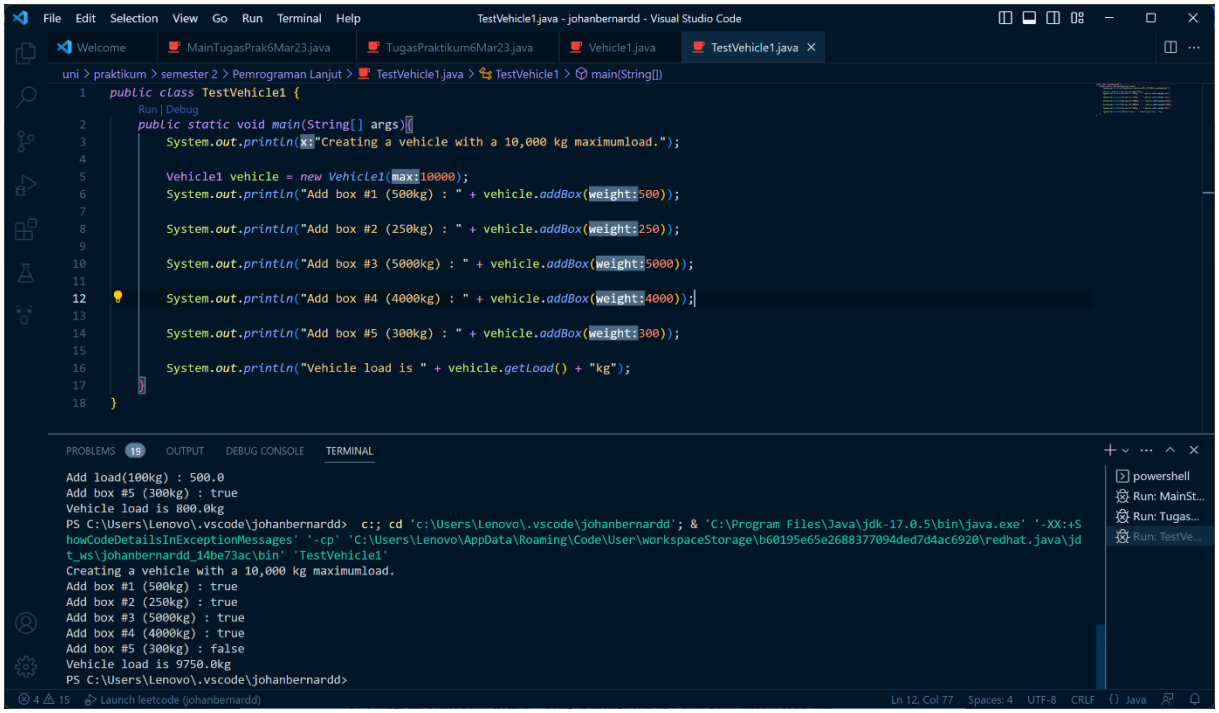
System.out.println("Add load(100kg) : " + (vehicle.load=500));

Jalankan program, apakah output dari program tersebut?

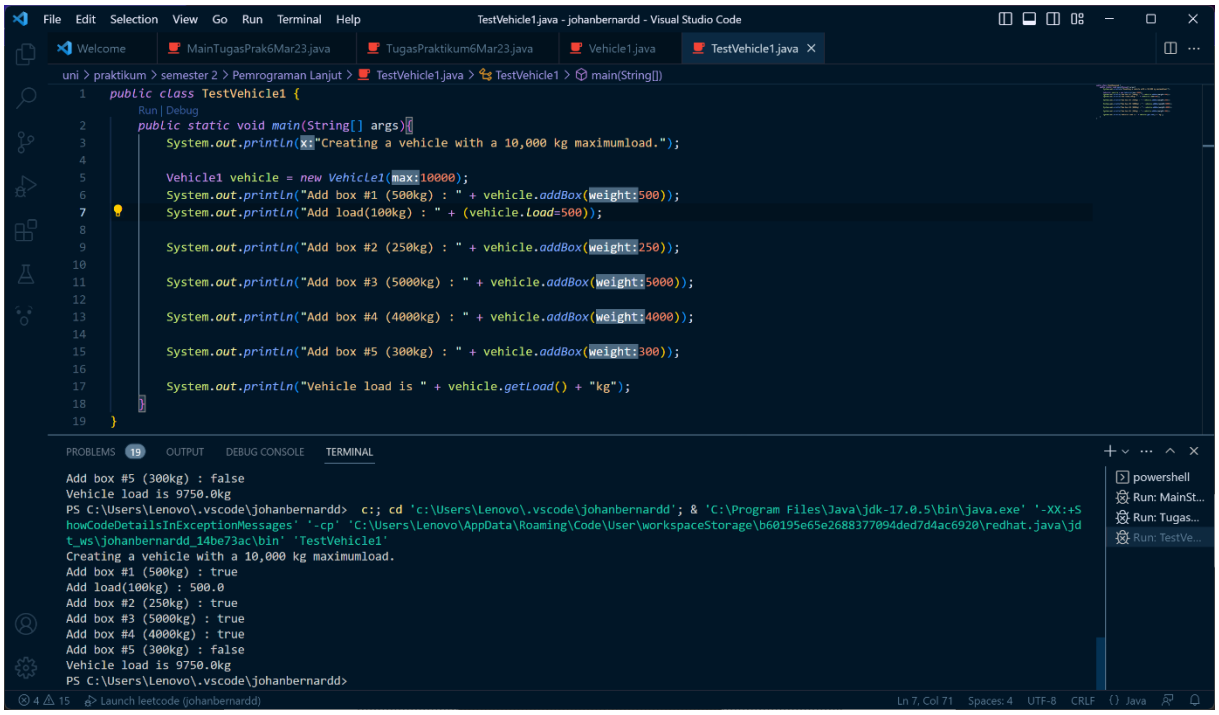
Kembalikan program seperti semula.



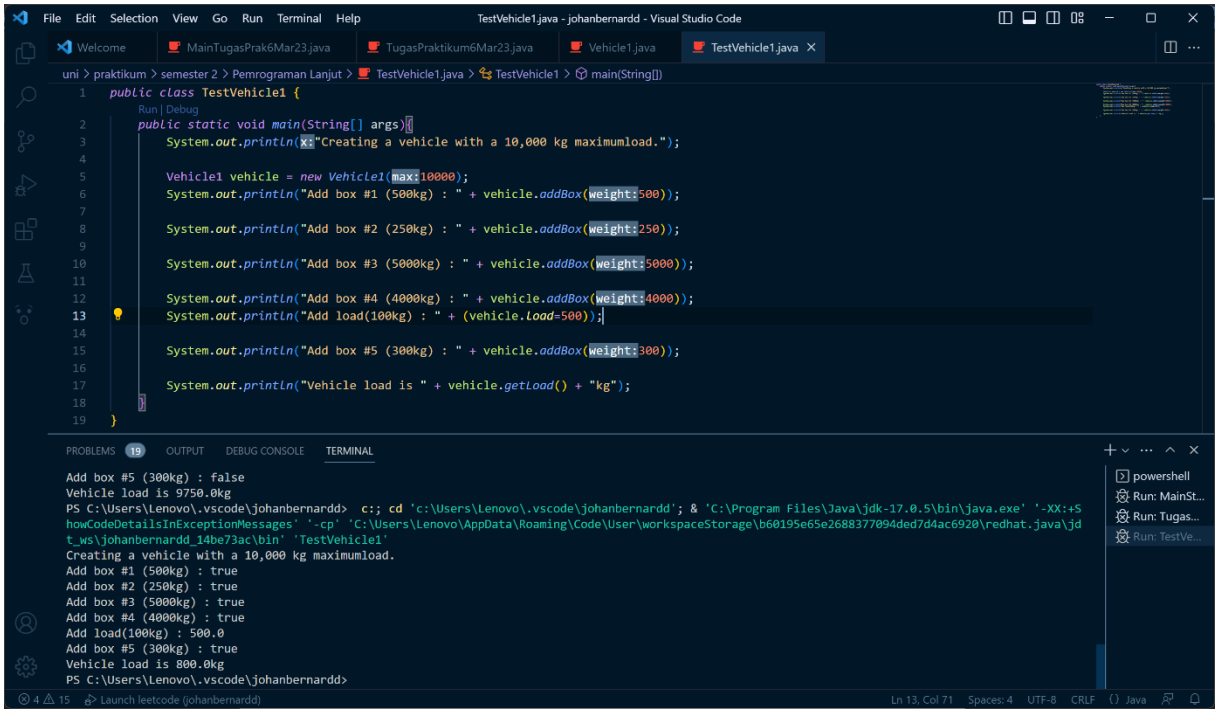
4. Ulangi instruksi pada nomer 4 dengan mengubah tipe data pada atribut load dan maxload pada class Vehicle1 menjadi **protected**.


File Edit Selection View Go Run Terminal Help
TestVehicle1.java - johanbernardd - Visual Studio Code
Welcome
MainTugasPrak6Mar23.java
TugasPraktikum6Mar23.java
Vehicle1.java
TestVehicle1.java
uni > praktikum > semester 2 > Pemrograman Lanjut > TestVehicle1.java > TestVehicle1 > main(String[])
public class TestVehicle1 {
Run | Debug
public static void main(String[] args){
System.out.println("Creating a vehicle with a 10,000 kg maximumload.");
Vehicle1 vehicle = new Vehicle1(max:10000);
System.out.println("Add box #1 (500kg) : " + vehicle.addBox(weight:500));
System.out.println("Add box #2 (250kg) : " + vehicle.addBox(weight:250));
System.out.println("Add box #3 (5000kg) : " + vehicle.addBox(weight:5000));
System.out.println("Add box #4 (4000kg) : " + vehicle.addBox(weight:4000));
System.out.println("Add box #5 (300kg) : " + vehicle.addBox(weight:300));
System.out.println("Vehicle load is " + vehicle.getLoad() + "kg");
}
}
PROBLEMS 19
OUTPUT
DEBUG CONSOLE
TERMINAL
Add load(100kg) : 500.0
Add box #5 (300kg) : true
Vehicle load is 800.0kg
PS C:\Users\Lenovo\.vscode\johanbernardd> c:; cd 'c:\Users\Lenovo\.vscode\johanbernardd'; & 'C:\Program Files\Java\jdk-17.0.5\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Lenovo\AppData\Roaming\Code\User\workspaceStorage\b60195e65e2688377094ded7d4ac6920\redhat.java\jdt_ws\johanbernardd_14be73ac\bin' 'TestVehicle1'
Creating a vehicle with a 10,000 kg maximumload.
Add box #1 (500kg) : true
Add box #2 (250kg) : true
Add box #3 (5000kg) : true
Add box #4 (4000kg) : true
Add box #5 (300kg) : false
Vehicle load is 9750.0kg
PS C:\Users\Lenovo\.vscode\johanbernardd>
powershell
Run: MainSt...
Run: Tugas...
Run: TestVe...
Launch leetcode (johanbernardd)
Ln 12, Col 77
Spaces: 4
UTF-8
CRLF
Java

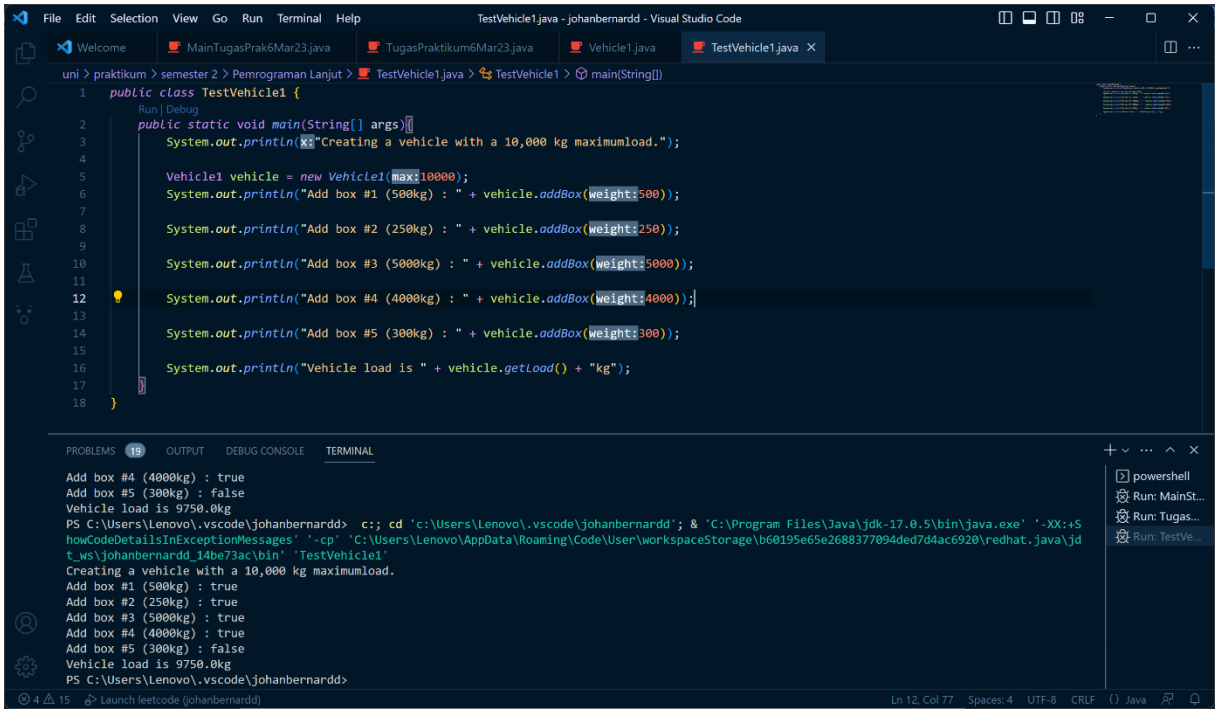
a.


File Edit Selection View Go Run Terminal Help
TestVehicle1.java - johanbernardd - Visual Studio Code
Welcome
MainTugasPrak6Mar23.java
TugasPraktikum6Mar23.java
Vehicle1.java
TestVehicle1.java
uni > praktikum > semester 2 > Pemrograman Lanjut > TestVehicle1.java > TestVehicle1 > main(String[])
public class TestVehicle1 {
Run | Debug
public static void main(String[] args){
System.out.println("Creating a vehicle with a 10,000 kg maximumload.");
Vehicle1 vehicle = new Vehicle1(max:10000);
System.out.println("Add box #1 (500kg) : " + vehicle.addBox(weight:500));
System.out.println("Add load(100kg) : " + (vehicle.load=500));
System.out.println("Add box #2 (250kg) : " + vehicle.addBox(weight:250));
System.out.println("Add box #3 (5000kg) : " + vehicle.addBox(weight:5000));
System.out.println("Add box #4 (4000kg) : " + vehicle.addBox(weight:4000));
System.out.println("Add box #5 (300kg) : " + vehicle.addBox(weight:300));
System.out.println("Vehicle load is " + vehicle.getLoad() + "kg");
}
}
PROBLEMS 19
OUTPUT
DEBUG CONSOLE
TERMINAL
Add box #5 (300kg) : false
Vehicle load is 9750.0kg
PS C:\Users\Lenovo\.vscode\johanbernardd> c:; cd 'c:\Users\Lenovo\.vscode\johanbernardd'; & 'C:\Program Files\Java\jdk-17.0.5\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Lenovo\AppData\Roaming\Code\User\workspaceStorage\b60195e65e2688377094ded7d4ac6920\redhat.java\jdt_ws\johanbernardd_14be73ac\bin' 'TestVehicle1'
Creating a vehicle with a 10,000 kg maximumload.
Add box #1 (500kg) : true
Add load(100kg) : 500.0
Add box #2 (250kg) : true
Add box #3 (5000kg) : true
Add box #4 (4000kg) : true
Add box #5 (300kg) : false
Vehicle load is 9750.0kg
PS C:\Users\Lenovo\.vscode\johanbernardd>
powershell
Run: MainSt...
Run: Tugas...
Run: TestVe...
Launch leetcode (johanbernardd)
Ln 7, Col 71
Spaces: 4
UTF-8
CRLF
Java

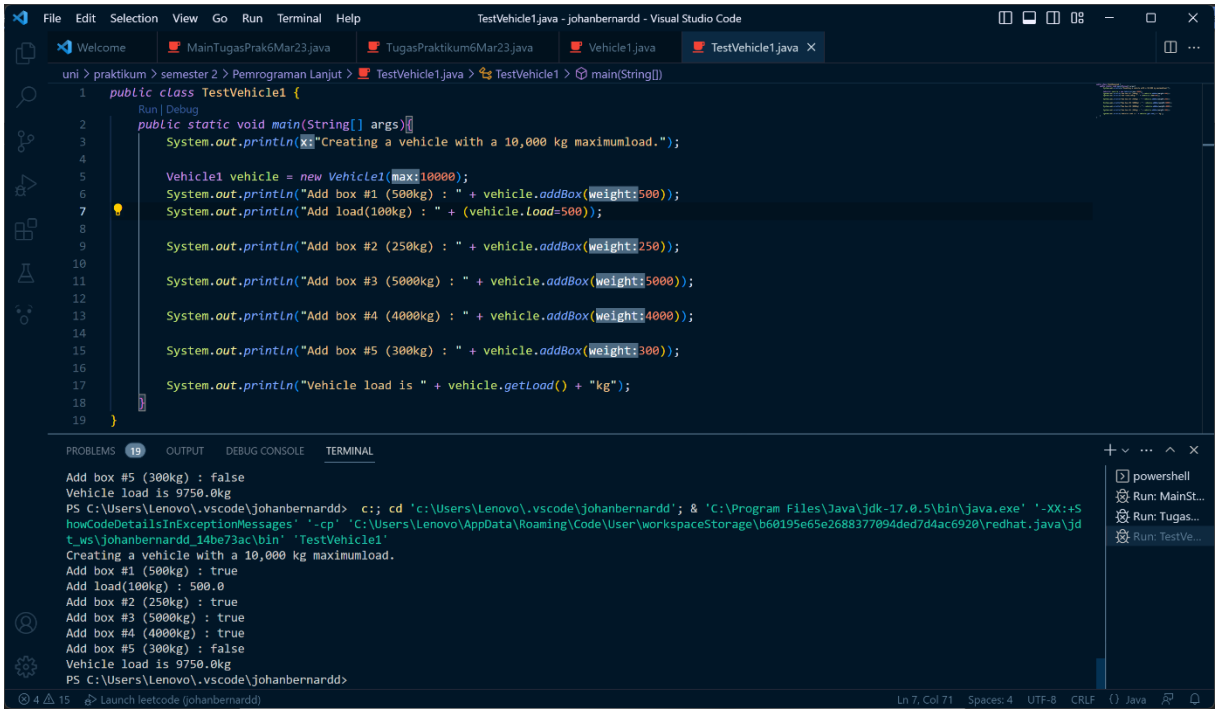
b.



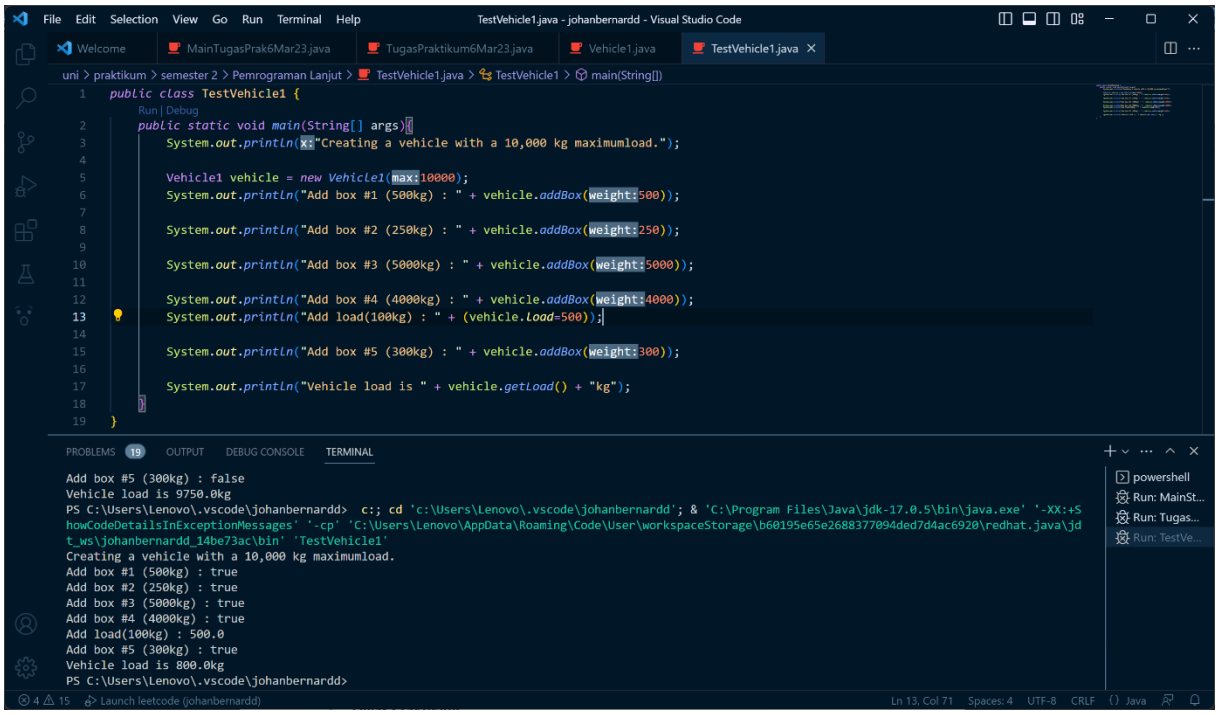
5. Ulangi instruksi pada nomer 4 dengan mengubah tipe data pada atribut load dan maxload pada class Vehicle1 menjadi **default.**



a.



b.



2. Tugas Praktikum

2.1 Source code

```
3   import java.util.Scanner;
4
```

```
5  public class TugasPraktikum20Mar23 {
6      private double saldo;
7      private String noPelanggan, nama;
8
9      public TugasPraktikum20Mar23(double saldo, String
   noPelanggan, String nama) {
10         this.saldo = saldo;
11         this.noPelanggan = noPelanggan;
12         this.nama = nama;
13     }
14     public double getSaldo() {
15         return saldo;
16     }
17     public String getNoPelanggan() {
18         return noPelanggan;
19     }
20     public String getNama() {
21         return nama;
22     }
23
24     private boolean checkAutentikasi(int pin) {
25         Scanner input = new Scanner(System.in);
26         int percobaan = 0;
27         while(pin != 123456 && percobaan < 2) {
28             System.out.println("PIN salah! Coba lagi");
29             percobaan++;
30             pin = input.nextInt();
31         }
32         return (pin == 123456);
33     }
34
35     // SILVER = 38;
36     // GOLD = 56;
37     // PLATINUM = 74;
38
39     public boolean pembelian (double harga) {
40        double cashback = 0;
41        boolean berhasil = false;
42         if (this.noPelanggan.substring(0,2).equals("38")) {
43             if (harga > 1000000) {
44                 cashback = harga * 0.05;
45             }
46         } else if (this.noPelanggan.substring(0,2).equals("56"))
   {
47             if (harga > 1000000) {
48                 cashback = (harga * 0.07);
```

```
49              } else {
50                  cashback = harga * 0.02;
51              }
52          } else if (this.noPelanggan.substring(0,2).equals("74"))
    {
53              if (harga > 1000000) {
54                  cashback = harga * 0.1;
55              } else {
56                  cashback = harga * 0.05;
57              }
58          }
59          double totalHarga = harga - cashback;
60          if (totalHarga >= 10000 && this.saldo >= totalHarga) {
61              this.saldo -= totalHarga;
62              System.out.println(this.saldo);
63              berhasil = true;
64          }
65          return berhasil;
66      }
67
68      public boolean topUp(double jumlahTopUp) {
69          boolean berhasil = false;
70          if (jumlahTopUp >= 0) {
71              saldo += jumlahTopUp;
72              System.out.println(this.saldo);
73              berhasil = true;
74          }
75          return berhasil;
76      }
77
78      public static void main(String[] args) {
79          Scanner input = new Scanner(System.in);
80          System.out.print("Nama: ");
81          String nama = input.nextLine();
82          System.out.print("No.Pelanggan: ");
83          String noPelanggan = input.nextLine();
84          System.out.print("Saldo: ");
85          double saldo = input.nextDouble();
86
87          TugasPraktikum20Mar23 proses = new
    TugasPraktikum20Mar23(saldo, noPelanggan, nama);
88          boolean autentikasiBerhasil = false;
89
90          System.out.println("Verifikasi data");
91          int batasKesalahanAutentikasi = 0;
```

```
92          while(!autentikasiBerhasil && batasKesalahanAutentikasi
    < 2) {
93              System.out.print("PIN: ");
94              int pin = input.nextInt();
95              autentikasiBerhasil = proses.checkAutentikasi(pin);
96
97              if(!autentikasiBerhasil) {
98                  System.out.println("Gagal memasukkan pin yang
    benar sebanyak 3x. Akun diblokir");
99                  System.exit(0);
100             }
101         }
102
103         boolean diulang = true;
104         while (diulang) {
105             System.out.println();
106             System.out.println("Halo " + proses.getNama() + ",
    Menu:");
107             System.out.println("1. Beli barang");
108             System.out.println("2. Top-up");
109             System.out.println("3. Keluar");
110
111             System.out.print("Pilihan menu: ");
112             int pilihanMenu = input.nextInt();
113
114             switch (pilihanMenu) {
115                 case 1:
116                     System.out.print("Total Harga: ");
117                     double totalHarga = input.nextDouble();
118                     proses.pembelian(totalHarga);
119
120                     if (proses.pembelian(totalHarga) == true) {
121                         System.out.println("Saldo anda sekarang
    diatas!");
122                         System.out.println("Transaksi
    berhasil!");
123                     } else if (!proses.pembelian(totalHarga) ==
    false) {
124                         System.out.println("Transaksi gagal!
    Saldo tidak cukup.");
125                     }
126                     break;
127                 case 2:
128                     System.out.print("Jumlah top up: ");
129                     double jumlahTopUp = input.nextDouble();
130                     proses.topUp(jumlahTopUp);
```

```
131                     System.out.println("Top up sukses! Saldo
   Anda saat ini diatas!");
132                     break;
133                 case 3:
134                     diulang = false;
135                     System.out.println("Terima kasih");
136                     break;
137                 default:
138                     System.out.println("Pilihan menu tidak
   valid");
139             }
140         }
141     }
142}
```

142.1 Screenshot hasil