Inheritance

OOP

NIFR - Oktober 2020

Inheritance & Polymorphism

Object oriented programming

Object oriented programming: A Primer

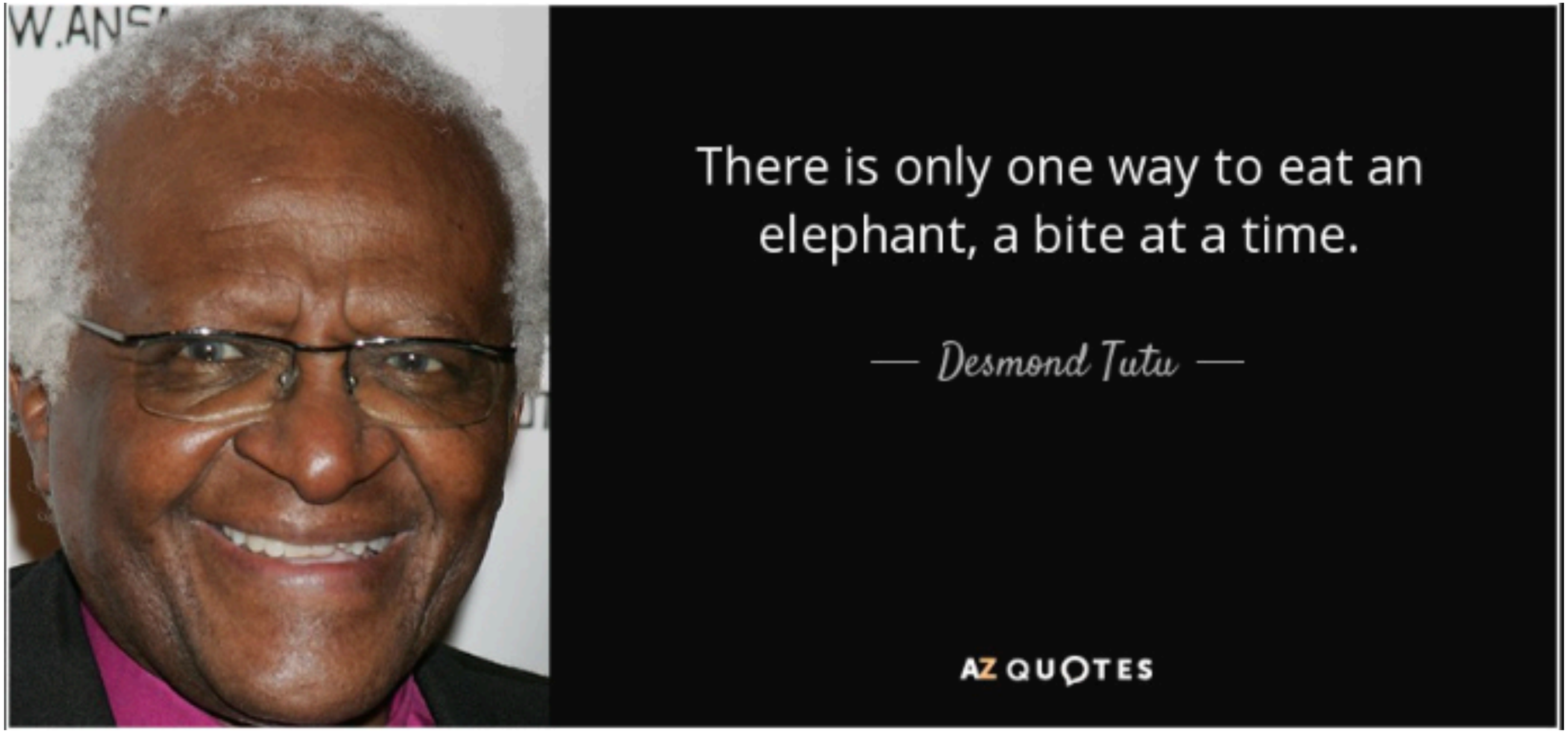
Why do we need inheritance?

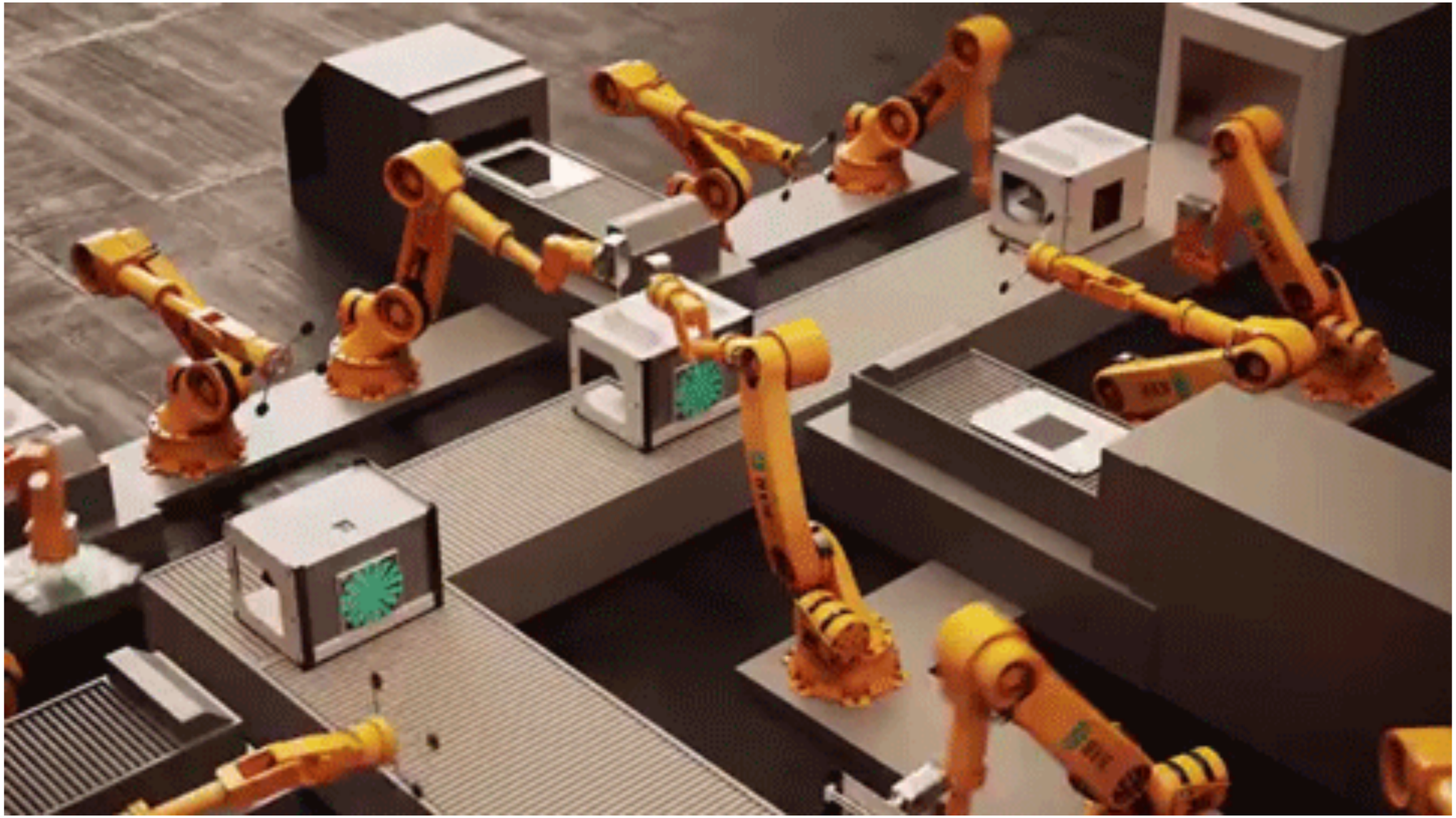
What is inheritance (in Java)?

Abstract classes

Overriding methods

What are programs?


There is only one way to eat an elephant, a bite at a time.
— Desmond Tutu —
AZ QUOTES



Building a humongous complex system

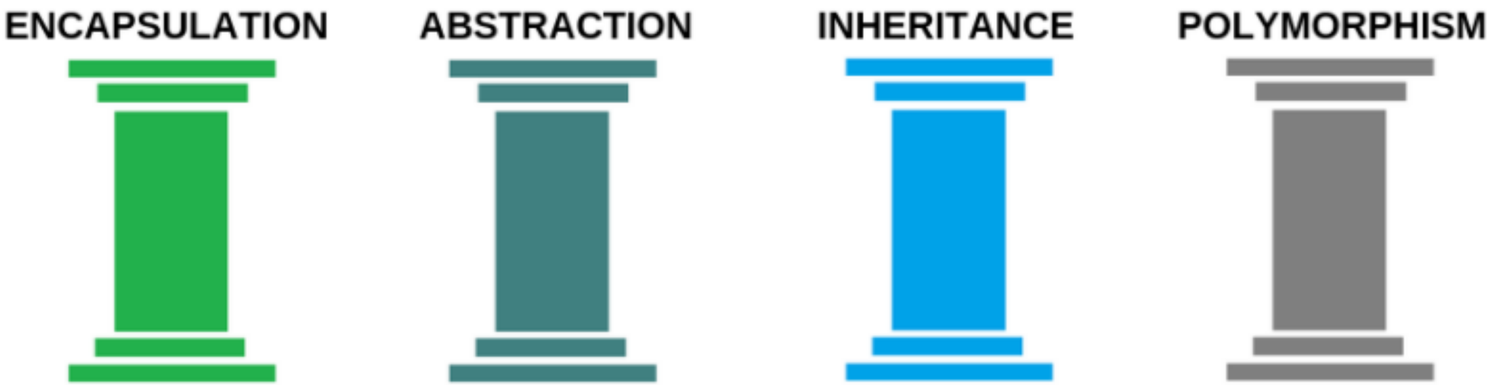
VS.

Building a number of small components

A class is a component

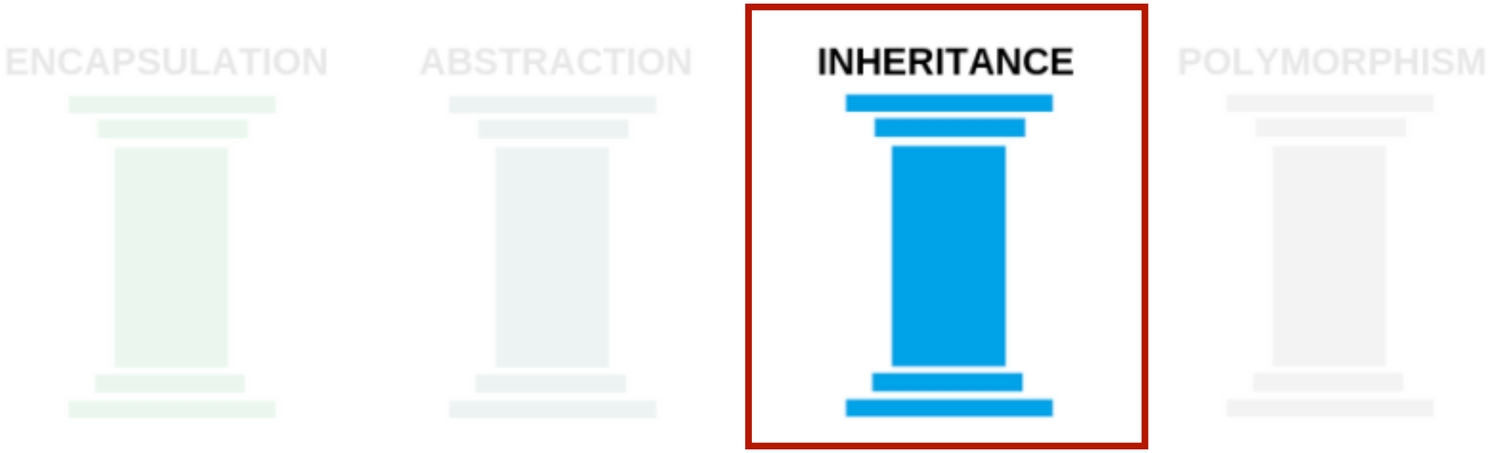
Object oriented programming

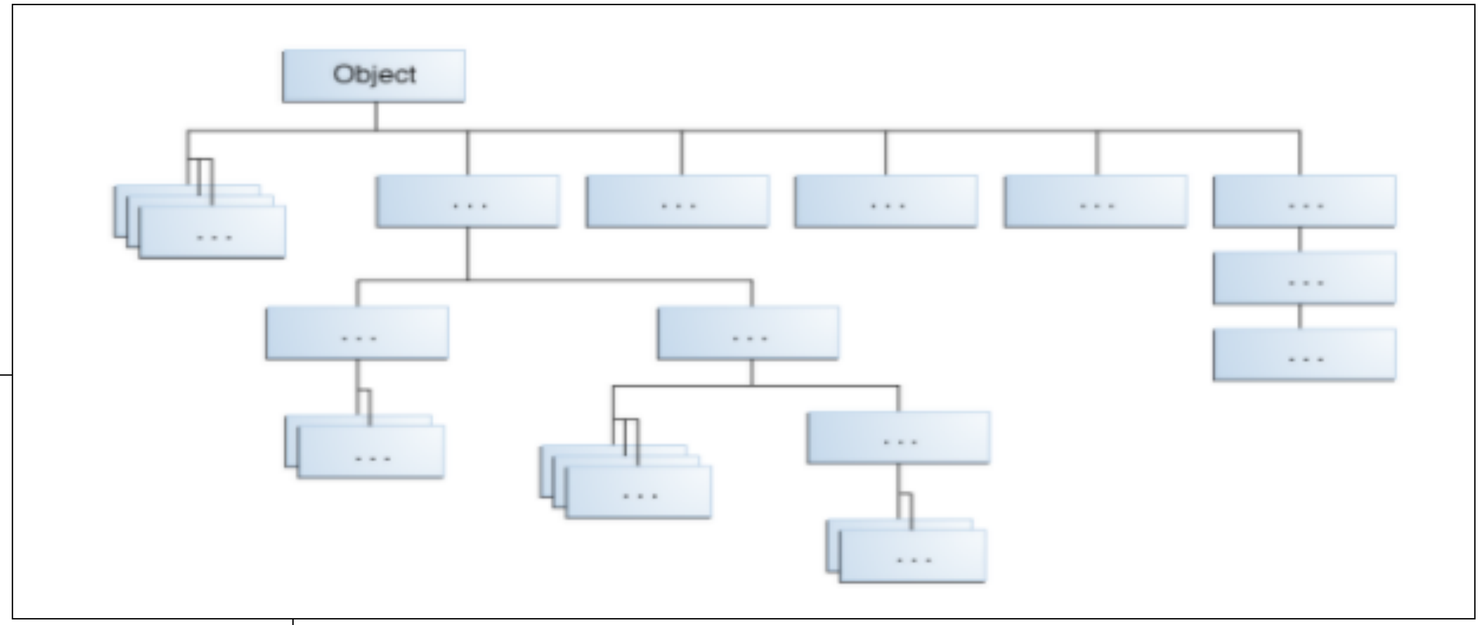
4 pillars of OOP

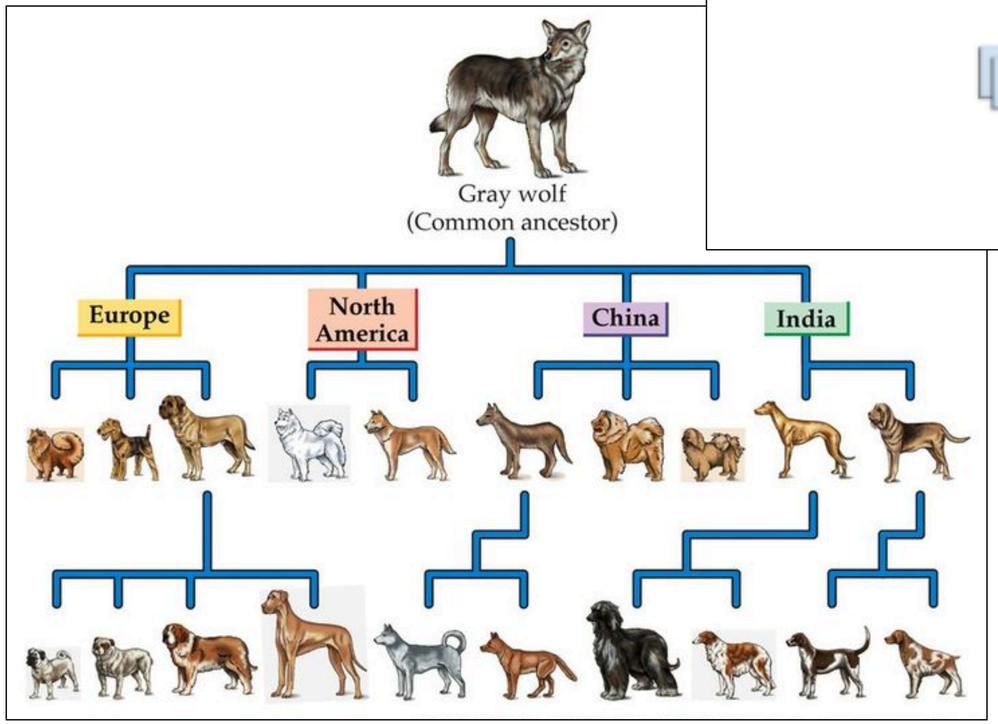


Object oriented programming

4 pillars of OOP

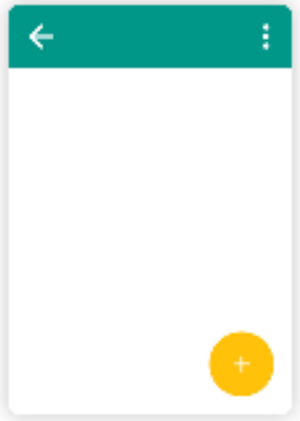



Object


Gray wolf
(Common ancestor)
Europe
North America
China
India

Practical Utilities of Inheritance

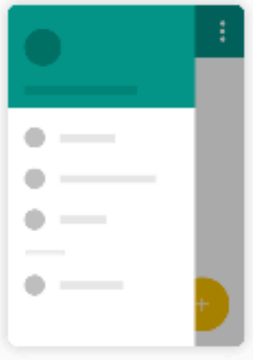
In Application Development



Basic Activity

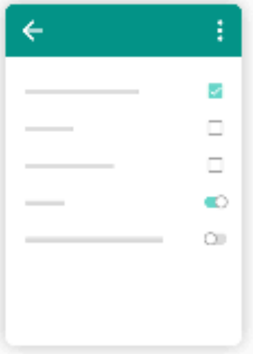
EXTENDS TO

Primary/Detail Flow

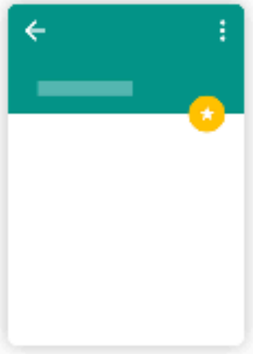


Navigation Drawer Activity

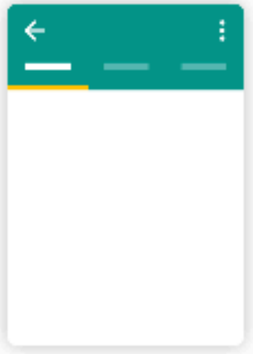
Responsive Activity



Settings Activity



Scrolling Activity



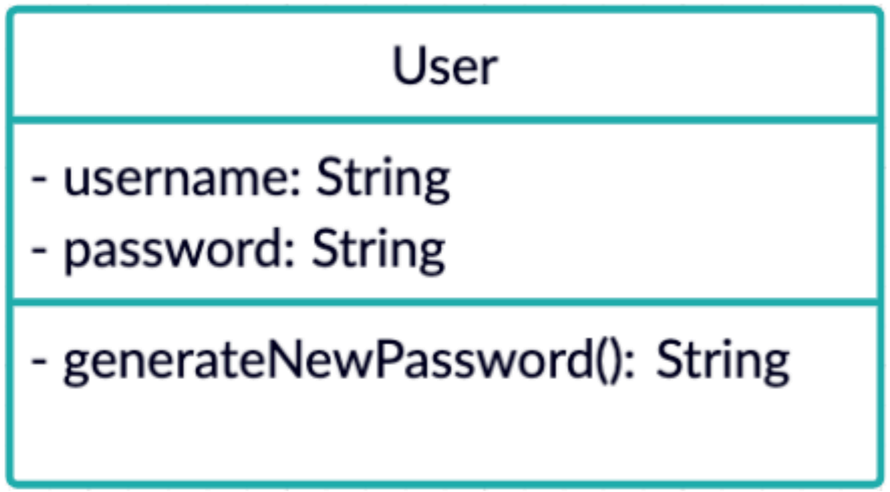
Tabbed Activity

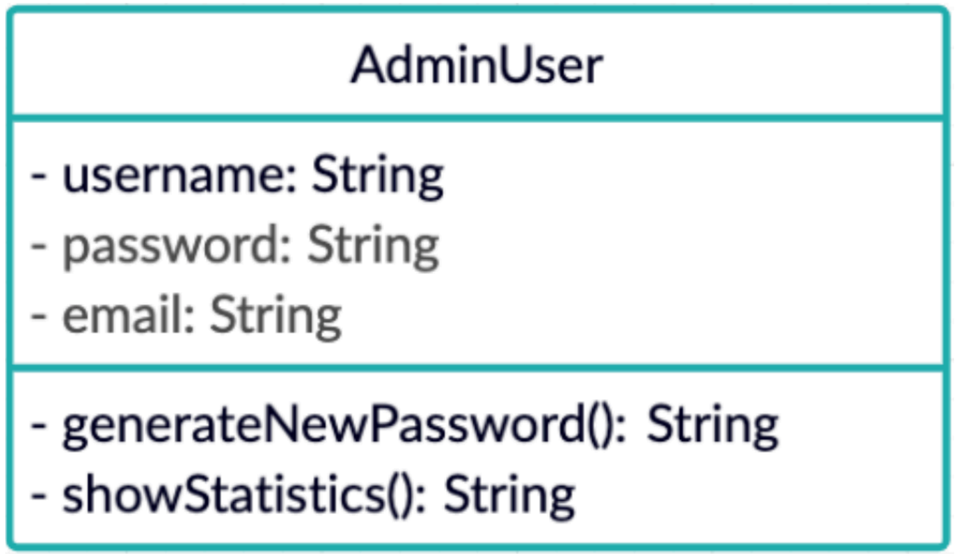
Example: Everything is an object

Why problem is inheritance solving?

D.R.Y

Don’t Repeat Yourself





Problem: Duplicated code with same intention

Generalisation:

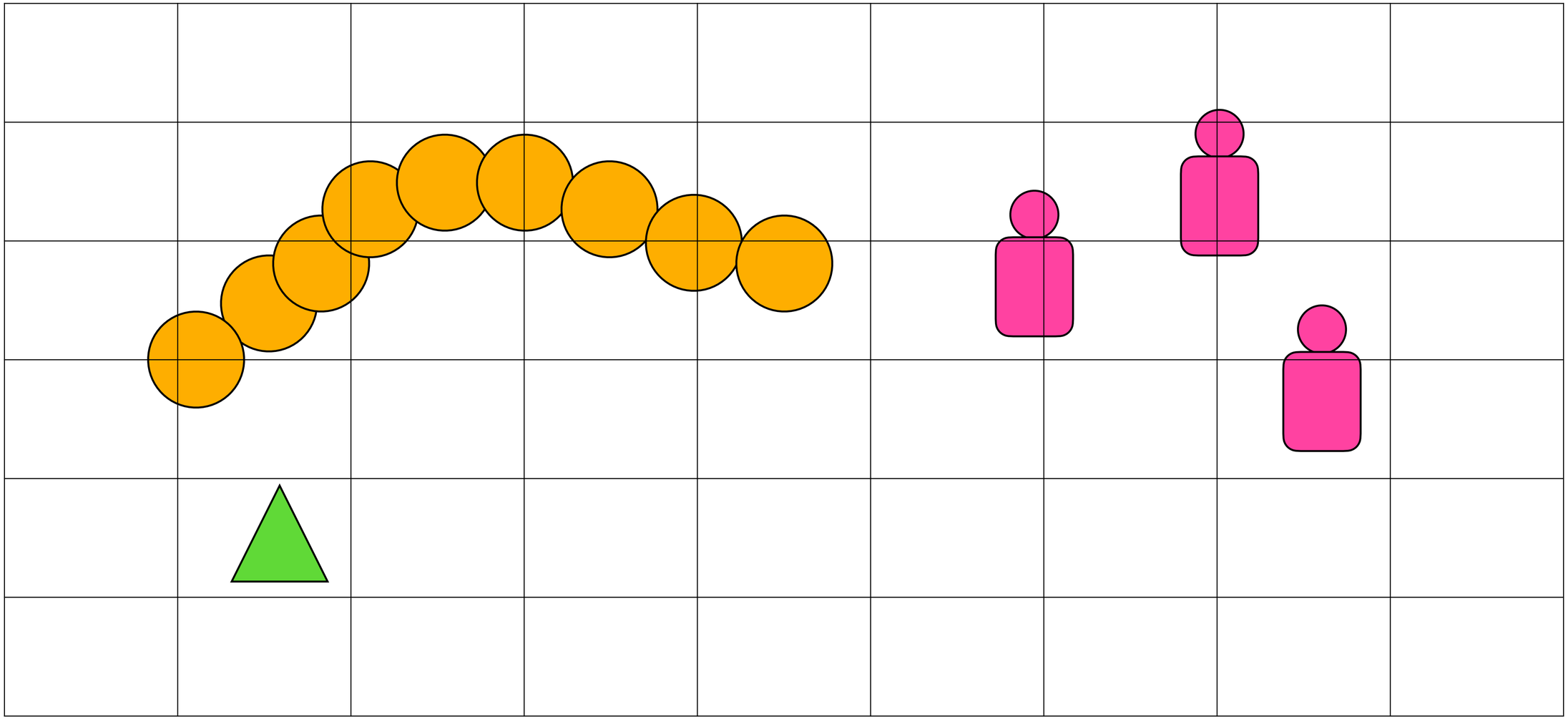
- All users should be able to generate a new password

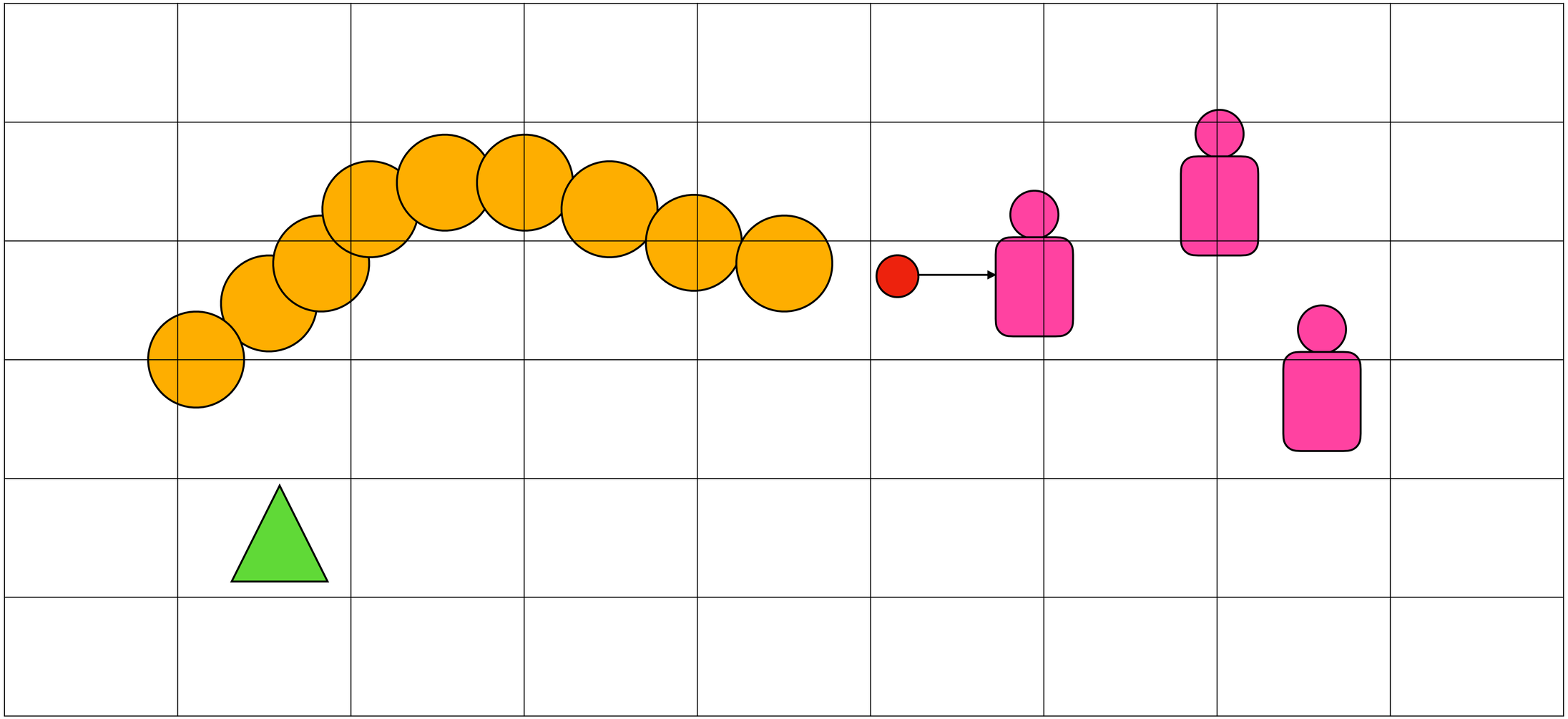
Specialisation:

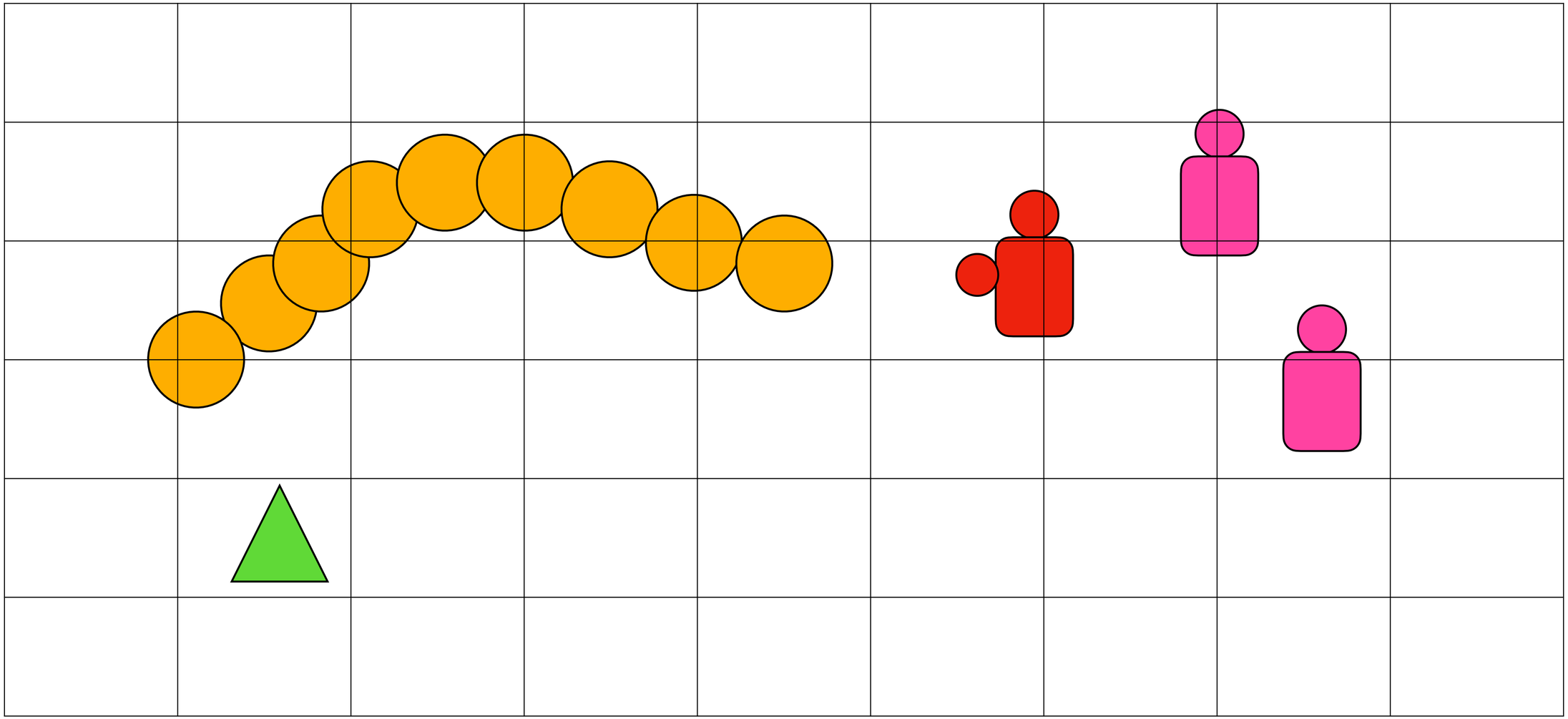
- AdminUser has an email attribute & can show statistics

Abstract Classes

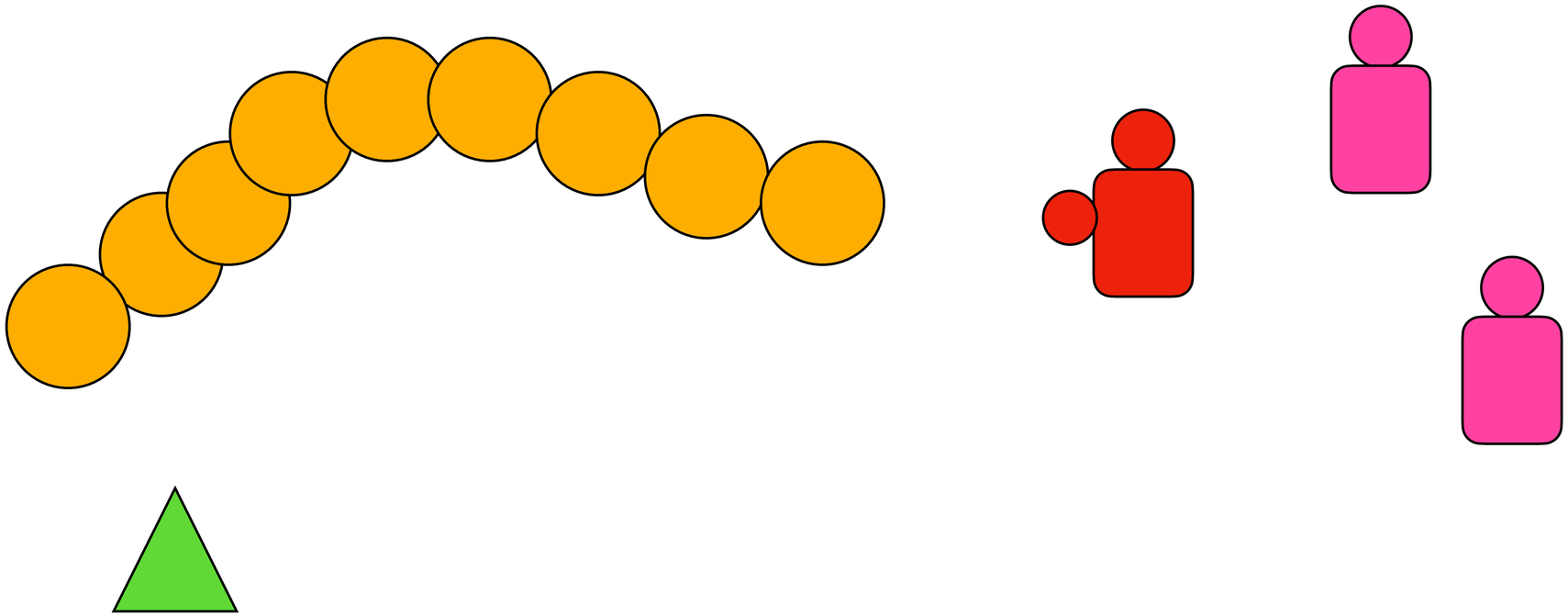
A class is a component







Collision detected -
Game Over

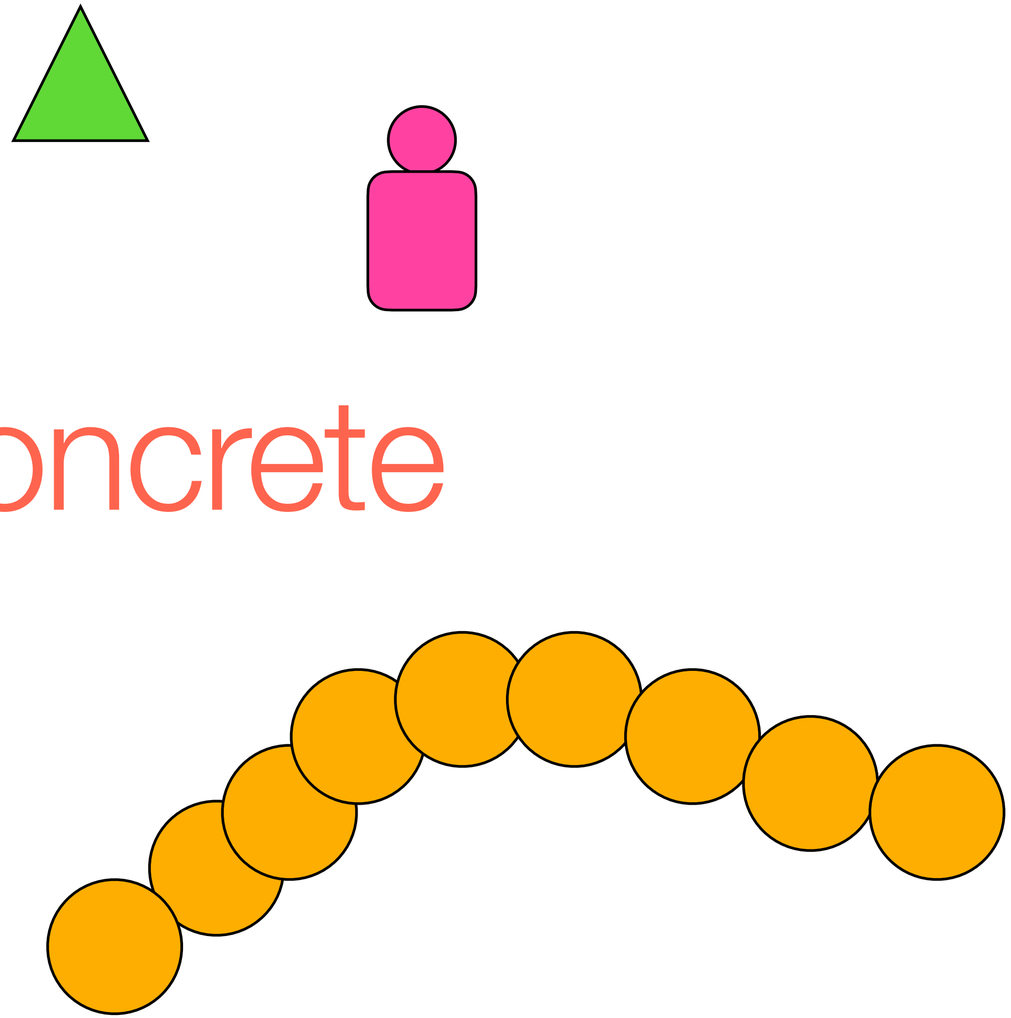


Collision detected -
Game Over

A Shape

Another Shape

Abstract | Concrete



All shapes should be able to calculate their perimeter & area

Abstract classes

- Cannot be instantiated
  - You cannot make an object from an abstract classes
- Methods can be abstract
  - They have no method body -> Logic/actions are not implemented
- Are used as tools to specialisation via inheritance to concrete classes

Example:
Abstract class & overriding

Deadly Diamond of Death

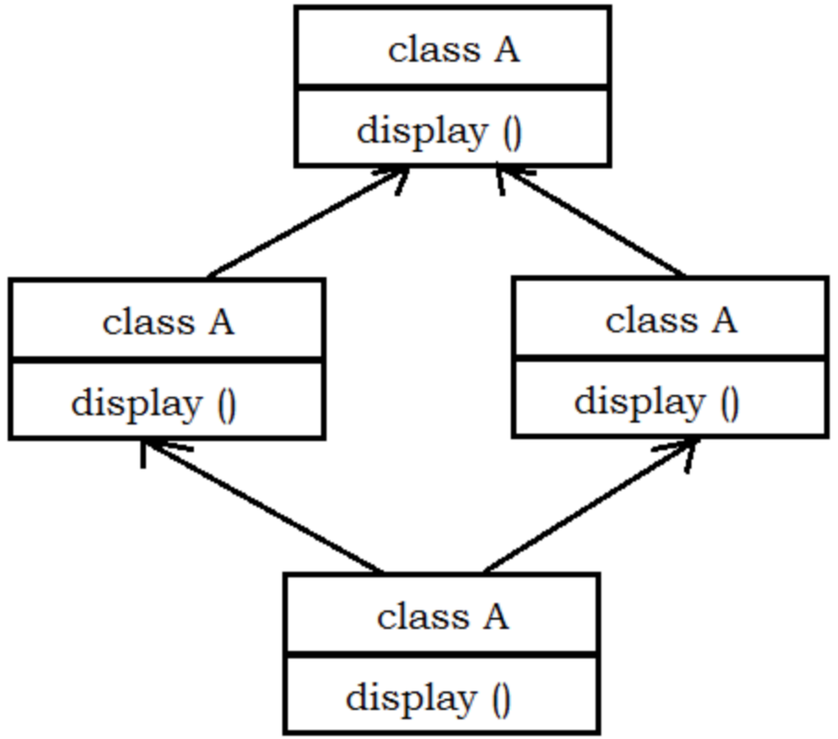


Fig (a) Deadly Diamond of Death

Explaining a subject

Teacher/student exercise

- 20 min: Create a presentation on one or more subjects with a partner
- 5 min: Presentation & Active Critical Listening
- 5 min: Questions, common ground & differences

Explainer

Topics

a) Explain the concept of inheritance

b) Give an example - not one used in class / book

b) Overriding vs. Overloading