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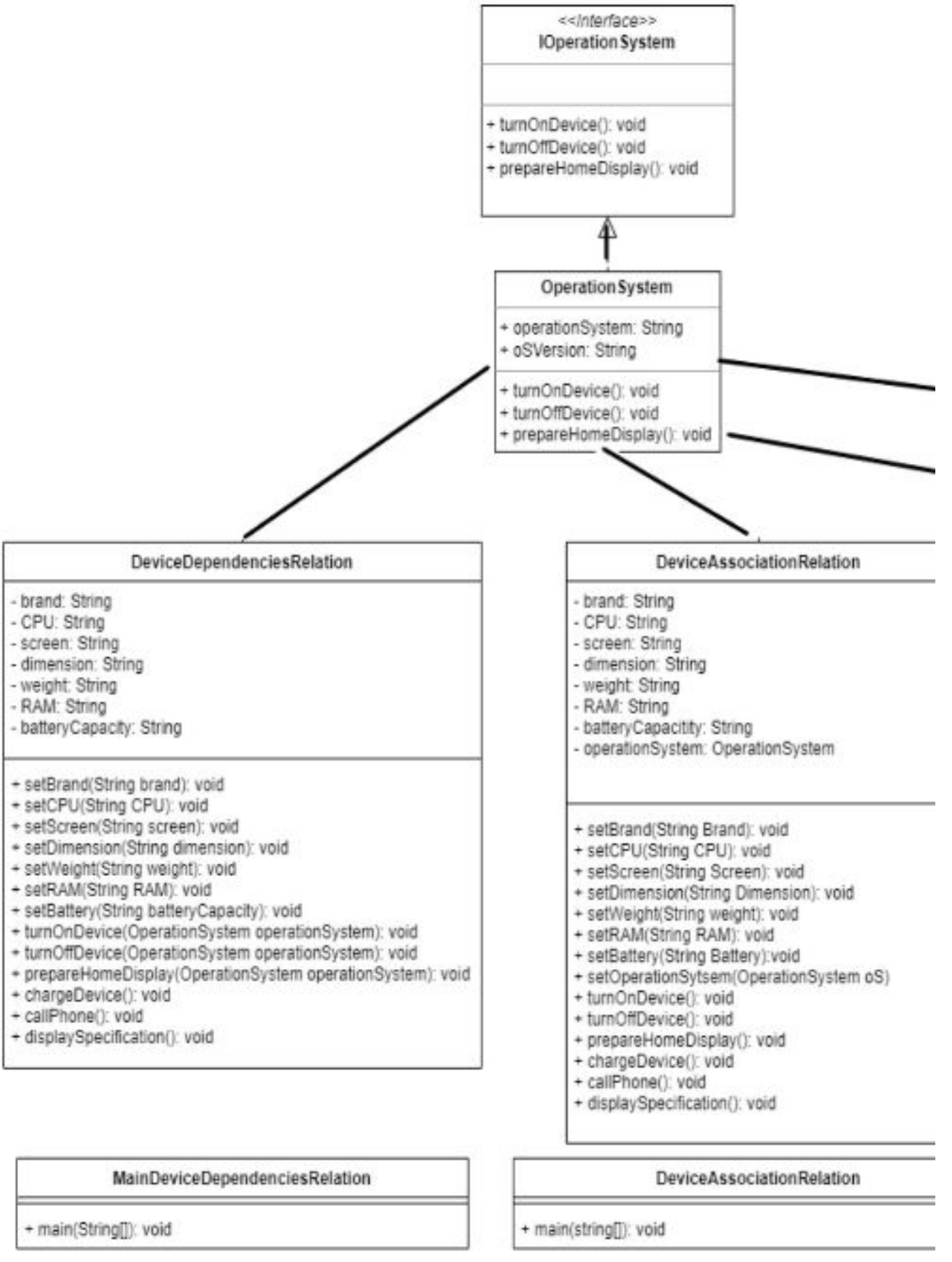
- DIAGRAM CLASS :



Source code :

IOperationSystem.java

```
public interface IOperationiSystem {
    void turnOnDevice();
    void turnOffDevice();
    void prepareHomeDisplay();
}
```

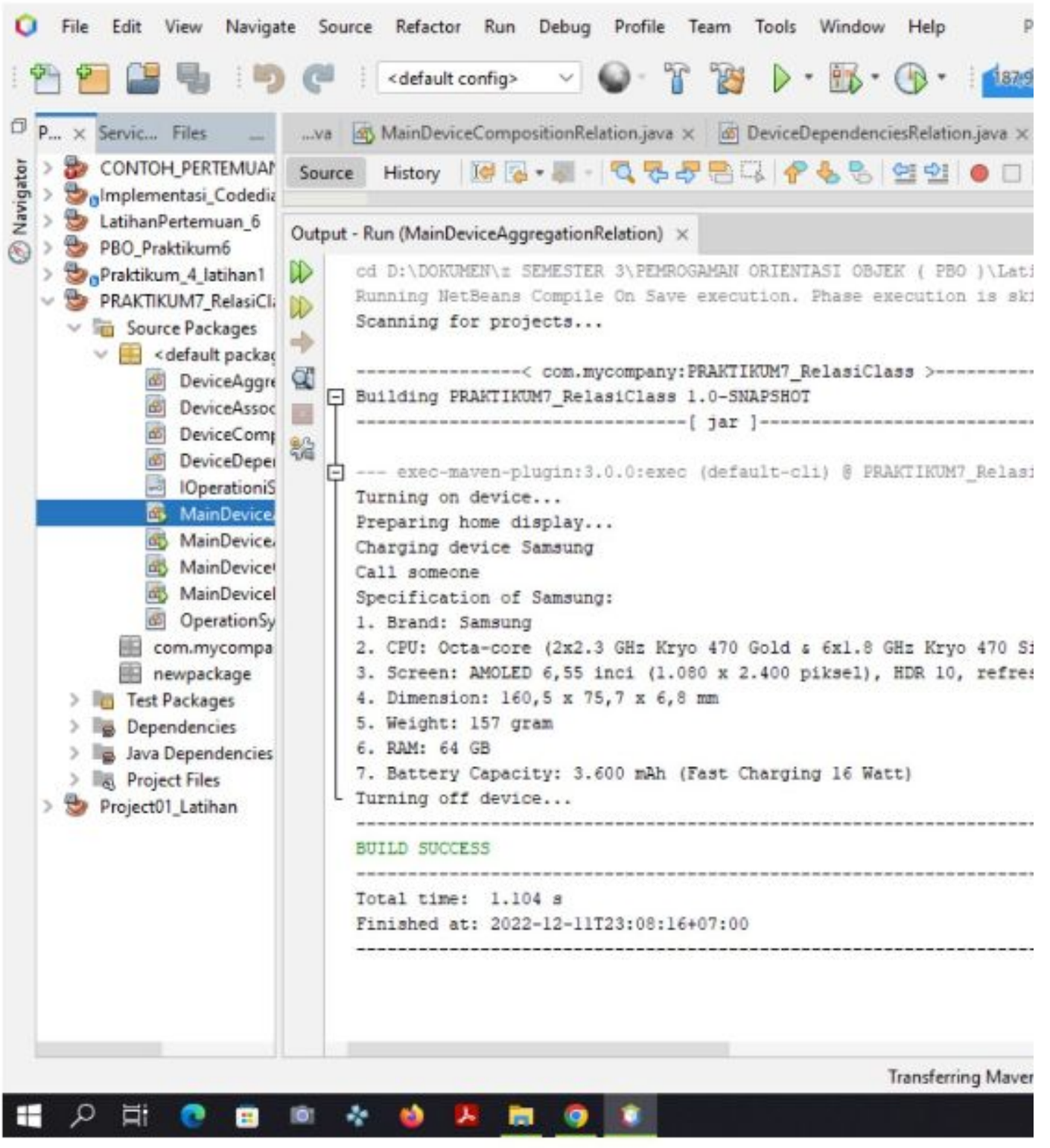
```
IOperationSystem.java
    public class OperationSystem implements IOperationiSystem {
    public String operationSystem;
    public String OSVersion;

    @Override
    public void turnOnDevice() {
        System.out.println("Turning on device...");
    }

    @Override
    public void turnOffDevice() {
        System.out.println("Turning off device...");
    }

    @Override
    public void prepareHomeDisplay() {
        System.out.println("Preparing home display...");
    }
}
```

Aggregataion

```
public class DeviceAggregationRelation {
    private String brand;
    private String CPU;
    private String screen;
    private String dimension;
    private String weight;
    private String RAM;
    private String batteryCapacity;
    private final OperationSystem operationSystem;

    public DeviceAggregationRelation(OperationSystem oS) {
        operationSystem = oS;
    }

    public void setBrand(String brand) {
        this.brand = brand;
    }
```

```
    public void setCPU(String CPU) {
        this.CPU = CPU;
    }

    public void setScreen(String screen) {
        this.screen = screen;
    }

    public void setDimension(String dimension) {
        this.dimension = dimension;
    }

    public void setWeight(String weight) {
        this.weight = weight;
    }

    public void setRAM(String RAM) {
        this.RAM = RAM;
    }

    public void setBatteryCapacity(String batteryCapacity) {
        this.batteryCapacity = batteryCapacity;
    }

    public void turnOnDevice() {
        operationSystem.turnOnDevice();
    }

    public void turnOffDevice() {
        operationSystem.turnOffDevice();
    }

    public void prepareHomeDisplay() {
        operationSystem.prepareHomeDisplay();
    }

    public void chargeDevice() {
        System.out.println("Charging device " + this.brand);
    }

    public void callPhone() {
        System.out.println("Call someone");
    }

    public void displaySpecification() {
        System.out.println("Specification of " + this.brand + ":");
        System.out.println("1. Brand: " + this.brand);
        System.out.println("2. CPU: " + this.CPU);
        System.out.println("3. Screen: " + this.screen);
        System.out.println("4. Dimension: " + this.dimension);
        System.out.println("5. Weight: " + this.weight);
        System.out.println("6. RAM: " + this.RAM);
        System.out.println("7. Battery Capacity: " + this.batteryCapacity);
    }
}


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

```
        // Membuat object oporation system
        OperationSystem oS = new OperationSystem();

        // memanggil atribut dan nilai
        oS.operationSystem = "Android Operation System";
        oS.OSVersion = "Android 11";

        // Membuat object Device
        DeviceAggregationRelation samsungS9 = new DeviceAggregationRelation(oS);
        samsungS9.setBrand("Samsung");
        samsungS9.setCPU("Octa-core (2x2.3 GHz Kryo 470 Gold & 6x1.8 GHz Kryo 470
Silver)");
        samsungS9.setScreen("AMOLED 6,55 inci (1.080 x 2.400 piksel), HDR 10,
refresh rate 90 Hz, Gorilla Glass 5, aspek rasio 20:9");
        samsungS9.setDimension("160,5 x 75,7 x 6,8 mm");
        samsungS9.setWeight("157 gram");
        samsungS9.setRAM("64 GB");
        samsungS9.setBatteryCapacity("3.600 mAh (Fast Charging 16 Watt)");
        samsungS9.turnOnDevice();
        samsungS9.prepareHomeDisplay();
        samsungS9.chargeDevice();
        samsungS9.callPhone();
        samsungS9.displaySpecification();
        samsungS9.turnOffDevice();
    }
}
#output!
```



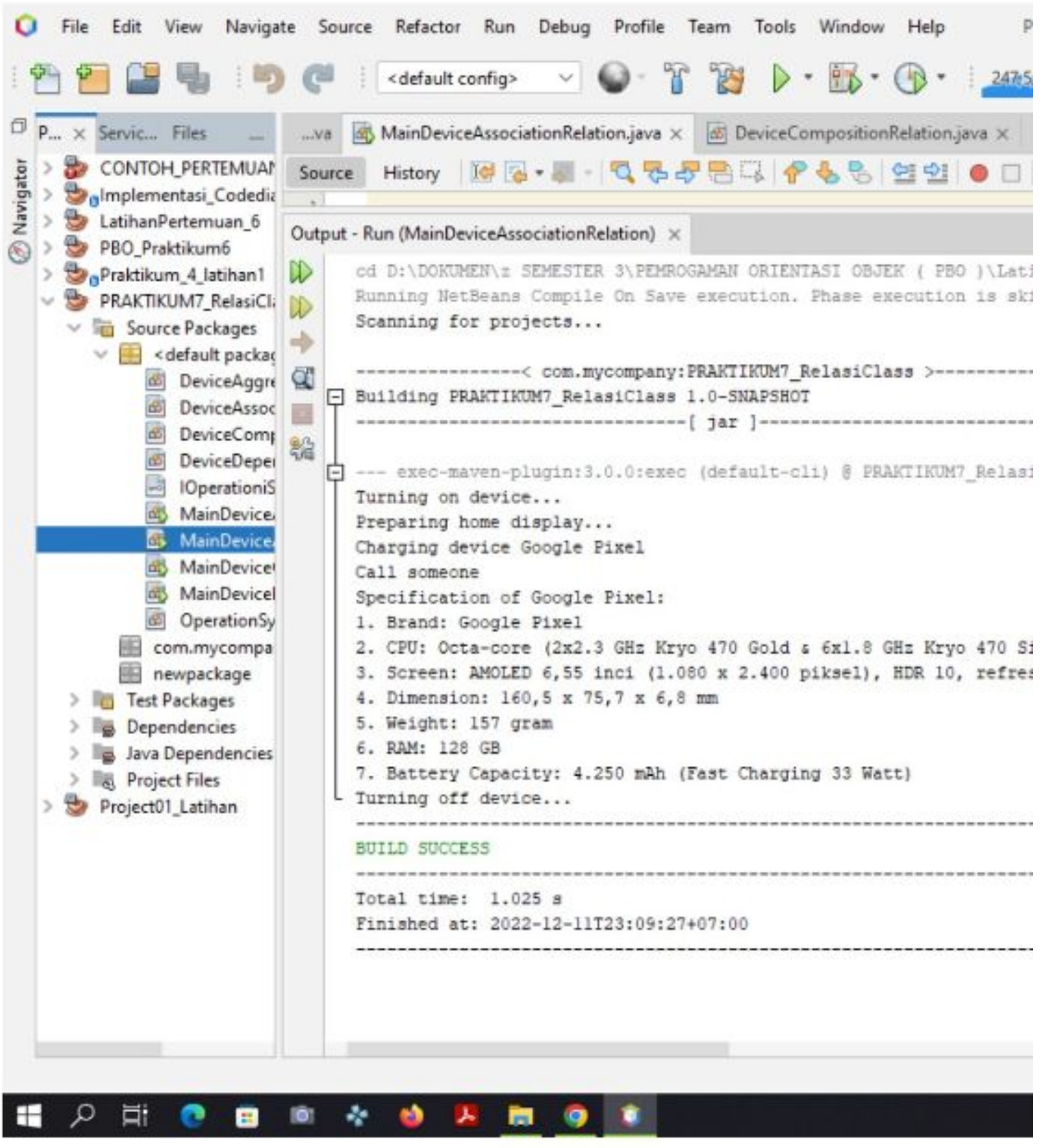
Associasion

```
public class DeviceAssociationRelation {
    private String brand;
    private String CPU;
    private String screen;
    private String dimension;
```

```
private String weight;
private String RAM;
private String batteryCapacity;
OperationSystem operationSystem;

public void setBrand(String brand) {
    this.brand = brand;
}

public void setCPU(String CPU) {
    this.CPU = CPU;
}

public void setScreen(String screen) {
    this.screen = screen;
}

public void setDimension(String dimension) {
    this.dimension = dimension;
}

public void setWeight(String weight) {
    this.weight = weight;
}

public void setRAM(String RAM) {
    this.RAM = RAM;
}

public void setBatteryCapacity(String batteryCapacity) {
    this.batteryCapacity = batteryCapacity;
}

public void setOperationSystem(OperationSystem os) {
    operationSystem = os;
}

public void turnOnDevice() {
    operationSystem.turnOnDevice();
}

public void turnOffDevice() {
    operationSystem.turnOffDevice();
}

public void prepareHomeDisplay() {
    operationSystem.prepareHomeDisplay();
}

public void chargeDevice() {
    System.out.println("Charging device " + this.brand);
}

public void callPhone() {
    System.out.println("Call someone");
}

public void displaySpecification() {
    System.out.println("Specification of " + this.brand + ":");
```

```
        System.out.println("1. Brand: " + this.brand);
        System.out.println("2. CPU: " + this.CPU);
        System.out.println("3. Screen: " + this.screen);
        System.out.println("4. Dimension: " + this.dimension);
        System.out.println("5. Weight: " + this.weight);
        System.out.println("6. RAM: " + this.RAM);
        System.out.println("7. Battery Capacity: " + this.batteryCapacity);
    }
}
```

```
public class MainDeviceAssociationRelation {
    public static void main(String[] args) {
        // Membuat object oporation system
        OperationSystem oS = new OperationSystem();

        // memanggil atribut dan nilai
        oS.operationSystem = "Android Operation System";
        oS.OSVersion = "Android 11";

        // Membuat object Device
        DeviceAssociationRelation googlePixel5 = new DeviceAssociationRelation();
        googlePixel5.setOperationSystem(oS);
        googlePixel5.setBrand("Google Pixel");
        googlePixel5.setCPU("Octa-core (2x2.3 GHz Kryo 470 Gold & 6x1.8 GHz Kryo
470 Silver)");
        googlePixel5.setScreen("AMOLED 6,55 inci (1.080 x 2.400 piksel), HDR 10,
refresh rate 90 Hz, Gorilla Glass 5, aspek rasio 20:9");
        googlePixel5.setDimension("160,5 x 75,7 x 6,8 mm");
        googlePixel5.setWeight("157 gram");
        googlePixel5.setRAM("128 GB");
        googlePixel5.setBatteryCapacity("4.250 mAh (Fast Charging 33 Watt)");
        googlePixel5.turnOnDevice();
        googlePixel5.prepareHomeDisplay();
        googlePixel5.chargeDevice();
        googlePixel5.callPhone();
        googlePixel5.displaySpecification();
        googlePixel5.turnOffDevice();
    }
}
#output
```



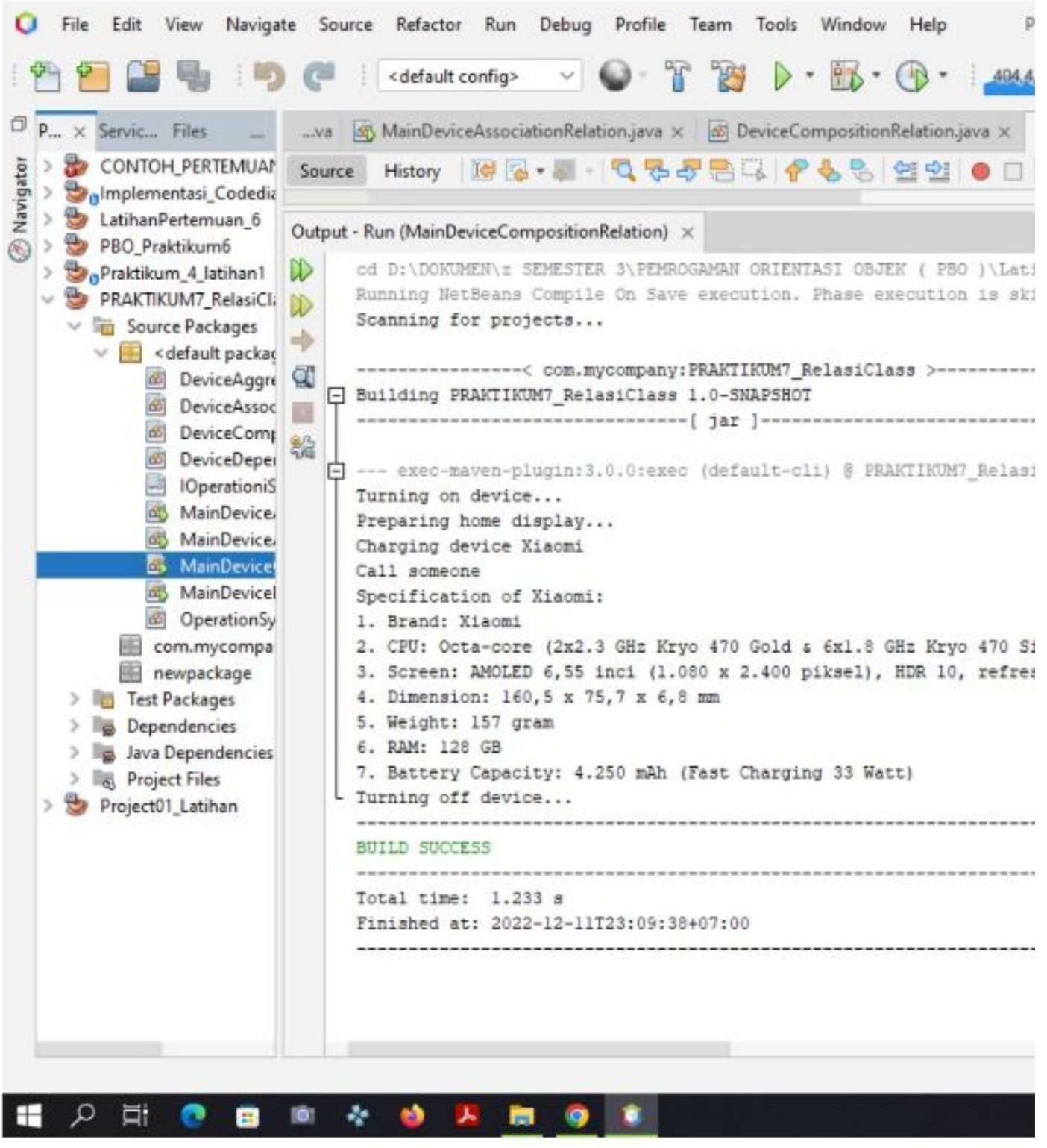
Composition

```
public class DeviceCompositionRelation {
    private final String brand;
    private final String CPU;
    private final String screen;
    private final String dimension;
```

```
    private final String weight;
    private final String RAM;
    private final String batteryCapacity;
    private final OperationSystem operationSystem;

    public DeviceCompositionRelation(String oS, String oSVersion, String brand,
String CPU, String screen, String dimension, String weight, String RAM, String
batteryCapacity) {
        operationSystem = new OperationSystem();
        operationSystem.operationSystem = oS;
        operationSystem.OSVersion = oSVersion;
        this.brand = brand;
        this.CPU = CPU;
        this.screen = screen;
        this.dimension = dimension;
        this.weight = weight;
        this.RAM = RAM;
        this.batteryCapacity = batteryCapacity;
    }

    public void turnOnDevice() {
        operationSystem.turnOnDevice();
    }

    public void turnOffDevice() {
        operationSystem.turnOffDevice();
    }

    public void prepareHomeDisplay() {
        operationSystem.prepareHomeDisplay();
    }

    public void chargeDevice() {
        System.out.println("Charging device " + this.brand);
    }

    public void callPhone() {
        System.out.println("Call someone");
    }

    public void displaySpecification() {
        System.out.println("Specification of " + this.brand + ":");
        System.out.println("1. Brand: " + this.brand);
        System.out.println("2. CPU: " + this.CPU);
        System.out.println("3. Screen: " + this.screen);
        System.out.println("4. Dimension: " + this.dimension);
        System.out.println("5. Weight: " + this.weight);
        System.out.println("6. RAM: " + this.RAM);
        System.out.println("7. Battery Capacity: " + this.batteryCapacity);
    }
}



public class MainDeviceCompositionRelation {
    public static void main(String[] args) {
        // Membuat object Device
        DeviceCompositionRelation xiaomiLite11 = new
DeviceCompositionRelation("Android Operation System", "Android 11", "Xiaomi",
```

```
"Octa-core (2x2.3 GHz Kryo 470 Gold & 6x1.8 GHz Kryo 470 Silver)", "AMOLED 6,55
inci (1.080 x 2.400 piksel), HDR 10, refresh rate 90 Hz, Gorilla Glass 5, aspek
rasio 20:9", "160,5 x 75,7 x 6,8 mm", "157 gram", "128 GB", "4.250 mAh (Fast
Charging 33 Watt)");
        xiaomiLite11.turnOnDevice();
        xiaomiLite11.prepareHomeDisplay();
        xiaomiLite11.chargeDevice();
        xiaomiLite11.callPhone();
        xiaomiLite11.displaySpecification();
        xiaomiLite11.turnOffDevice();
    }
}
```

#output



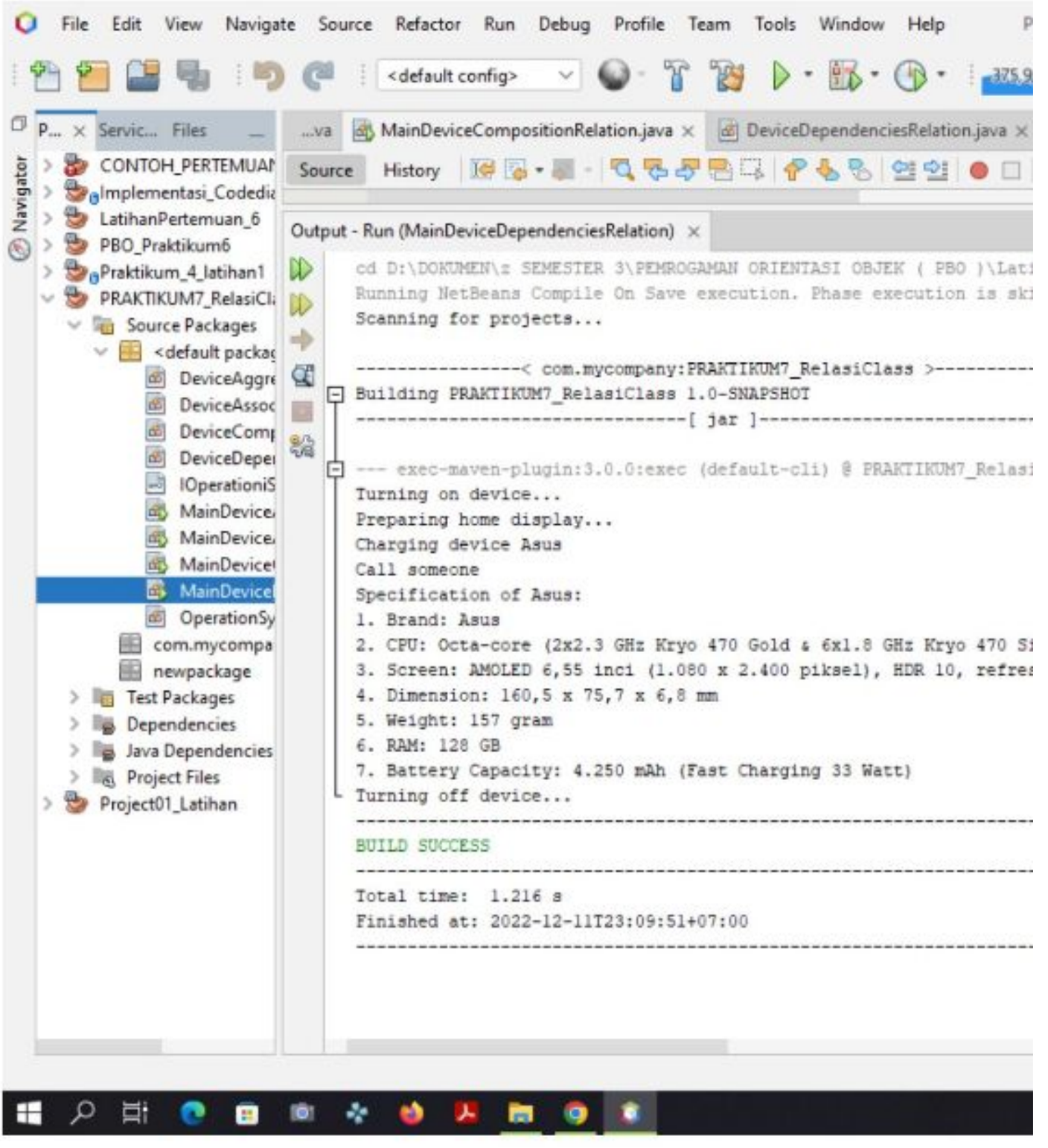
Dependencies

```
public class DeviceDependenciesRelation {
    private String brand;
    private String CPU;
    private String screen;
    private String dimension;
```

```
private String weight;
private String RAM;
private String batteryCapacity;

public void setBrand(String brand) {
    this.brand = brand;
}

public void setCPU(String CPU) {
    this.CPU = CPU;
}

public void setScreen(String screen) {
    this.screen = screen;
}

public void setDimension(String dimension) {
    this.dimension = dimension;
}

public void setWeight(String weight) {
    this.weight = weight;
}

public void setRAM(String RAM) {
    this.RAM = RAM;
}

public void setBatteryCapacity(String batteryCapacity) {
    this.batteryCapacity = batteryCapacity;
}

public void turnOnDevice(OperationSystem operationSystem) {
    operationSystem.turnOnDevice();
}

public void turnOffDevice(OperationSystem operationSystem) {
    operationSystem.turnOffDevice();
}

public void prepareHomeDisplay(OperationSystem operationSystem) {
    operationSystem.prepareHomeDisplay();
}

public void chargeDevice() {
    System.out.println("Charging device " + this.brand);
}

public void callPhone() {
    System.out.println("Call someone");
}

public void displaySpecification() {
    System.out.println("Specification of " + this.brand + ":");
    System.out.println("1. Brand: " + this.brand);
    System.out.println("2. CPU: " + this.CPU);
    System.out.println("3. Screen: " + this.screen);
    System.out.println("4. Dimension: " + this.dimension);
    System.out.println("5. Weight: " + this.weight);
```

```
        System.out.println("6. RAM: " + this.RAM);
        System.out.println("7. Battery Capacity: " + this.batteryCapacity);
    }
}

public class MainDeviceDependenciesRelation {
    public static void main(String[] args) {
        // Membuat object oporation system
        OperationSystem oS = new OperationSystem();

        // memanggil atribut dan nilai
        oS.operationSystem = "Android Operation System";
        oS.OSVersion = "Android 11";

        // Membuat object Device
        DeviceDependenciesRelation asusZenfone7 = new
DeviceDependenciesRelation();
        asusZenfone7.setBrand("Asus");
        asusZenfone7.setCPU("Octa-core (2x2.3 GHz Kryo 470 Gold & 6x1.8 GHz Kryo
470 Silver)");
        asusZenfone7.setScreen("AMOLED 6,55 inci (1.080 x 2.400 piksel), HDR 10,
refresh rate 90 Hz, Gorilla Glass 5, aspek rasio 20:9");
        asusZenfone7.setDimension("160,5 x 75,7 x 6,8 mm");
        asusZenfone7.setWeight("157 gram");
        asusZenfone7.setRAM("128 GB");
        asusZenfone7.setBatteryCapacity("4.250 mAh (Fast Charging 33 Watt)");
        asusZenfone7.turnOnDevice(oS);
        asusZenfone7.prepareHomeDisplay(oS);
        asusZenfone7.chargeDevice();
        asusZenfone7.callPhone();
        asusZenfone7.displaySpecification();
        asusZenfone7.turnOffDevice(oS);
    }
}
```

output



- to be continued

public class DeviceDependenciesRelation {

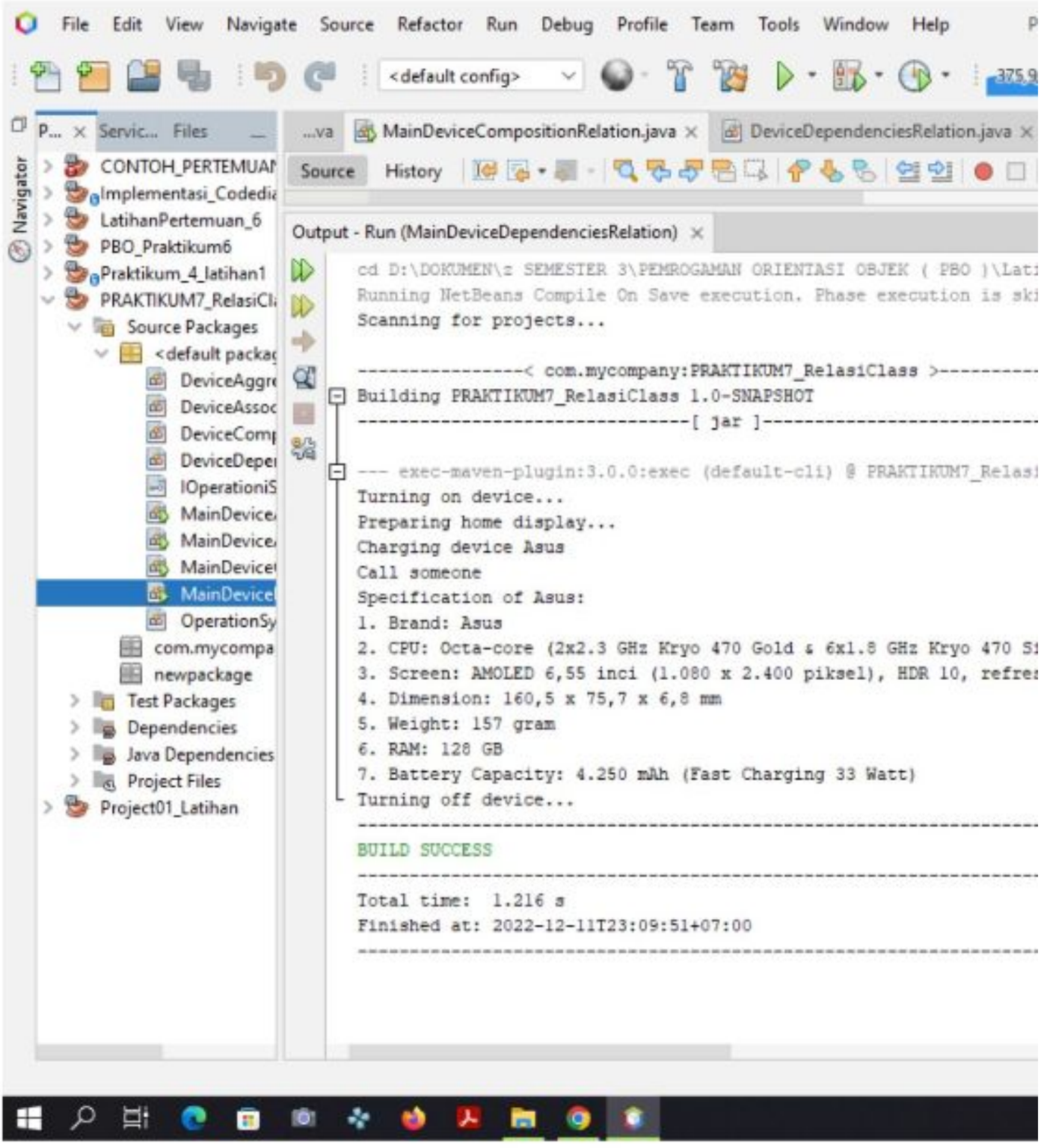
```
private String brand;
private String CPU;
private String screen;
private String dimension;
private String weight;
private String RAM;
private String batteryCapacity;

public void setBrand(String brand) {
   this.brand = brand;
}

public void setCPU(String CPU) {
   this.CPU = CPU;
}

public void setScreen(String screen) {
   this.screen = screen;
}

public void setDimension(String dimension) {
   this.dimension = dimension;
}

public void setWeight(String weight) {
   this.weight = weight;
}

public void setRAM(String RAM) {
   this.RAM = RAM;
}
```

```
public void setBatteryCapacity(String batteryCapacity) {
    this.batteryCapacity = batteryCapacity;
}

public void turnOnDevice(OperationSystem operationSystem) {
    operationSystem.turnOnDevice();
}

public void turnOffDevice(OperationSystem operationSystem) {
    operationSystem.turnOffDevice();
}

public void prepareHomeDisplay(OperationSystem operationSystem) {
    operationSystem.prepareHomeDisplay();
}

public void chargeDevice() {
    System.out.println("Charging device " + this.brand);
}

public void callPhone() {
    System.out.println("Call someone");
}

public void displaySpecification() {
    System.out.println("Specification of " + this.brand + ":");
    System.out.println("1. Brand: " + this.brand);
    System.out.println("2. CPU: " + this.CPU);
    System.out.println("3. Screen: " + this.screen);
    System.out.println("4. Dimension: " + this.dimension);
```

```
        System.out.println("5. Weight: " + this.weight);
        System.out.println("6. RAM: " + this.RAM);
        System.out.println("7. Battery Capacity: " + this.batteryCapacity);
    }
}

public class MainDeviceDependenciesRelation {
    public static void main(String[] args) {
        // Membuat object oporation system
        OperationSystem oS = new OperationSystem();

        // memanggil atribut dan nilai
        oS.operationSystem = "Android Operation System";
        oS.OSVersion = "Android 11";

        // Membuat object Device
        DeviceDependenciesRelation asusZenfone7 = new DeviceDependenciesRelation();
        asusZenfone7.setBrand("Asus");
        asusZenfone7.setCPU("Octa-core (2x2.3 GHz Kryo 470 Gold & 6x1.8 GHz Kryo 470 Silver)");
        asusZenfone7.setScreen("AMOLED 6,55 inci (1.080 x 2.400 piksel), HDR 10, refresh rate 90 Hz,
Gorilla Glass 5, aspek rasio 20:9");
        asusZenfone7.setDimension("160,5 x 75,7 x 6,8 mm");
        asusZenfone7.setWeight("157 gram");
        asusZenfone7.setRAM("128 GB");
        asusZenfone7.setBatteryCapacity("4.250 mAh (Fast Charging 33 Watt)");
        asusZenfone7.turnOnDevice(oS);
        asusZenfone7.prepareHomeDisplay(oS);
        asusZenfone7.chargeDevice();
        asusZenfone7.callPhone();
        asusZenfone7.displaySpecification();
        asusZenfone7.turnOffDevice(oS);
```

```
    }
}
```

output



- to be continued