OOSE 課輔

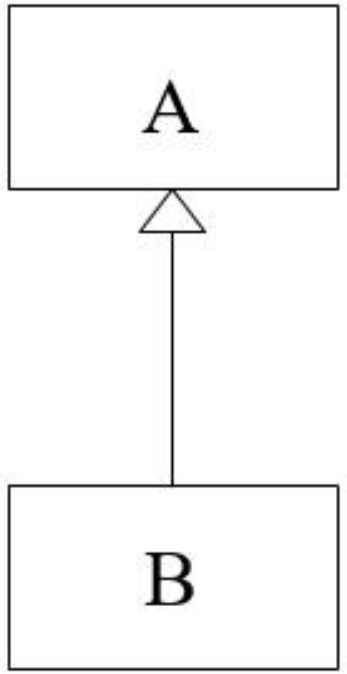
2019/09/18

Coupling Between Object Classes (CBO)

- CBO(C) = |{C’:C depends on C’}|
- The higher the CBO for class C the more difficult to understand, test, maintain, and reuse class C.
- Depends-on relationships
  - Inheritance
  - Aggregation

Coupling Between Object Classes (CBO)

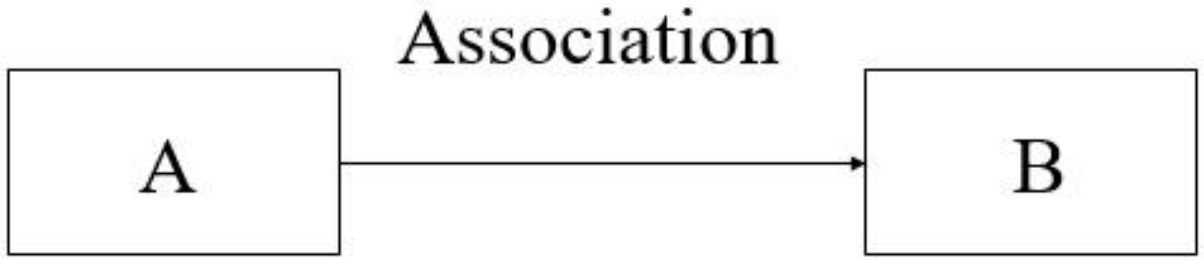
Inheritance



CBO (A) = 0

CBO (B) = 1

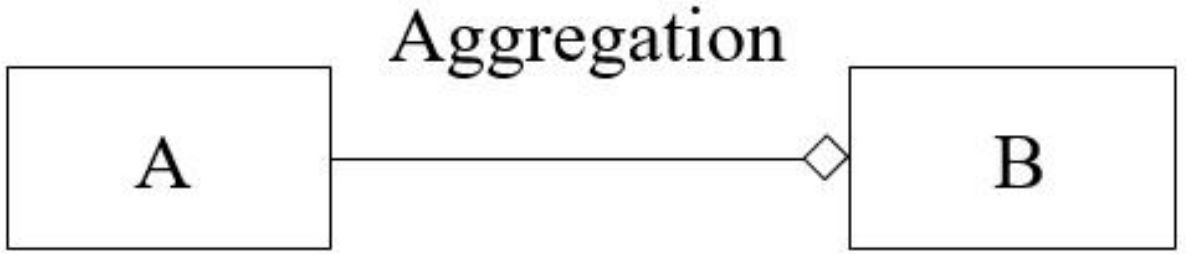
Coupling Between Object Classes (CBO)



CBO (A) = 1

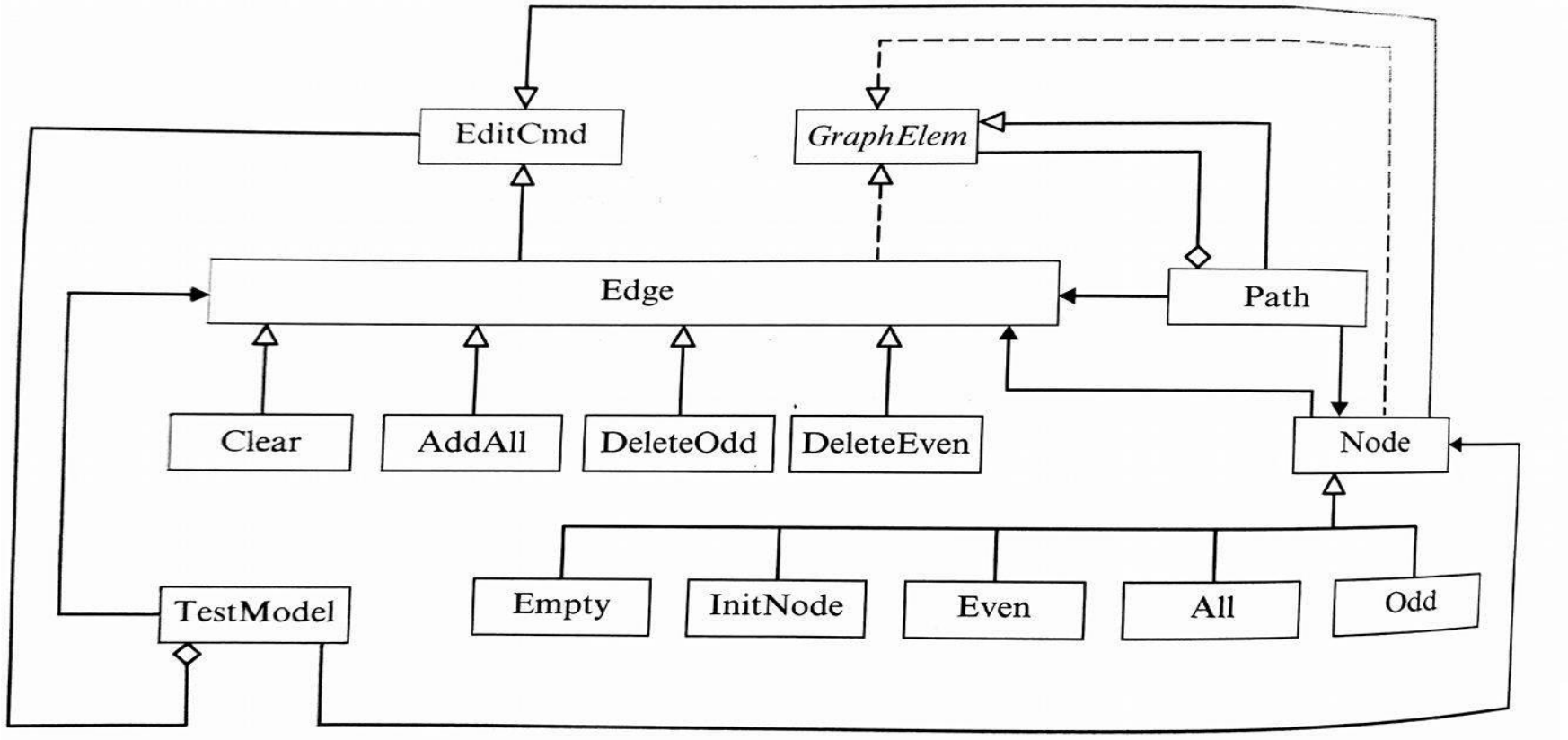
CBO (B) = 0

Coupling Between Object Classes (CBO)



CBO (A) = 0

CBO (B) = 1



CBO = 0 : EditCmd, GraphElem

CBO = 1 :Clear, AddAll, DeleteOdd, DeleteEven, Empty, InitNode, Even, All, Odd

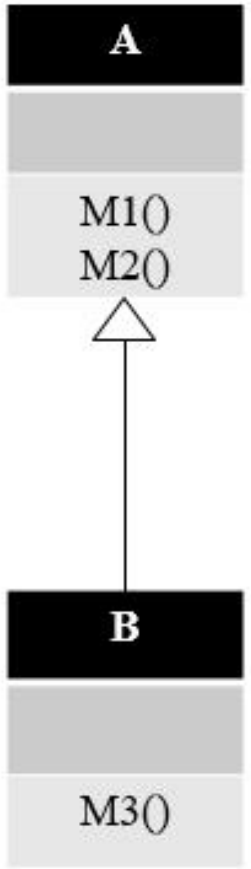
CBO = 2 : Edge

CBO = 3 : TestNodel , Node, Path

Response for a Class (RFC)

- RFC (C) = |{ m : m is a method of C, or m is called by a method of C }|
- The higher the RFC, the more difficult to understand, test, maintain, and reuse the class due to higher dependencies of the class on other classes.

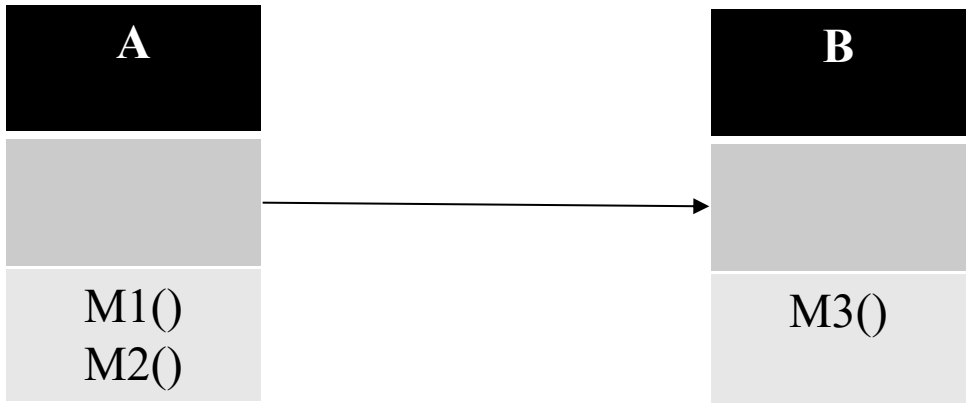
Inheritance



RFC (A) = 2

RFC (B) = 3

Association



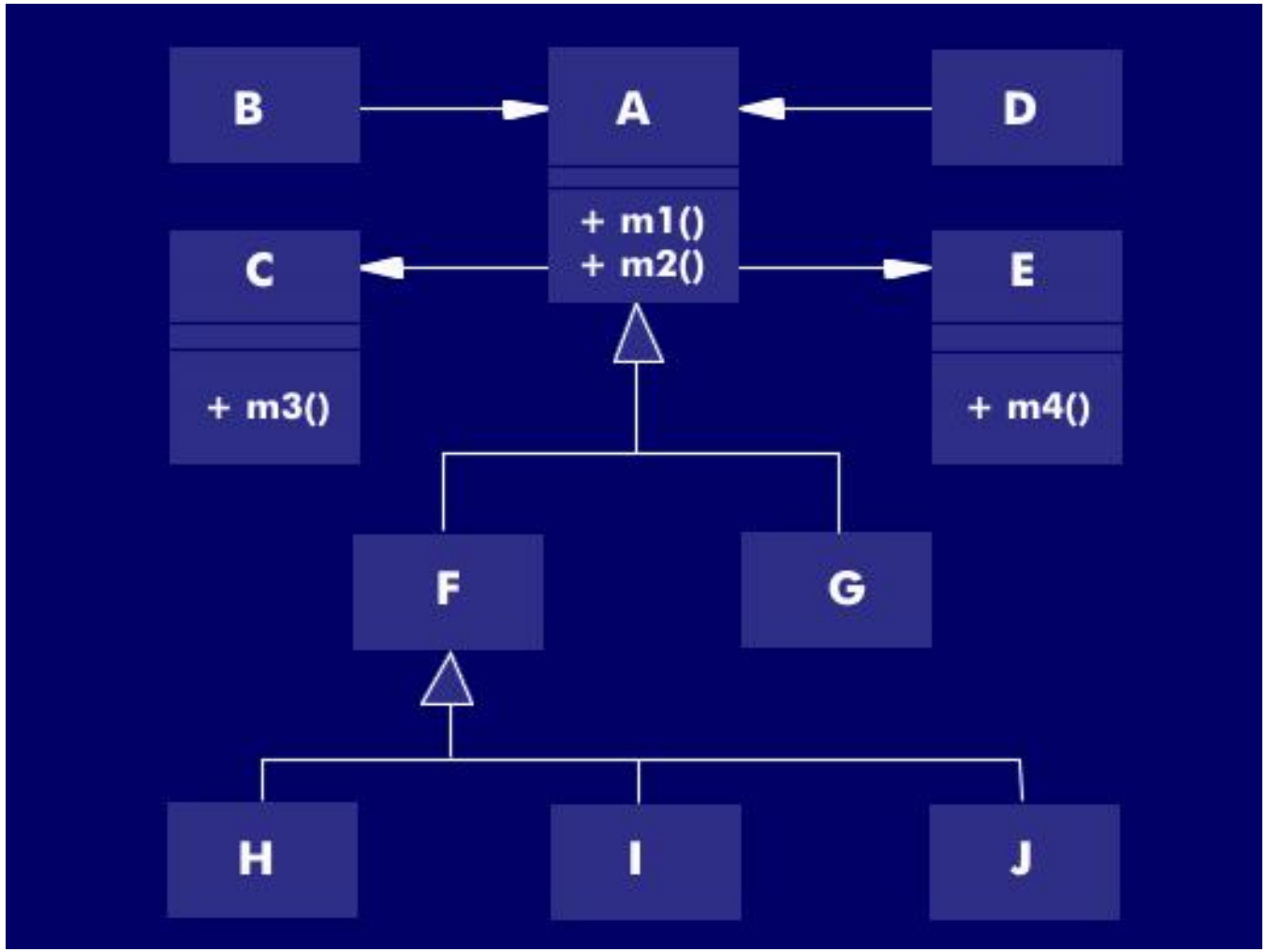
RFC (A) = 3

RFC (B) = 1

Aggregation

RFC (A) = 2

RFC (B) = 3



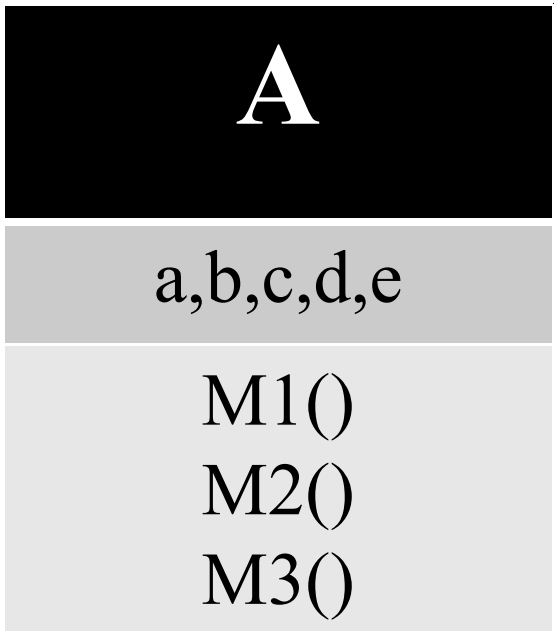
RFC(A) = 4 RFC(B) = 2

RFC(C) = 1 RFC(F) = 4

Lack of Cohesion in Methods

- LCOM (C) = n * (n-1) / 2 - 2 *

  |{ (mi, mj) : mi and mj share an attribute of C }|
- LCOM measures the number of pairs of methods of C that do not share a common attribute.
- Class exercise:
  - Is it possible to derive a metric called “cohesion of methods of a class?”
  - If so, what would be the formula?



If :

M1 has a,b,c attributes

M2 has c,d attributes

M3 has e attributes

LCOM(A) = 1