CSC319 (2024-01-18) lecture 1

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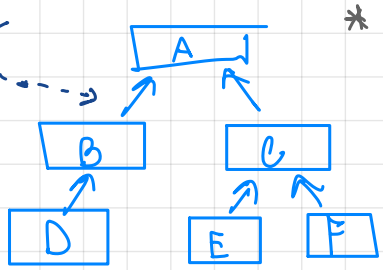
4 Pillars of Object Orientation
- Inheritance (สืบทอดคุณสมบัติ)
- Abstraction (รู้แค่ที่ต้องรู้)
- Encapsulation (เก็บซ่อน, ห้ามเข้าถึง)
- Polymorphism (การมีหลายรูปแบบ)

Reuse → Ingrained into OO (ฝังอยู่ในตัว)
* Inheritance

B is inherit from A (B will own)



* Can't access private properties from superclass

User of Language	Designer of Language
(just know what the lang can do)	• Requirment
• feature available?	• SRS (Software requirement specification)
• How gonna use them?	• Design Document
* Don't need to know behind scene	• Implementation model
	• Code
	• Software

Use Case ↕ higher abstraction ↕ lower (level)

OO ← as part of pillars — Abstraction

↳ Can use abstraction to help mange complexity

One of the form is to use the modelling languages.
Modelling is also the technique that make use of Abstraction and so with modelling technique we introduce the modeling program, the modelling language like UML.

first in first out relationship (kind of relationship)

last in first out

"type"

*stack is not a kind of the list

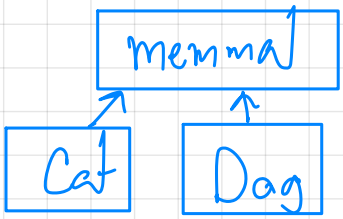
Obseving this when working with inheritances will allow you to avoid many potentiled problems

also allow to observe the liskov substitution principle (LSP: SoLID) design principle

"Type"
- primetive
- Object

Superclass → Supertype
Supclass → Suptype

Where we have a variable of subtype we can assign a value of subtype to it.



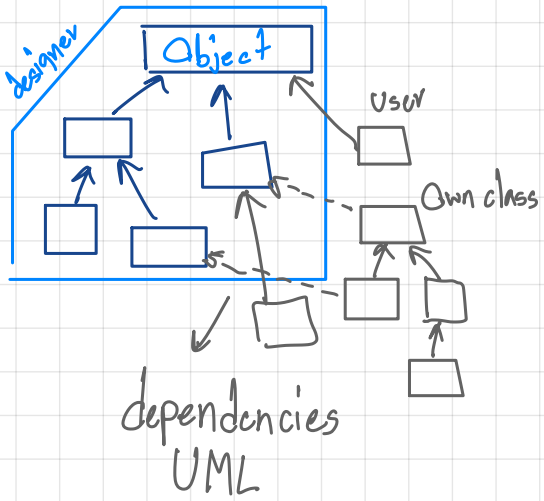
follow substitution principle

Memmal m:

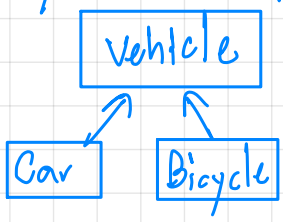
m = new Catclass;
m = new Dogclass;

Java class inheritance

In Java has one root, known root C++ (named Object)



"Subtype" vs "Supertype"



Its have 2 states

- time of the compiler will have type of the Car.
- time of its running will have type of a Bicycle.

```
Car c;
C = new Bicycle;
```

Compile time → Compiler always chek the type based on the static type

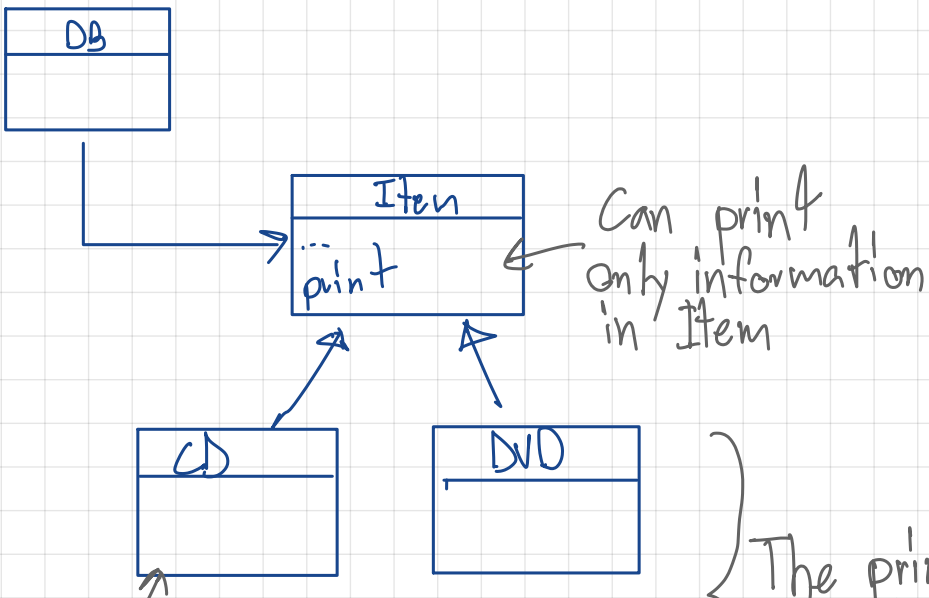
static type : Car

Dynamic type : Bicycle

(run time)

because static type of C is Car and dynamic type of C is Bicycle.

The inheritance hierarchy



Can print only information in Item

The print method we have access to DVD data at the same time and also have access through inheritance to the item data.

Can't print information about CD because it hasn't defined