

$$\begin{aligned}
 & \frac{(k+1) \cdot n^{k+1-k} \cdot k! + b \left(\sum_{n=0}^{\infty} \binom{n}{k} \cdot (n-k)! \right)}{(k+1)! \cdot (n-k)!} \\
 & \frac{(k+1) \cdot n^k + \sum_{n=0}^{\infty} \binom{n}{k} \cdot a^k \cdot b^{n-k}}{(k+1) \cdot n!} \\
 & \frac{(k+1)! \cdot (n-k)!}{((k+1) \cdot (n-k))!} + b^{n+1-k} \\
 & \frac{a! \cdot (n+1)^k}{(n+1)!} \cdot b^{n+1} \\
 & K = 1 - \sum_{n=1}^{\infty} \frac{1}{(2n-1)^5} \\
 & (n+1)_T = 273,15
 \end{aligned}$$

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Composition de métriques logicielles

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Sébastien Mosser - INF5153
Chapitre 8 - Capsule 2
Automne 2020

crédits photos: Pixabay



Pragmatic Design Quality Assessment

Tudor Gîrba
University of Bern, Switzerland

Michele Lanza
University of Lugano, Switzerland

Radu Marinescu
Politehnica University of Timisoara, Romania

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Cette capsule est intensivement basée sur ce tutoriel

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En tant que développeur ...



Metric	Value
LOC	35175
NOM	3618
NOC	384
CYCLO	5579
NOP	19
CALLS	15128
FANOUT	8590
AHH	0.12
ANDC	0.31

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Identifier des défauts de conception

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Un **BLOB** (ou **classe Dieu**) tend à **centraliser toute l'intelligence** du système, à **tout faire** et à **utiliser** des données en provenance de **classes purement structurelles**



4

Identifier des défauts de conception

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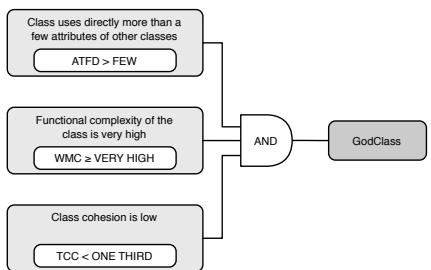
- Un BLOB :
 - Centralise toute l'intelligence du système
 - Fait tout
 - Utilise des données de classes structurelles
- Un BLOB :
 - Est complexe
 - N'est pas cohésif
 - Utilise des données externes

5

A **God Class** centralizes too much intelligence in the system.

Lanza, Marinescu 2006

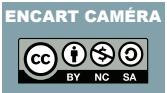
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6

A God Class centralizes too much intelligence in the system.

Lanza, Marinescu 2006



Access To Foreign Data (ATFD)

Class uses directly more than a few attributes of other classes
ATFD > FEW

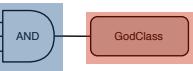
Weighted Method Count (WMC)

Functional complexity of the class is very high
WMC ≥ VERY HIGH

Tight Class Cohesion (TCC)

Class cohesion is low
TCC < ONE THIRD

Problème de conception



GodClass

Composition de métrique

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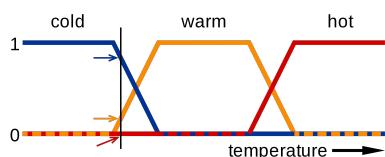
Problème : Comment définir les seuils ?



Class uses directly more than a few attributes of other classes
ATFD > FEW

Functional complexity of the class is very high
WMC ≥ VERY HIGH

Class cohesion is low
TCC < ONE THIRD

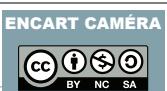


Utilisation de logique floue

https://en.wikipedia.org/wiki/Fuzzy_logic 8

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Déterminer les seuils est un exercice difficile



How People Interpret Probabilistic Words

"Always" doesn't always mean always.

Distribution of responses according to respondents' estimate of likelihood

Word or phrase

Always

Certainly

Slam dunk

Almost certainly

Almost always

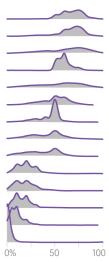
With high probability

Usually

Likely

Frequently

- Probably
- Often
- Serious possibility
- More often than not
- Real possibility
- With moderate probability
- Maybe
- Possibly
- Might happen
- Not often
- Unlikely
- With low probability
- Rarely
- Never



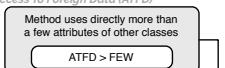
9

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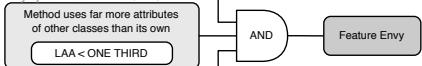
Un autre exemple : La jalousie



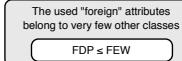
Access To Foreign Data (ATFD)



Locality of Attribute Access (LAA)



Foreign Data Providers (FDP)

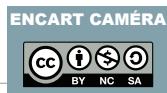


Une méthode est dite "jalouse" si elle est plus intéressée par les données des autres classes que par celles de la classe qui la contient.

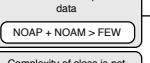
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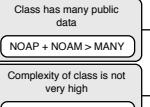
On peut aussi composer des règles



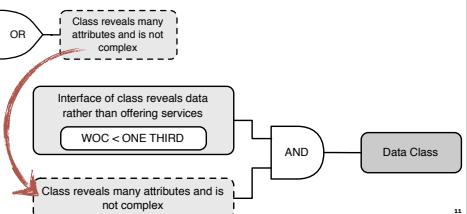
More than a few public data



Class has many public data

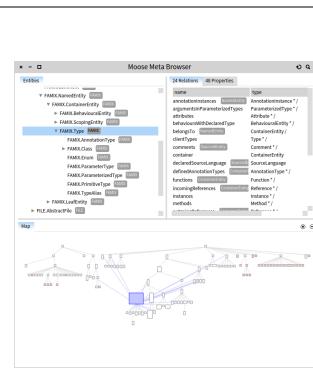


Fragments réutilisables pour aider la lecture



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Exemple : L'environnement MOOSE

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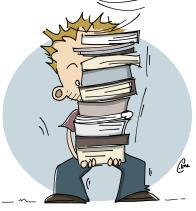
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FACULTÉ DES SCIENCES
Université du Québec à Montréal



<https://mosser.github.io/>

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 ace
<https://ace-design.github.io/>

Abonne toi à la chaîne, 
et met un pouce bleu ! 
