

Data Dependency

A data dependency is a directed relation between two pieces of code, such as expressions or methods. Specifically, it refers to dependencies between the definition and use of values. This type of dependency is concerned with how values defined in one part of the code are used in another part. The 'data' transmitted in our definition is not limited to just parameters. It also encompasses any data that is being read from or written to by both entities. This could include global or shared variables, files, databases, or any other form of data exchange.

Here's an example of data dependency among three Java classes: ClassA, ClassB, and ClassC.

Java Classes Example

In this example, we have three Java classes that demonstrate data interactions and dependencies.

ClassA (The Base Class)

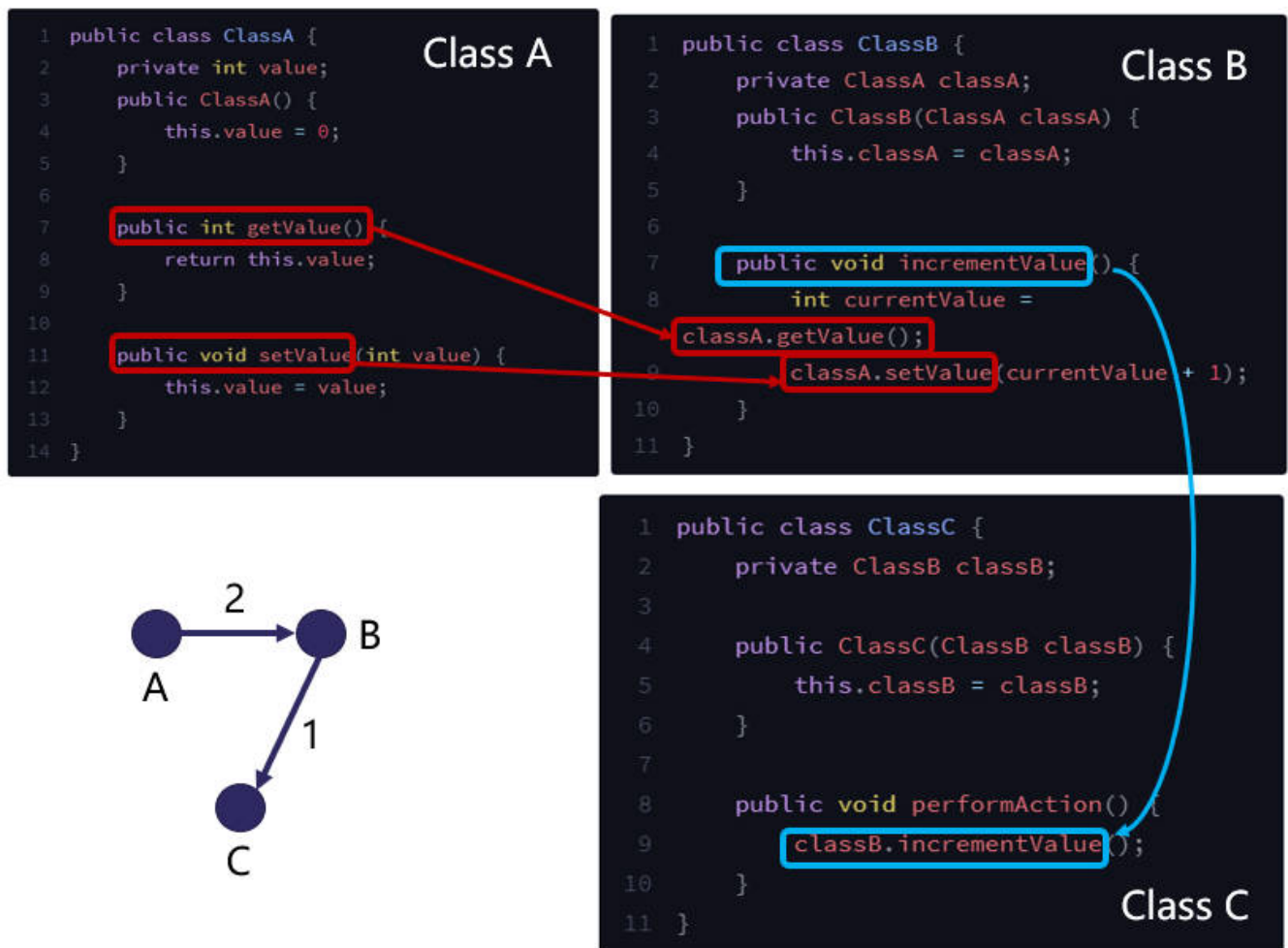
ClassA is a basic class with a private integer variable named `value`. This class has a constructor that initializes `value` to 0, and it also provides two methods: `getValue()` for retrieving the value of `value` and `setValue(int value)` for setting its value.

ClassB (The Intermediate Class)

ClassB acts as an intermediary between ClassA and ClassC. It has a private instance of ClassA. In its constructor, it initializes this instance. ClassB has a method named `incrementValue()` that reads the current value from its ClassA instance, increments it by 1, and then sets it back using ClassA's methods.

ClassC (The Calling Class)

Finally, ClassC, which contains an instance of ClassB, uses this instance to indirectly interact with ClassA. It has a method named `performAction()` that calls the `incrementValue()` method of its ClassB instance.



Data Calls Analysis

In this setup, ClassC depends on ClassB, and ClassB, in turn, depends on ClassA. The data calls can be broken down as follows:

- Between ClassB and ClassA, there are two data calls. One call is made to `getValue()` and another to `setValue(int value)` within the `incrementValue()` method of ClassB.
- Between ClassC and ClassB, there is one data call. This is the call made to `incrementValue()` in the `performAction()` method of ClassC.

Total Data Calls

In summary, there are two data calls between ClassB and ClassA and one data call between ClassC and ClassB. This example illustrates a simple chain of dependencies and interactions among three classes in a Java program. In more complex applications, such analysis would involve more classes and methods, and the interactions could be far more intricate.