**Exercise 3: Implementing the Builder Pattern**

**Scenario:**

You are developing a system to create complex objects such as a Computer with multiple optional parts. Use the Builder Pattern to manage the construction process.

**File Structure:**

* Computer.java : Product class with nested Builder
* TestBuilder.java : Main class to test different configurations

**Codes:**

//Computer.java

public class Computer {

private final String cpu;

private final String ram;

private final String storage;

private final String graphicsCard;

private Computer(Builder builder) {

this.cpu = builder.cpu;

this.ram = builder.ram;

this.storage = builder.storage;

this.graphicsCard = builder.graphicsCard;

}

public void displayConfiguration() {

System.out.println("CPU: " + cpu);

System.out.println("RAM: " + ram);

System.out.println("Storage: " + (storage != null ? storage : "Not included"));

System.out.println("Graphics Card: " + (graphicsCard != null ? graphicsCard : "Not included"));

}

public static class Builder {

private final String cpu;

private final String ram;

private String storage;

private String graphicsCard;

public Builder(String cpu, String ram) {

this.cpu = cpu;

this.ram = ram;

}

public Builder setStorage(String storage) {

this.storage = storage;

return this;

}

public Builder setGraphicsCard(String graphicsCard) {

this.graphicsCard = graphicsCard;

return this;

}

public Computer build() {

return new Computer(this);

}

}

}

//TestBuilder.java

public class TestBuilder {

public static void main(String[] args) {

Computer basicComputer = new Computer.Builder("Intel i3", "8GB").build();

System.out.println("Basic Computer Configuration:");

basicComputer.displayConfiguration();

Computer gamingComputer = new Computer.Builder("Intel i7", "16GB")

.setStorage("1TB SSD")

.setGraphicsCard("NVIDIA RTX 3060")

.build();

System.out.println("Gaming Computer Configuration:");

gamingComputer.displayConfiguration();

Computer officeComputer = new Computer.Builder("AMD Ryzen 5", "8GB")

.setStorage("512GB SSD")

.build();

System.out.println("Office Computer Configuration:");

officeComputer.displayConfiguration();

}

}

**Compile and Run:**

javac Computer.java TestBuilder.java

java TestBuilder

**Output:**

