The MOOD Set of Object-Oriented Software Metrics

Visibility
- Is_visible(M,C)
  - 1 if class C may call method M and M is in another class – i.e. public
  - 0 otherwise
- V(M) = sum of Is_visible for method M over all classes divided by number of other classes
  - percentage of other classes that can call this method

MHF definition
- Summation over all methods in all classes of 1 minus the V(M) divided by the total number of methods

\[
MHF = \frac{\sum_{i=1}^{TC} \sum_{m=1}^{M_i(C_i)} (1 - V(M_{m,i}))}{\sum_{i=1}^{TC} M_i(C_i)}
\]

Model for MHF?
- What would be a good abstraction?
- Is there a well-understood Empirical Relationship?
- Scale Type?

Inheritance Factor
- \(M_d(C_i)\) = number of methods declared in a class i
- \(M_i(C_i)\) = number of methods inherited (and not overridden) in a class i
- \(M_a(C_i)\) = \(M_d(C_i) + M_i(C_i)\) = number of methods that can be invoked in association with class i

\[
MIF = \frac{\sum_{i=1}^{TC} M_i(C_i)}{\sum_{i=1}^{TC} M_a(C_i)}
\]

Model for MIF?
- What would be a good abstraction?
- Is there a well-understood Empirical Relationship?
- Scale Type?
**Coupling Factor**

\[ CF = \frac{\sum_{i=1}^{TC} \sum_{j=1}^{TC} is\_client(c_i, c_j)}{TC^2 - TC} \]

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**Polymorphism Factor**

Let \( M_o(C_i) \) be the number of overriding methods in class \( i \).
Let \( M_n(C_i) \) be the number of new methods in class \( i \).
Let \( DC(C_i) \) be the number of descendants of class \( i \).

\[ PF = \frac{\sum_{i=1}^{TC} M_o(C_i)}{\sum_{i=1}^{TC} [M_n(C_i) \times DC(C_i) + 1]} \]

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**Model for CF?**

- What would be a good abstraction?
- Is there a well-understood Empirical Relationship?
- Scale Type?

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**Model for PF?**

- What would be a good abstraction?
- Is there a well-understood Empirical Relationship?
- Scale Type?