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A Tool for Measuring the Appropriateness of Access Modifiers in Java Systems

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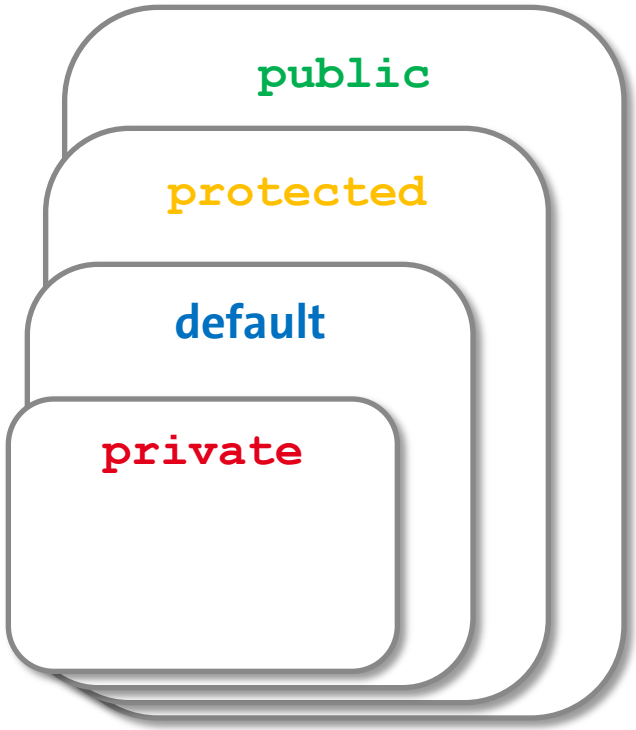
AccessAnalysis compares the **ACCESSIBILITY** of Java types and methods with their **ACTUAL USAGE**.

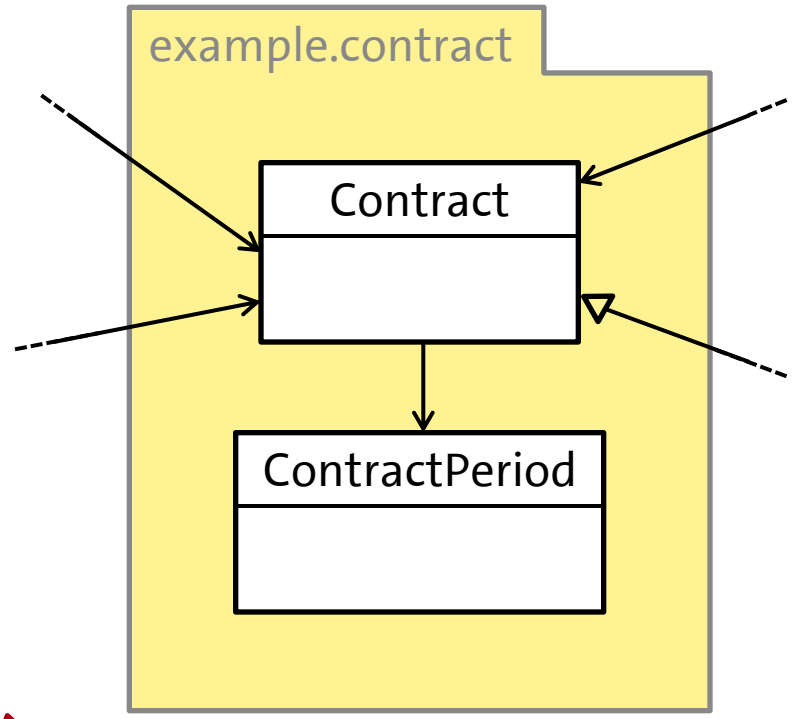
Minimal Access Modifier

The **most restrictive** access modifier of a type or method that would allow **all existing references** to that type or method (in the surrounding software system).



```
package example.contract;

public class Contract {

    private ContractPeriod _period;

    ...
}
```

```
package example.contract;

public class ContractPeriod {

    ...
}
```



Actual Access Modifier		Minimal Access Modifier	
ContractPeriod	public	ContractPeriod	default
Contract	public	Contract	public

Metrics calculated by AccessAnalysis

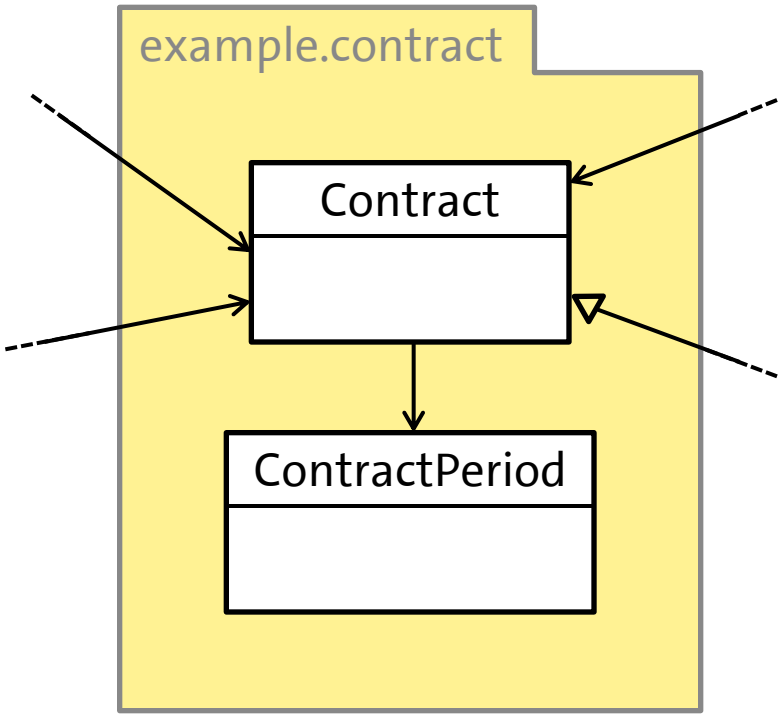
- **IGAT** : Inappropriate Generosity with Accessibility of Types
- **IGAM** : Inappropriate Generosity with Accessibility of Methods

The **proportion** of those types (methods) which **actual access modifier** is **more generous** than the **minimal** one.

Example: IGAT calculation

$$IGAT(example.contract, example) = \frac{1}{2}$$

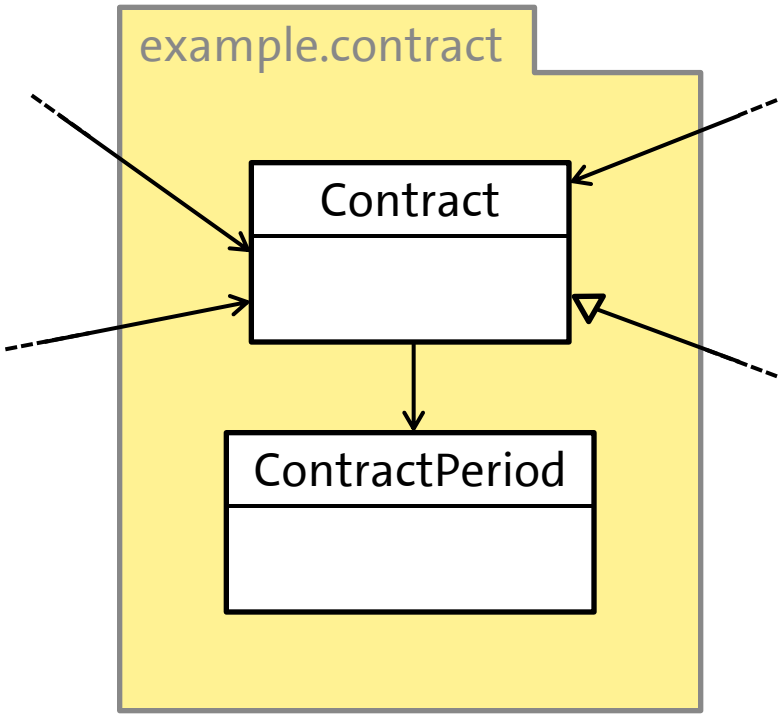
$$= 0.50$$



Actual Access Modifier		Minimal Access Modifier	
ContractPeriod	public	ContractPeriod	default
Contract	public	Contract	public

Example: IGAT calculation

$$IGAT(example.contract, example) = \frac{0}{2} = 0.00$$



Actual Access Modifier		Minimal Access Modifier	
ContractPeriod	default	ContractPeriod	default
Contract	public	Contract	public

http://accessanalysis.sourceforge.net