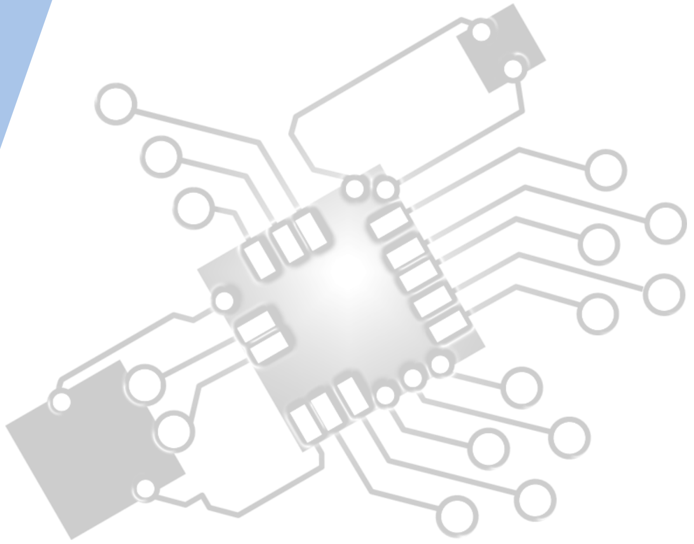
UML

IB Computer Science



Content developed by
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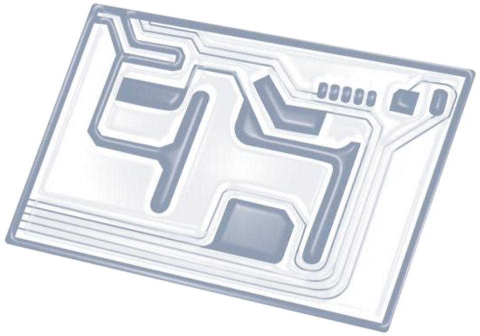
HL Topics 1-7, D1-4



1: System design

2: Computer Organisation

3: Networks

4: Computational thinking

5: Abstract data structures

6: Resource management

7: Control

D: OOP

HL & SL D.1 Overview

D.1 Objects as a programming concept

D.1.1 Outline the general nature of an object

D.1.2 Distinguish between an object (definition, template or class) and instantiation

D.1.3 Construct unified modelling language (UML) diagrams to represent object designs

D.1.4 Interpret UML diagrams

D.1.5 Describe the process of decomposition into several related objects

D.1.6 Describe the relationships between objects for a given problem

D.1.7 Outline the need to reduce dependencies between objects in a given problem

D.1.8 Construct related objects for a given problem

D.1.9 Explain the need for different data types to represent data items

D.1.10 Describe how data items can be passed to and from actions as parameters

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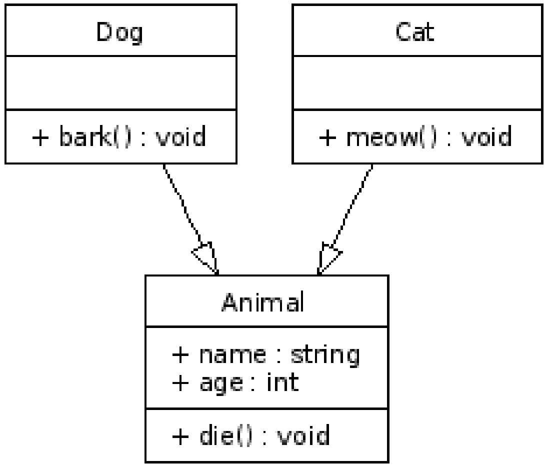
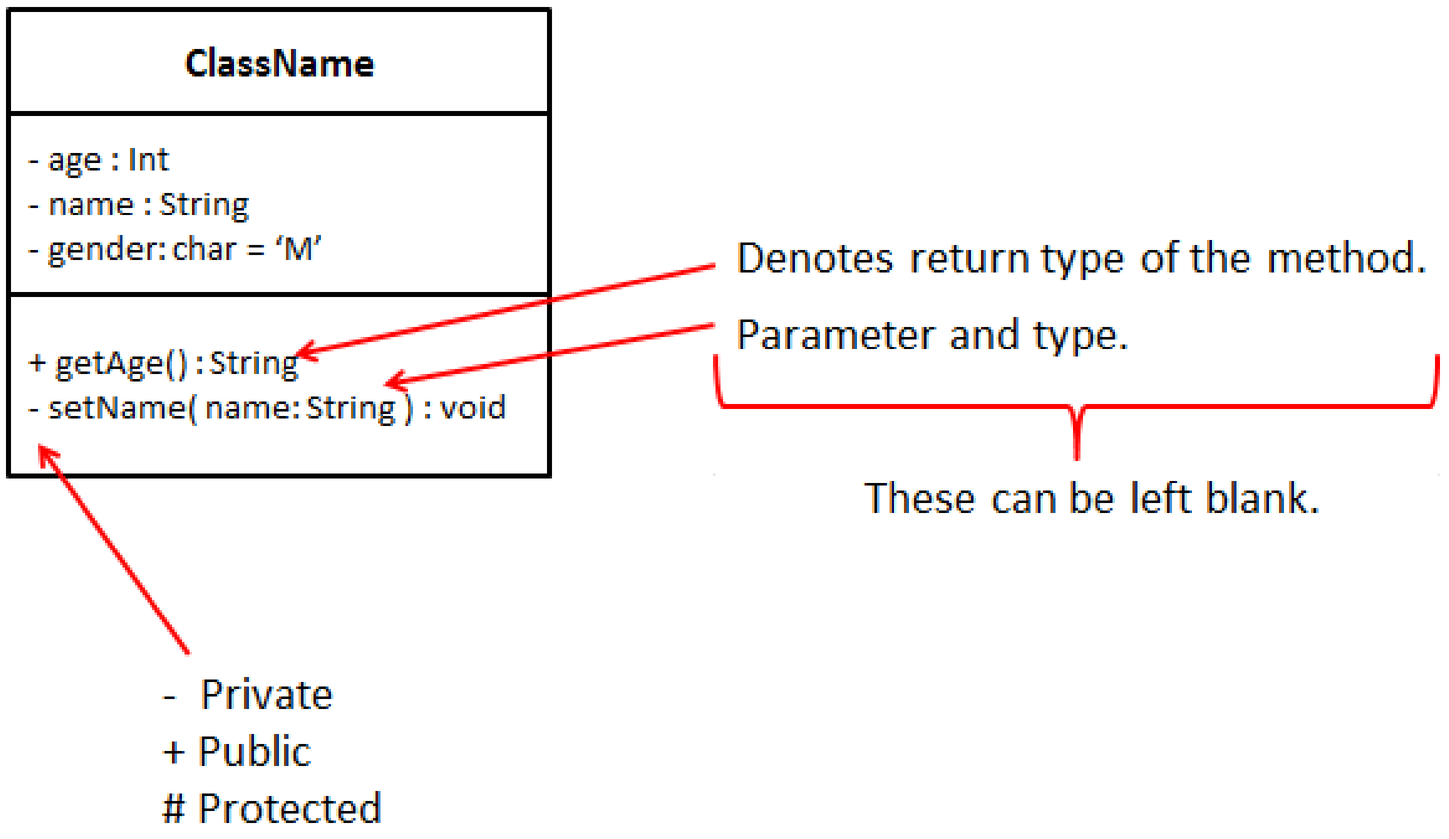
Topic D.1.3

Construct unified modelling language (UML) **diagrams** to represent object designs.

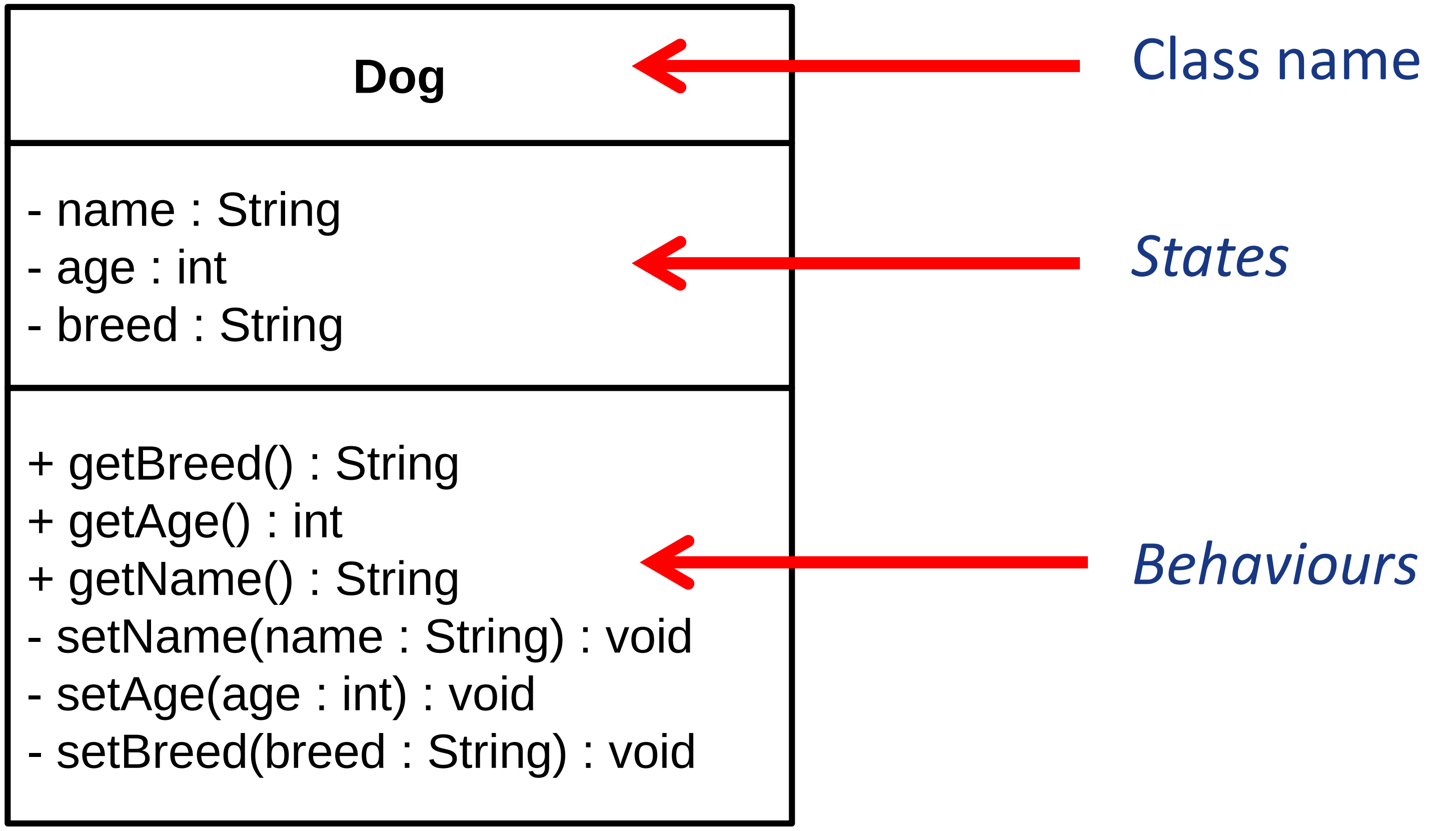


Class Diagrams

- Classes (*object*), variables (*state*) & methods (*behaviours*)



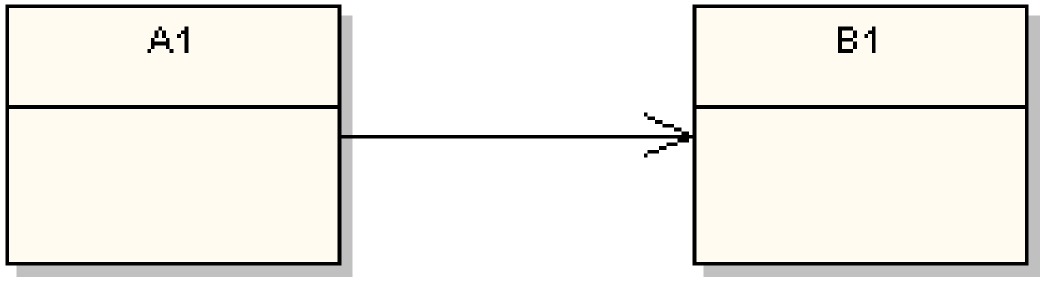
Example:



Dog
- name : String
- age : int
- breed : String
+ getBreed() : String
+ getAge() : int
+ getName() : String
- setName(name : String) : void
- setAge(age : int) : void
- setBreed(breed : String) : void
Class name
States
Behaviours

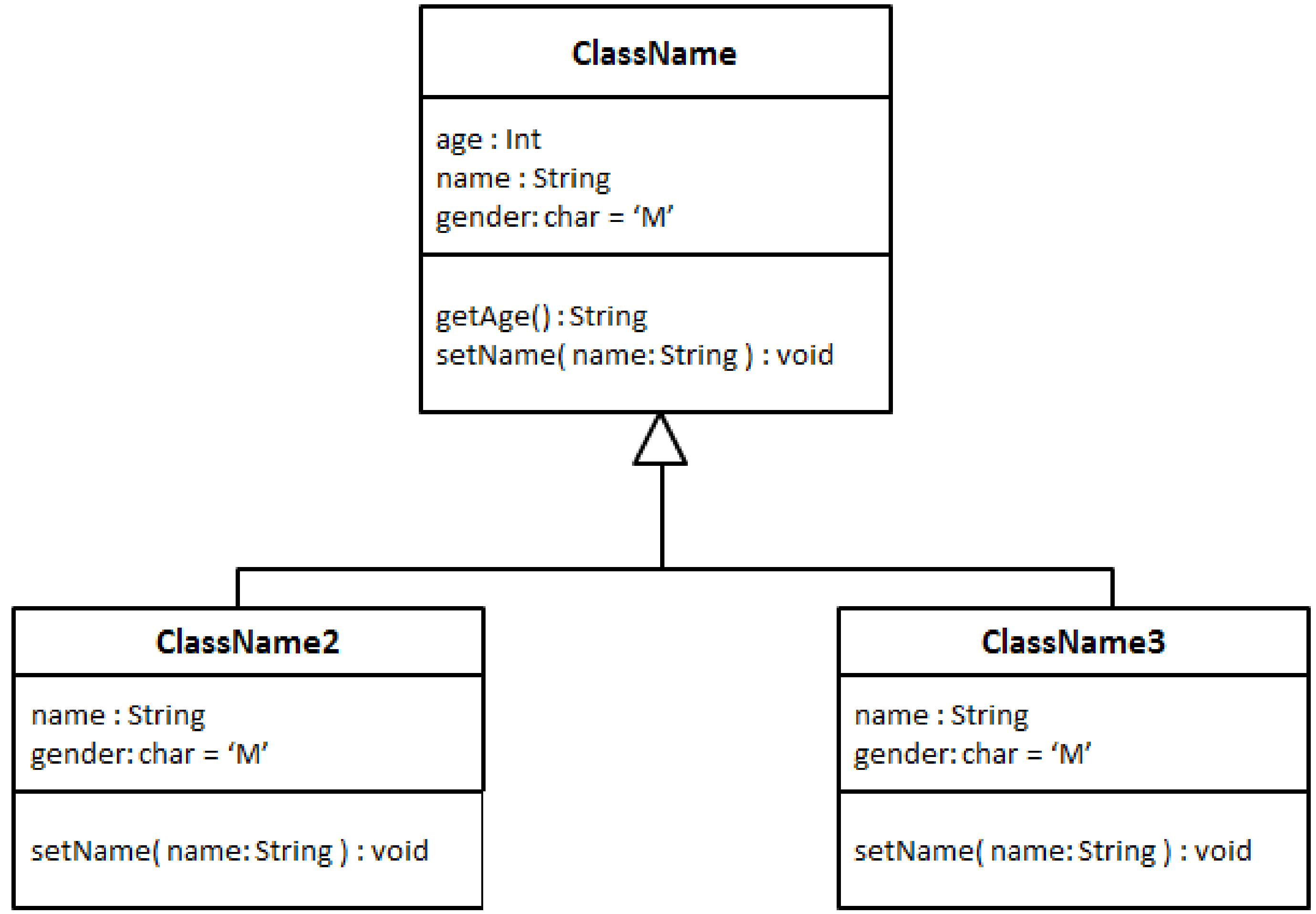
Associations (shown with lines/arrows)

- As projects contain multiple classes (driver & providers), it is important to show the **relationship** between two objects.



- This is a basic example where class A1 (driver) has a main method in which an object of class B1 (provider) is instantiated.

Multiple class diagrams in one project


ClassName
age : Int
name : String
gender: char = 'M'
getAge() : String
setName(name: String) : void
ClassName2
name : String
gender: char = 'M'
setName(name: String) : void
ClassName3
name : String
gender: char = 'M'
setName(name: String) : void