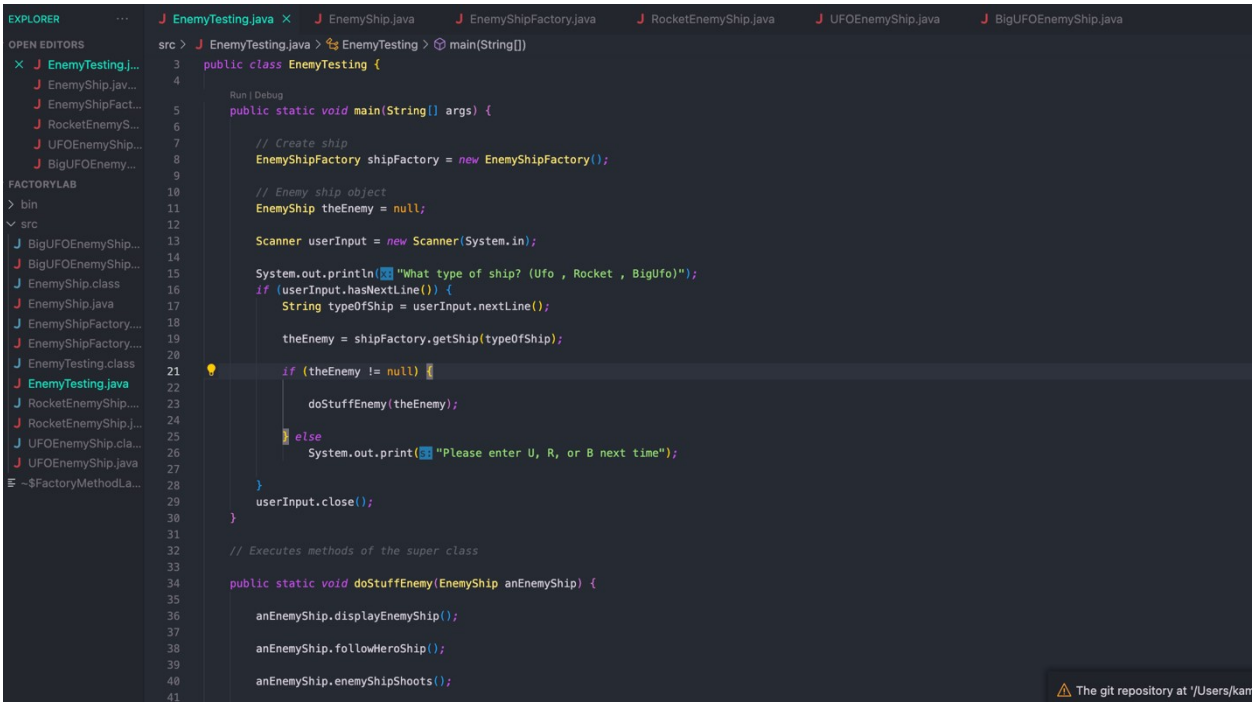
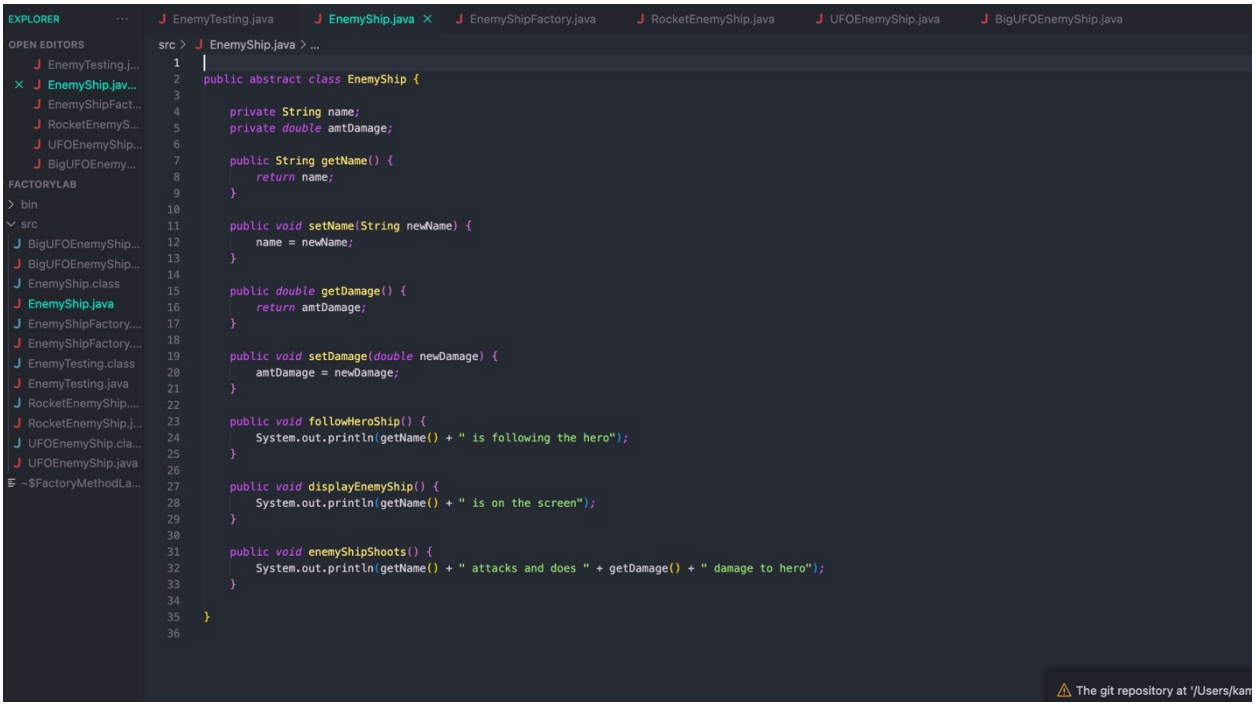
Shadan Khan 1876267 SDP lab3

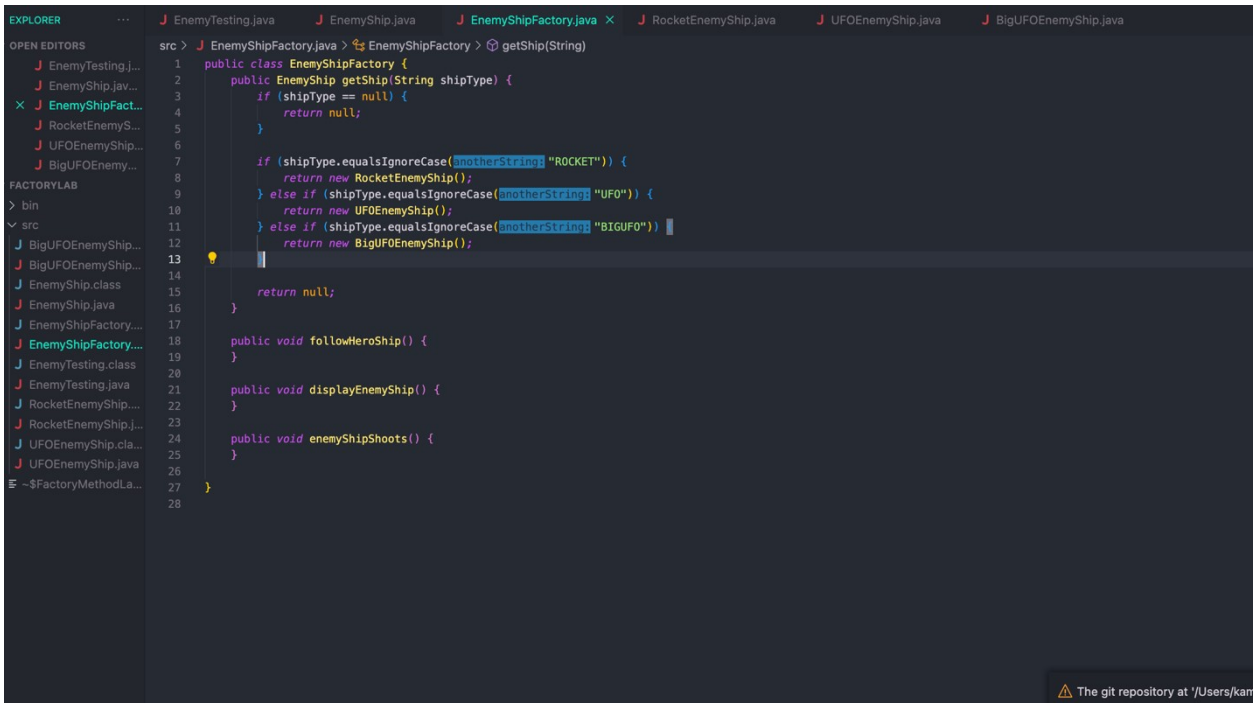
Factory Pattern

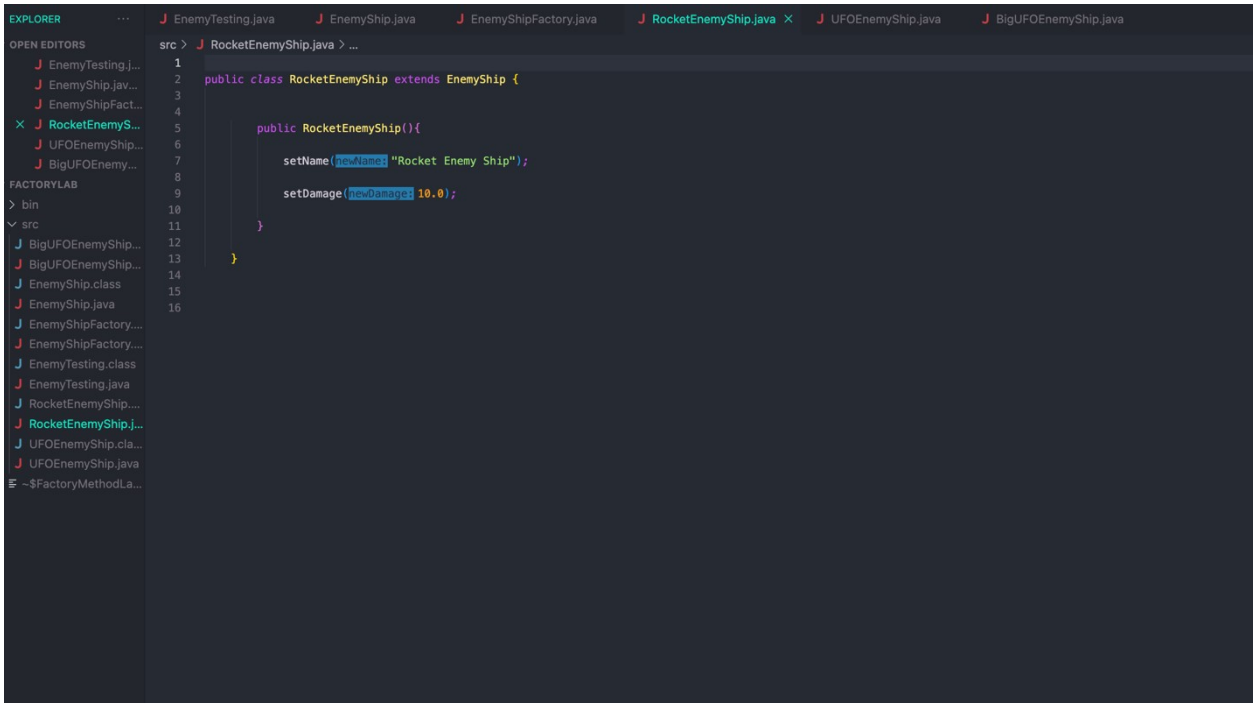


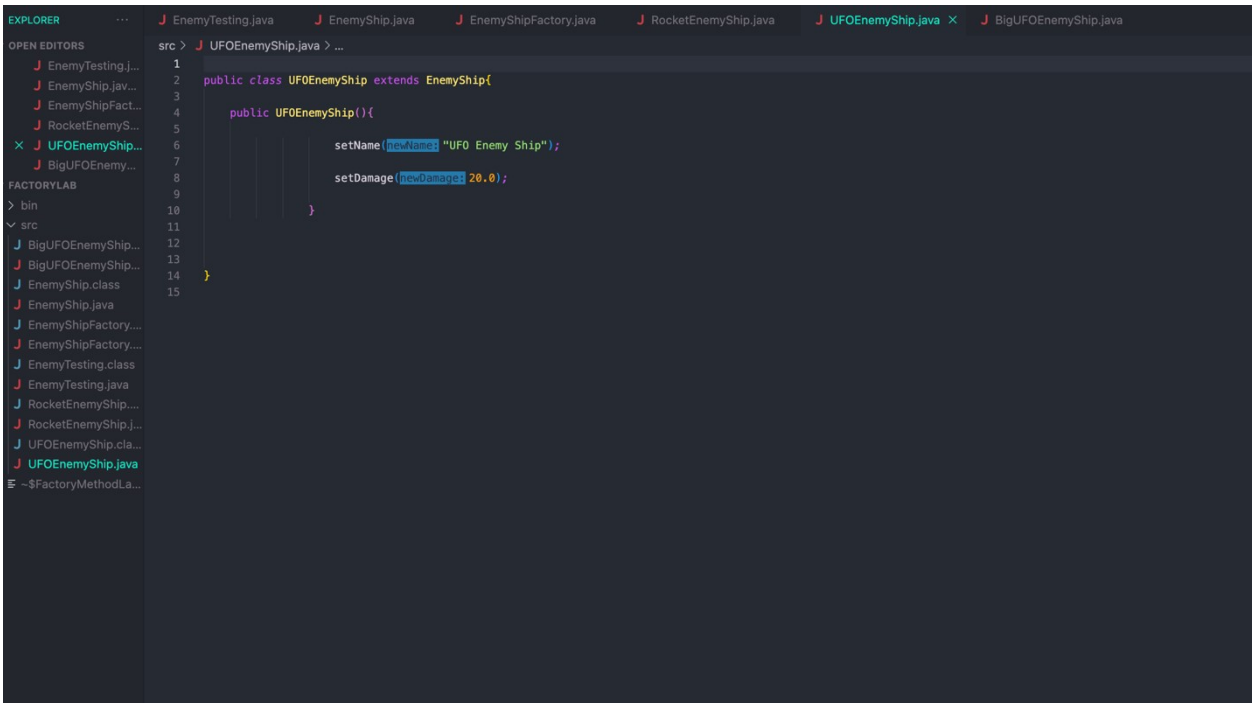
```java
public class EnemyTesting {

    Run | Debug
    public static void main(String[] args) {

        // Create ship
        EnemyShipFactory shipFactory = new EnemyShipFactory();

        // Enemy ship object
        EnemyShip theEnemy = null;

        Scanner userInput = new Scanner(System.in);

        System.out.println( x: "What type of ship? (Ufo , Rocket , BigUfo)");
        if (userInput.hasNextLine()) {
            String typeOfShip = userInput.nextLine();

            theEnemy = shipFactory.getShip(typeOfShip);

            if (theEnemy != null) {

                doStuffEnemy(theEnemy);

            } else
                System.out.print( x: "Please enter U, R, or B next time");

        }
        userInput.close();
    }

    // Executes methods of the super class

    public static void doStuffEnemy(EnemyShip anEnemyShip) {

        anEnemyShip.displayEnemyShip();

        anEnemyShip.followHeroShip();

        anEnemyShip.enemyShipShoots();
```

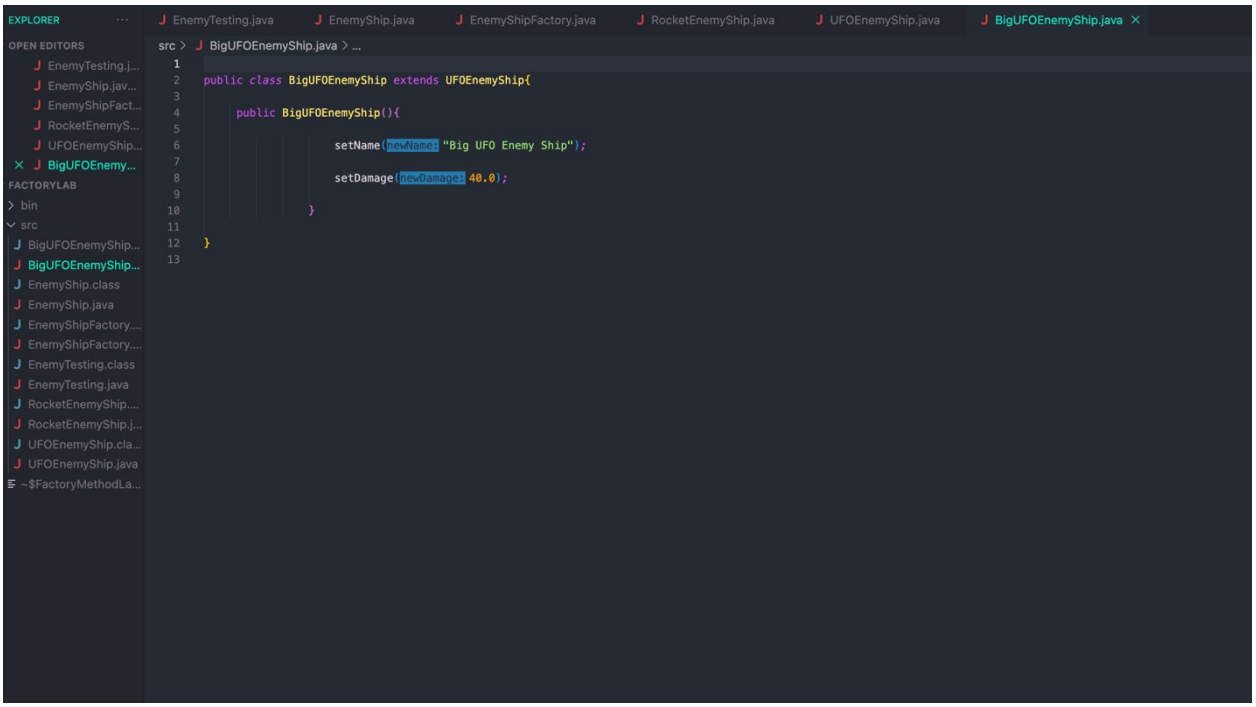


```java
public abstract class EnemyShip {

    private String name;
    private double amtDamage;

    public String getName() {
        return name;
    }

    public void setName(String newName) {
        name = newName;
    }

    public double getDamage() {
        return amtDamage;
    }

    public void setDamage(double newDamage) {
        amtDamage = newDamage;
    }

    public void followHeroShip() {
        System.out.println(getName() + " is following the hero");
    }

    public void displayEnemyShip() {
        System.out.println(getName() + " is on the screen");
    }

    public void enemyShipShoots() {
        System.out.println(getName() + " attacks and does " + getDamage() + " damage to hero");
    }

}
```


EXPLORER
EnemyTesting.java
EnemyShip.java
EnemyShipFactory.java
RocketEnemyShip.java
UFOEnemyShip.java
BigUFOEnemyShip.java
src > EnemyShipFactory.java > EnemyShipFactory > getShip(String)
public class EnemyShipFactory {
public EnemyShip getShip(String shipType) {
if (shipType == null) {
return null;
}
if (shipType.equalsIgnoreCase(anotherString: "ROCKET")) {
return new RocketEnemyShip();
} else if (shipType.equalsIgnoreCase(anotherString: "UFO")) {
return new UFOEnemyShip();
} else if (shipType.equalsIgnoreCase(anotherString: "BIGUFO")) {
return new BigUFOEnemyShip();
return null;
public void followHeroShip() {
public void displayEnemyShip() {
public void enemyShipShoots() {
The git repository at '/Users/kam


EXPLORER
EnemyTesting.java
EnemyShip.java
EnemyShipFactory.java
RocketEnemyShip.java
UFOEnemyShip.java
BigUFOEnemyShip.java
src > RocketEnemyShip.java > ...
public class RocketEnemyShip extends EnemyShip {
public RocketEnemyShip(){
setName(newName: "Rocket Enemy Ship");
setDamage(newDamage: 10.0);


EXPLORER
OPEN EDITORS
EnemyTesting.j...
EnemyShip.jav...
EnemyShipFact...
RocketEnemyS...
UFOEnemyShip...
BigUFOEnemy...
FACTORYLAB
bin
src
BigUFOEnemyShip...
BigUFOEnemyShip...
EnemyShip.class
EnemyShip.java
EnemyShipFactory....
EnemyShipFactory....
EnemyTesting.class
EnemyTesting.java
RocketEnemyShip....
RocketEnemyShip.j...
UFOEnemyShip.cla...
UFOEnemyShip.java
~$FactoryMethodLa...
EnemyTesting.java
EnemyShip.java
EnemyShipFactory.java
RocketEnemyShip.java
UFOEnemyShip.java
BigUFOEnemyShip.java
src > UFOEnemyShip.java > ...
public class UFOEnemyShip extends EnemyShip{
public UFOEnemyShip(){
setName(newName: "UFO Enemy Ship");
setDamage(newDamage: 20.0);
}
}


EXPLORER
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EnemyShip.jav...
EnemyShipFact...
RocketEnemyS...
UFOEnemyShip...
BigUFOEnemy...
FACTORYLAB
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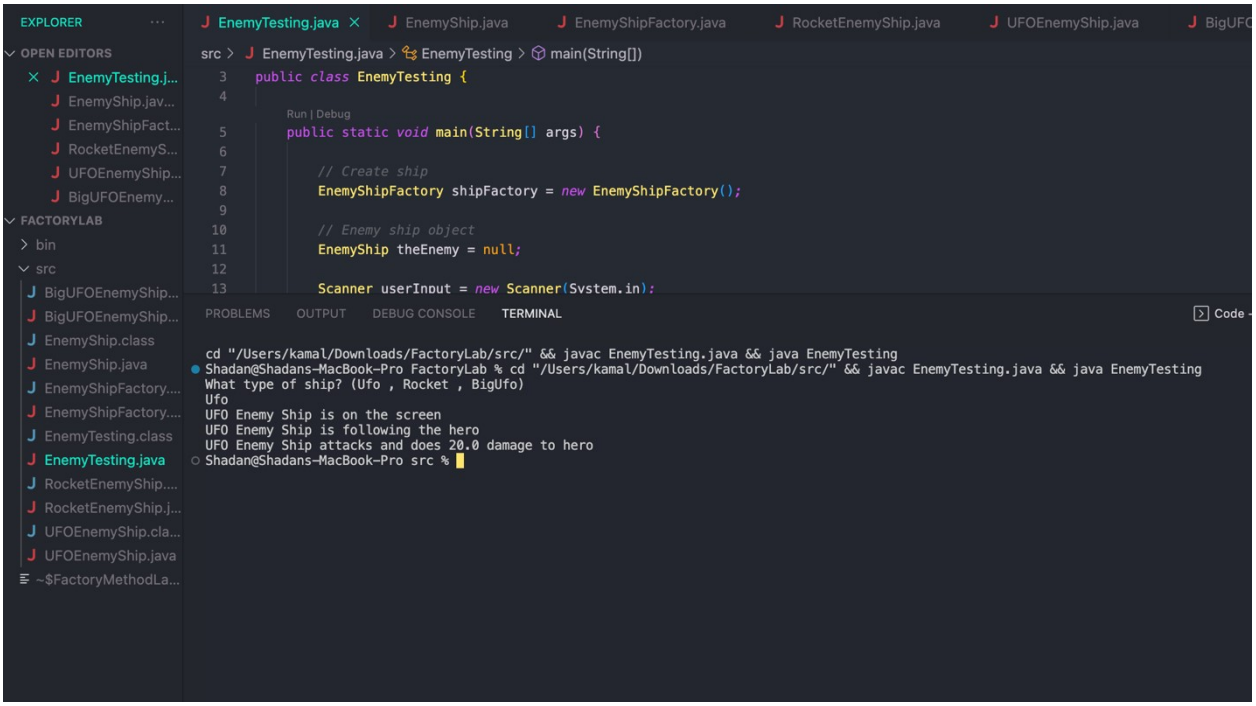
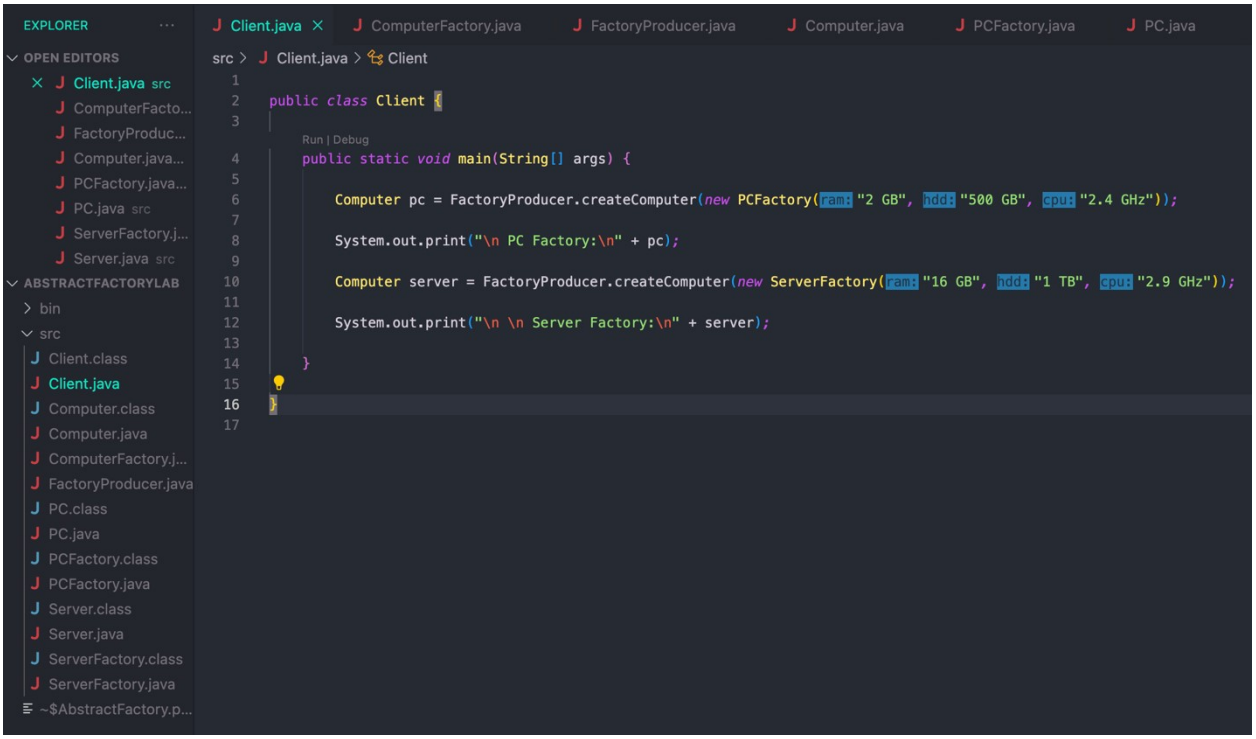
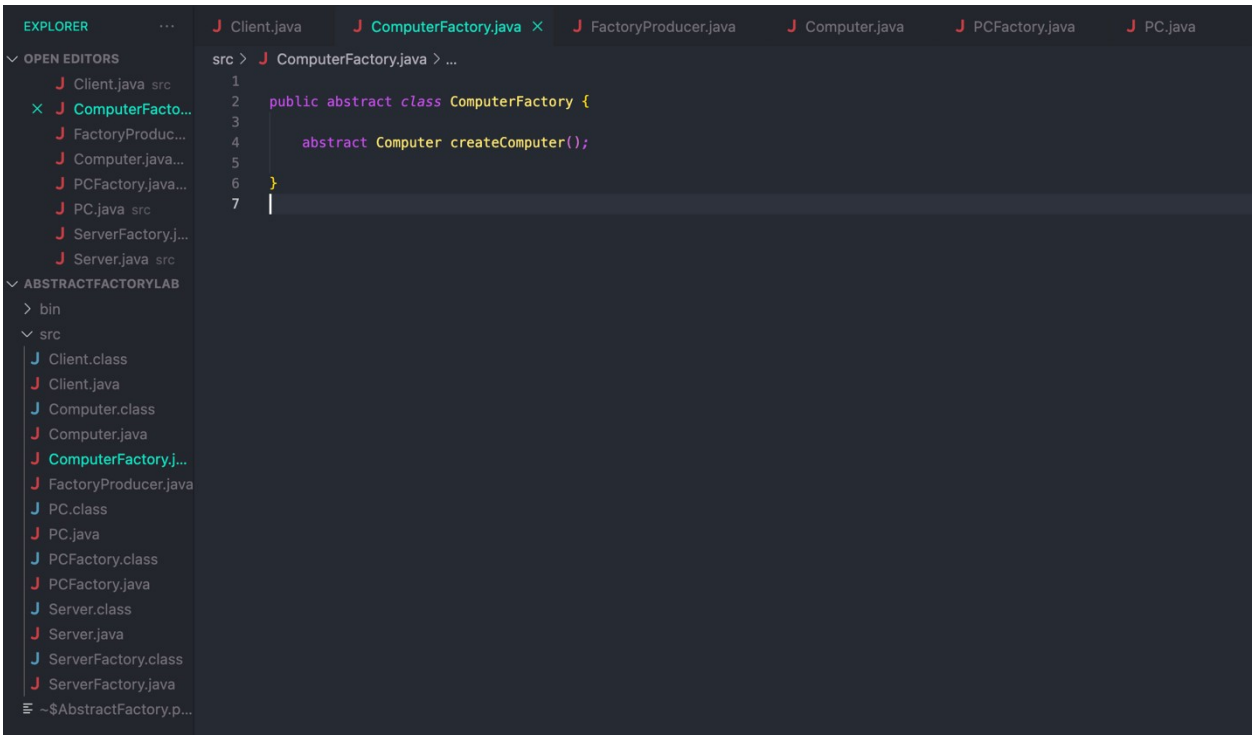
BigUFOEnemyShip...
BigUFOEnemyShip...
EnemyShip.class
EnemyShip.java
EnemyShipFactory....
EnemyShipFactory....
EnemyTesting.class
EnemyTesting.java
RocketEnemyShip....
RocketEnemyShip.j...
UFOEnemyShip.cla...
UFOEnemyShip.java
~$FactoryMethodLa...
EnemyTesting.java
EnemyShip.java
EnemyShipFactory.java
RocketEnemyShip.java
UFOEnemyShip.java
BigUFOEnemyShip.java
src > BigUFOEnemyShip.java > ...
public class BigUFOEnemyShip extends UFOEnemyShip{
public BigUFOEnemyShip(){
setName(newName: "Big UFO Enemy Ship");
setDamage(newDamage: 40.0);
}
}

Output:



Abstract pattern:




EXPLORER
Client.java
ComputerFactory.java
FactoryProducer.java
Computer.java
PCFactory.java
PC.java
src > ComputerFactory.java > ...
1
2 public abstract class ComputerFactory {
3
4 abstract Computer createComputer();
5
6 }
7
OPEN EDITORS
Client.java src
ComputerFacto...
FactoryProduc...
Computer.java...
PCFactory.java...
PC.java src
ServerFactory.j...
Server.java src
ABSTRACTFACTORYLAB
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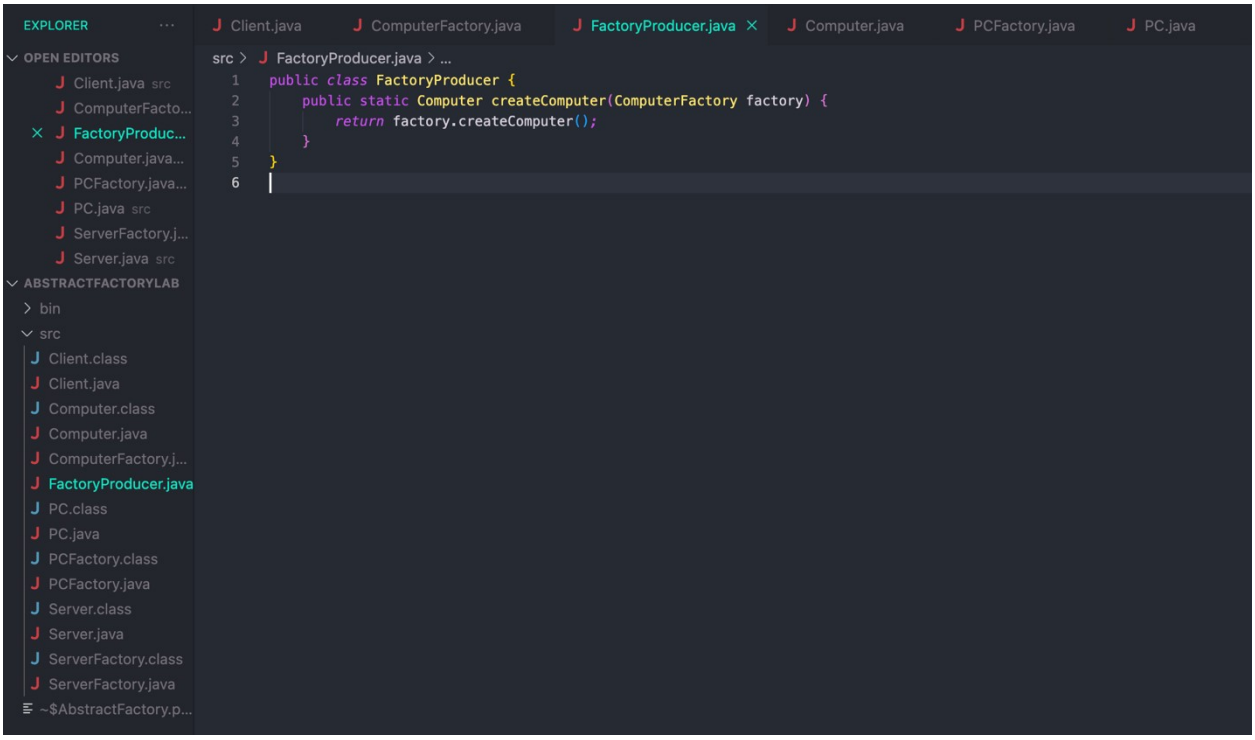
EXPLORER
Client.java
ComputerFactory.java
FactoryProducer.java
Computer.java
PCFactory.java
PC.java
src > FactoryProducer.java > ...
1 public class FactoryProducer {
2 public static Computer createComputer(ComputerFactory factory) {
3 return factory.createComputer();
4 }
5 }
6
OPEN EDITORS
Client.java src
ComputerFacto...
FactoryProduc...
Computer.java...
PCFactory.java...
PC.java src
ServerFactory.j...
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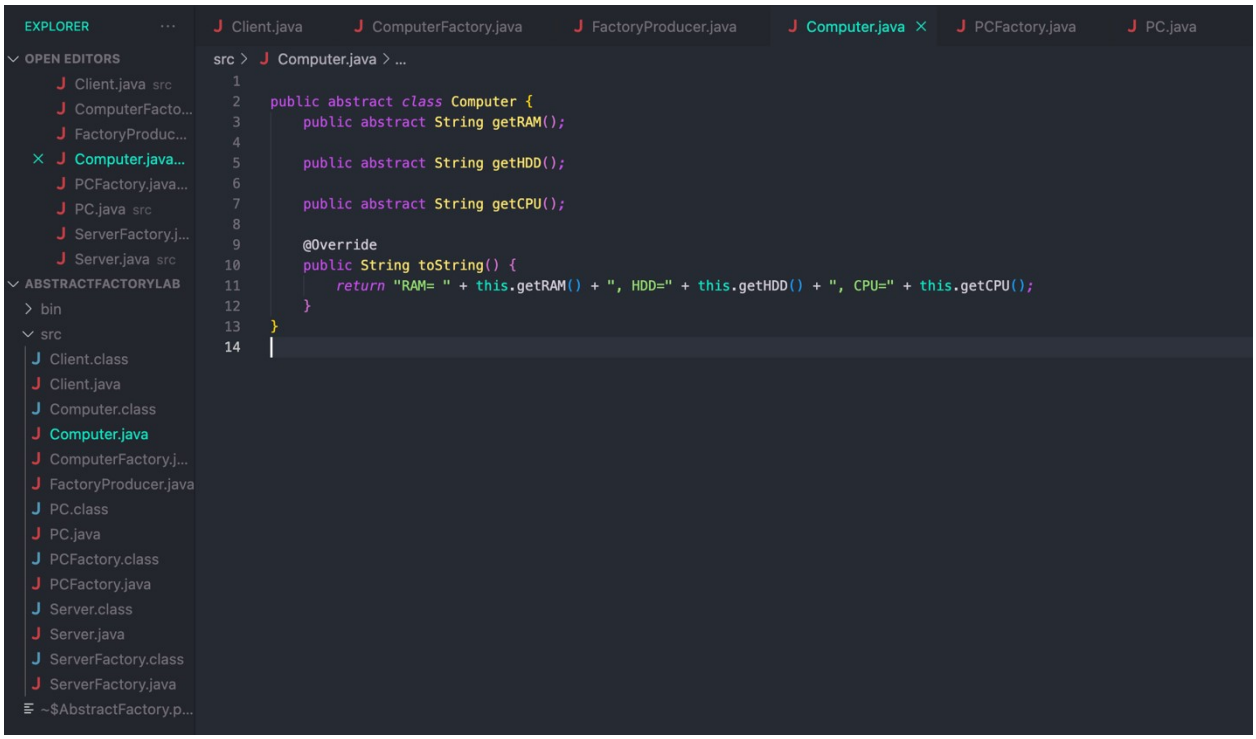
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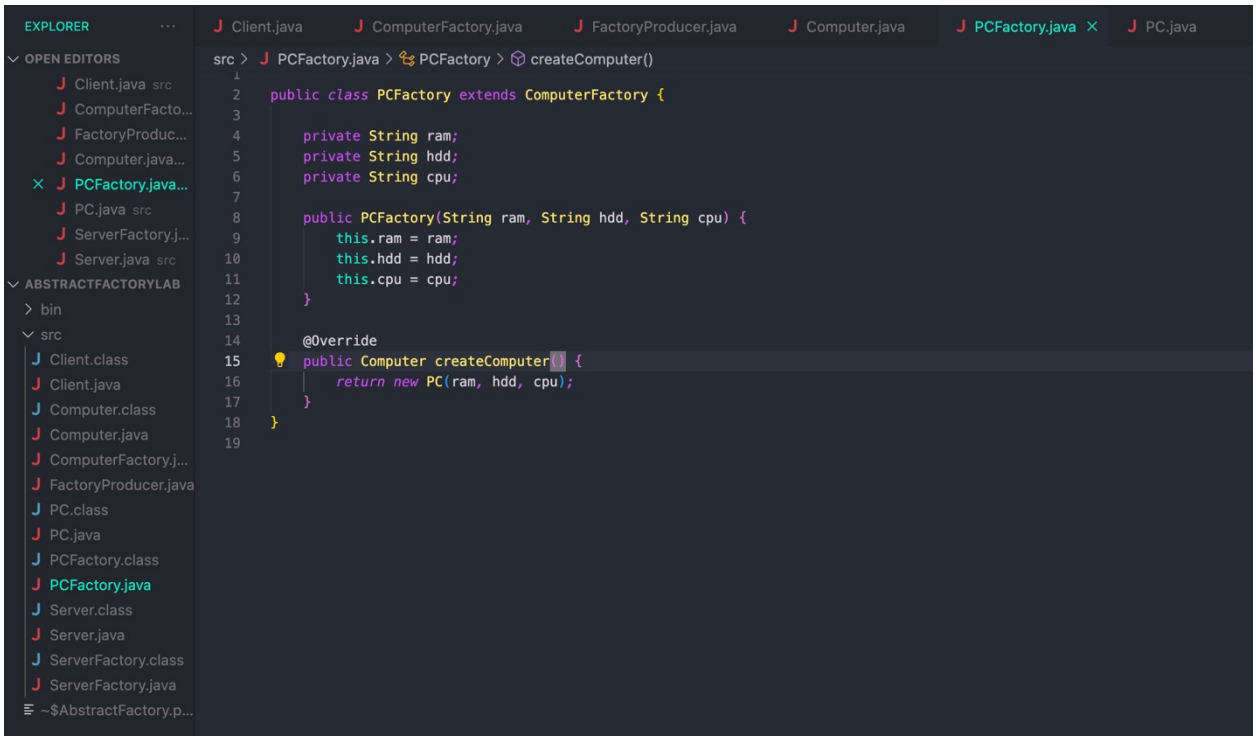
Client.java
ComputerFactory.java
FactoryProducer.java
Computer.java
PCFactory.java
PC.java
src > Computer.java > ...
1
public abstract class Computer {
public abstract String getRAM();
public abstract String getHDD();
public abstract String getCPU();
@Override
public String toString() {
return "RAM= " + this.getRAM() + ", HDD=" + this.getHDD() + ", CPU=" + this.getCPU();
}
}
14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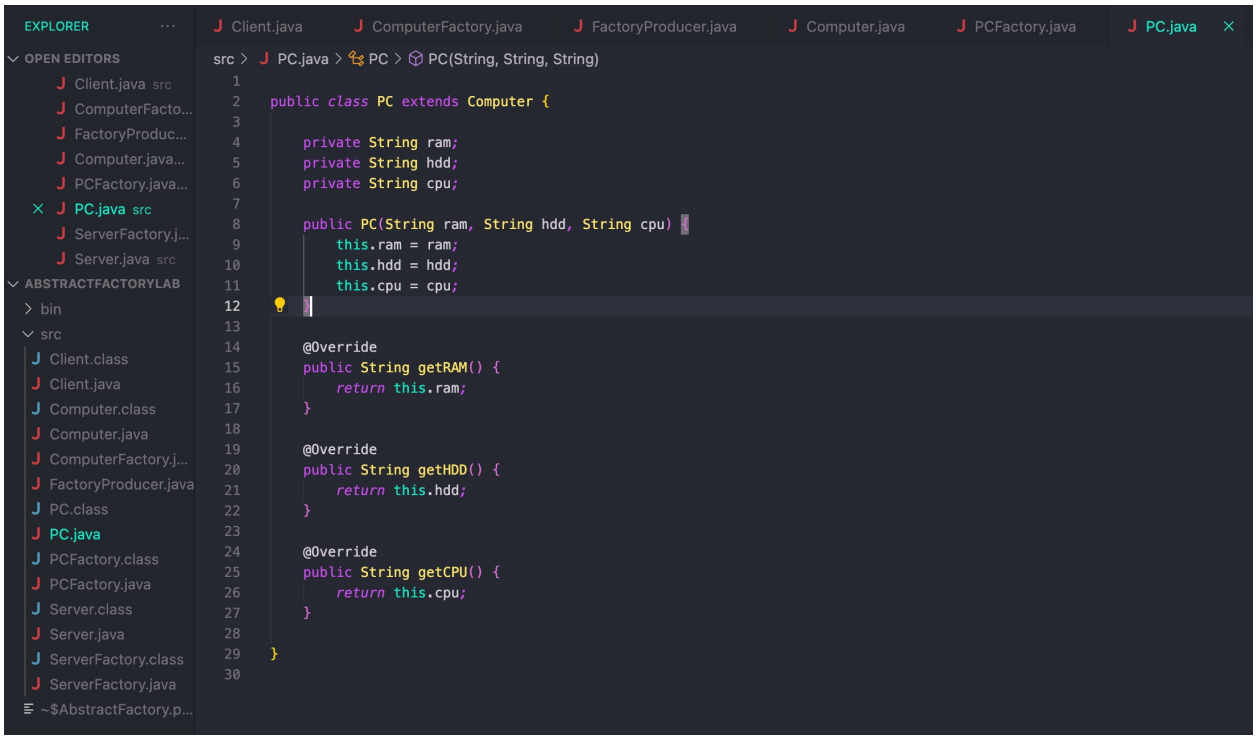
Client.java
ComputerFactory.java
FactoryProducer.java
Computer.java
PCFactory.java
PC.java
src > PCFactory.java > PCFactory > createComputer()
public class PCFactory extends ComputerFactory {
private String ram;
private String hdd;
private String cpu;
public PCFactory(String ram, String hdd, String cpu) {
this.ram = ram;
this.hdd = hdd;
this.cpu = cpu;
}
@Override
public Computer createComputer() {
return new PC(ram, hdd, cpu);
}
}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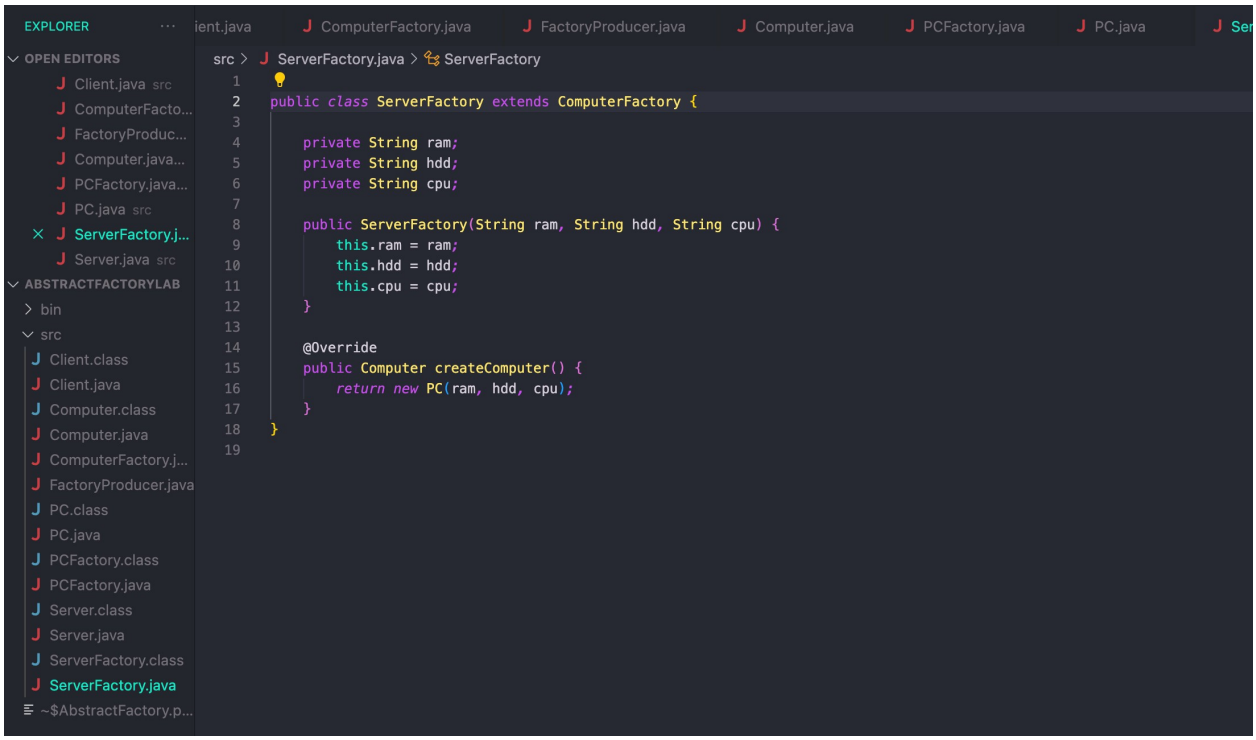
ServerFactory.class
ServerFactory.java
~$AbstractFactory.p...
Client.java
ComputerFactory.java
FactoryProducer.java
Computer.java
PCFactory.java
PC.java
src > PC.java > PC > PC(String, String, String)
public class PC extends Computer {
private String ram;
private String hdd;
private String cpu;
public PC(String ram, String hdd, String cpu) {
this.ram = ram;
this.hdd = hdd;
this.cpu = cpu;
}
@Override
public String getRAM() {
return this.ram;
}
@Override
public String getHDD() {
return this.hdd;
}
@Override
public String getCPU() {
return this.cpu;
}
}


EXPLORER
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Computer.java...
PCFactory.java...
PC.java src
ServerFactory.j...
Server.java src
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ComputerFactory.j...
FactoryProducer.java
PC.class
PC.java
PCFactory.class
PCFactory.java
Server.class
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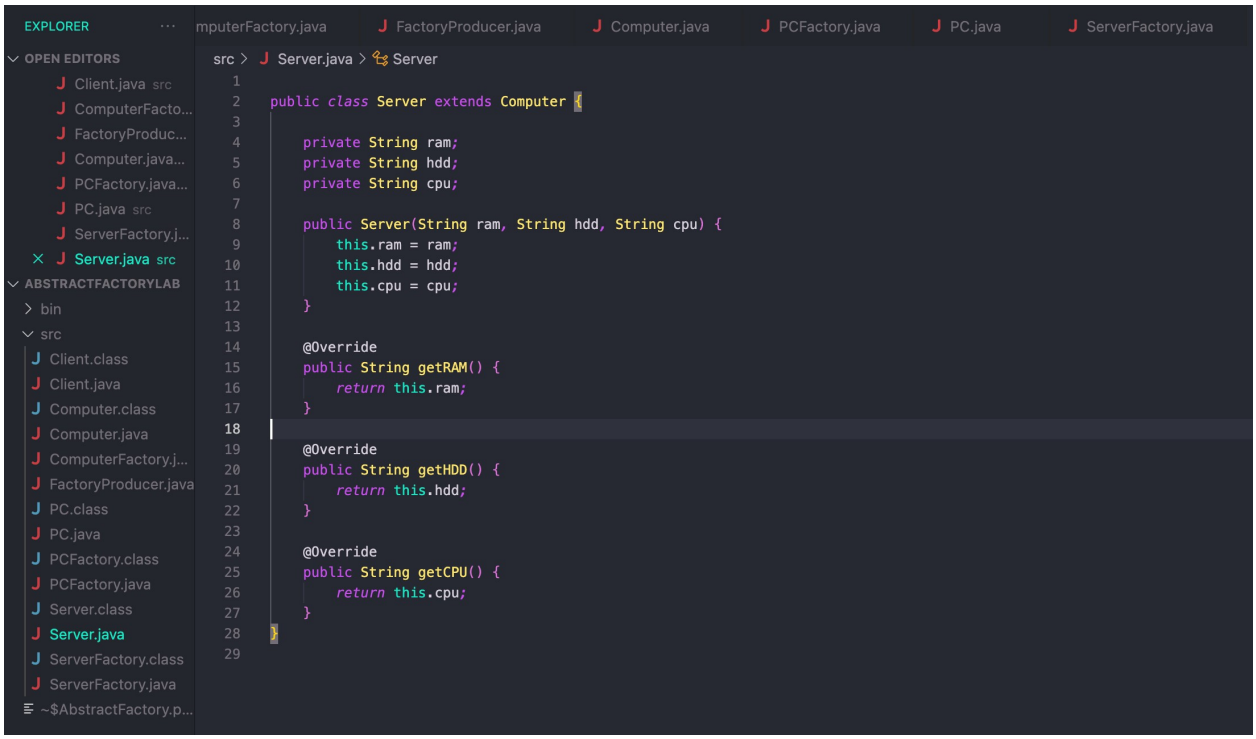
ServerFactory.class
ServerFactory.java
~$AbstractFactory.p...
ComputerFactory.java
FactoryProducer.java
Computer.java
PCFactory.java
PC.java
src > ServerFactory.java > ServerFactory
public class ServerFactory extends ComputerFactory {
private String ram;
private String hdd;
private String cpu;
public ServerFactory(String ram, String hdd, String cpu) {
this.ram = ram;
this.hdd = hdd;
this.cpu = cpu;
}
@Override
public Computer createComputer() {
return new PC(ram, hdd, cpu);
}
}


EXPLORER
mputerFactory.java
FactoryProducer.java
Computer.java
PCFactory.java
PC.java
ServerFactory.java
OPEN EDITORS
Client.java src
ComputerFacto...
FactoryProduc...
Computer.java...
PCFactory.java...
PC.java src
ServerFactory.j...
Server.java src
ABSTRACTFACTORYLAB
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Client.class
Client.java
Computer.class
Computer.java
ComputerFactory.j...
FactoryProducer.java
PC.class
PC.java
PCFactory.class
PCFactory.java
Server.class
Server.java
ServerFactory.class
ServerFactory.java
~$AbstractFactory.p...
src > Server.java > Server
public class Server extends Computer {
private String ram;
private String hdd;
private String cpu;
public Server(String ram, String hdd, String cpu) {
this.ram = ram;
this.hdd = hdd;
this.cpu = cpu;
}
@Override
public String getRAM() {
return this.ram;
}
@Override
public String getHDD() {
return this.hdd;
}
@Override
public String getCPU() {
return this.cpu;
}
}

Output:


Client.java src
ComputerFacto...
FactoryProduc...
Computer.java...
PCFactory.java...
PC.java src
ServerFactory.j...
Server.java src
ABSTRACTFACTORYLAB
bin
src
Client.class
Client.java
Computer.class
Computer.java
ComputerFactory.c...
ComputerFactory.j...
FactoryProducer.cl...
FactoryProducer.java
PC.class
PC.java
PCFactory.class
PCFactory.java
Server.class
Server.java
ServerFactory.class
ServerFactory.java
~$AbstractFactory.p...
TIMELINE
public class Client {
Run | Debug
public static void main(String[] args) {
Computer pc = FactoryProducer.createComputer(new PCFactory(ram: "2 GB", hdd: "500 GB", cpu: "2.4 GHz"));
System.out.print("\n PC Factory:\n" + pc);
Computer server = FactoryProducer.createComputer(new ServerFactory(ram: "16 GB", hdd: "1 TB", cpu: "2.9 GHz"));
System.out.print("\n \n Server Factory:\n" + server);
}
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Code - s
cd "/Users/kamal/Downloads/AbstractFactoryLab/src/" && javac Client.java && java Client
Shadan@Shadans-MacBook-Pro AbstractFactoryLab % cd "/Users/kamal/Downloads/AbstractFactoryLab/src/" && javac Client.java && java Client
PC Factory:
RAM= 2 GB, HDD=500 GB, CPU=2.4 GHz
Server Factory:
RAM= 16 GB, HDD=1 TB, CPU=2.9 GHz
Shadan@Shadans-MacBook-Pro src %