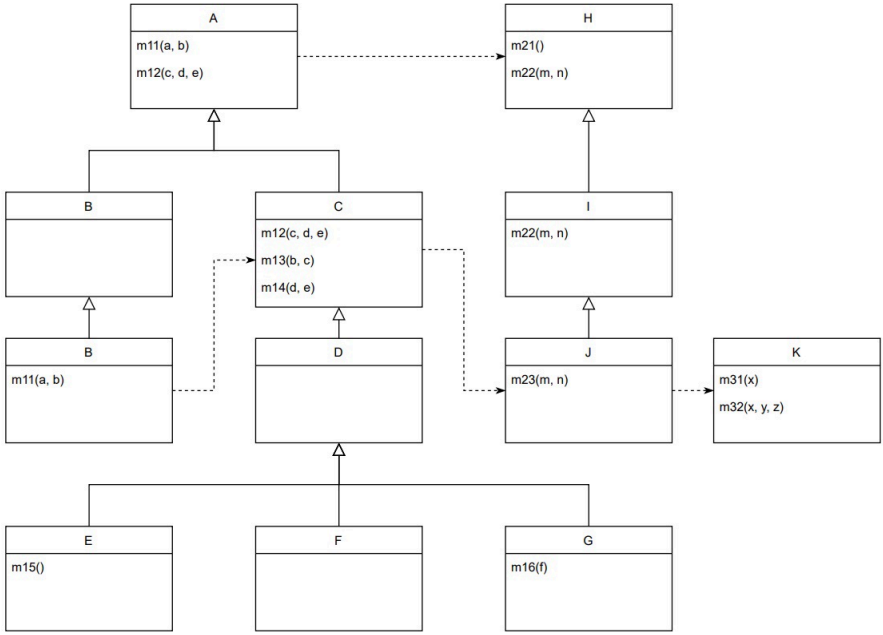
Figure 1: Class Diagram for Metrics Calculation



——▷ inheritance

- - - - - - ▸ association/coupling

a) DIT → depth of inheritance Tree
→ base class has 0
→ deeper trees → better design complexity
→ low: 0-5, medium: 5-10, high >10

DIT(C) = 1 C -> A
DIT(G) = 3 G -> D -> C -> A
DIT(K) = 0 → is not subclass of anything

b) NOC → number of children
→ Depth > breadth
→ higher up should have more children

NOC(A) = 2 B, C
NOC(C) = 1 D
NOC(J) = 0

c) CBO → coupling
→ number of other classes referenced by X
+ number of classes that reference X
→ high CBO → high sensitivity to changes
→ more rigorous testing
→ >20

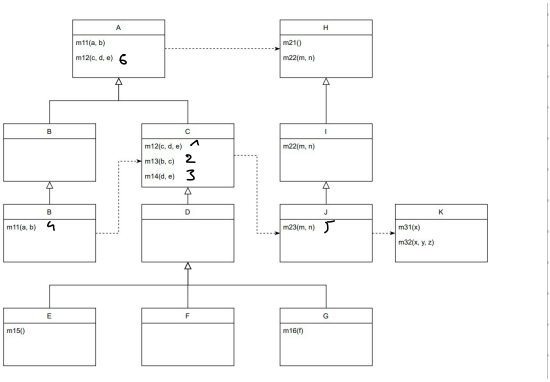
CBO(C) = 3 ; B, D, J
CBO(H) = 2 ; I, A

d) RFC → Response for a Class

→ Number of methods that could be called in response to a message to a class

→ methods declared in a class + inherited methods + unique methods of other classes directly called by method of class

→ with an increase of RFC the testing effort increases



RFC (C) = 6

e) LCOM – Lack of Cohesion in Methods

- $\begin{cases} P-Q & \text{... if } P>Q \\ 0 & \text{... otherwise} \end{cases}$

- P → # pairs of m. that do not share variables

Q → # p.o.m. that share variables

LCOM (E) = 0 → just one method

f) WMC → Weighted Method Count

- $\sum_{i=1}^{n} c_i$

- c_i → complexity of each method

- indicator of how much time and effort is required to develop and maintain the class

WMC (G) = V(m16) = 5