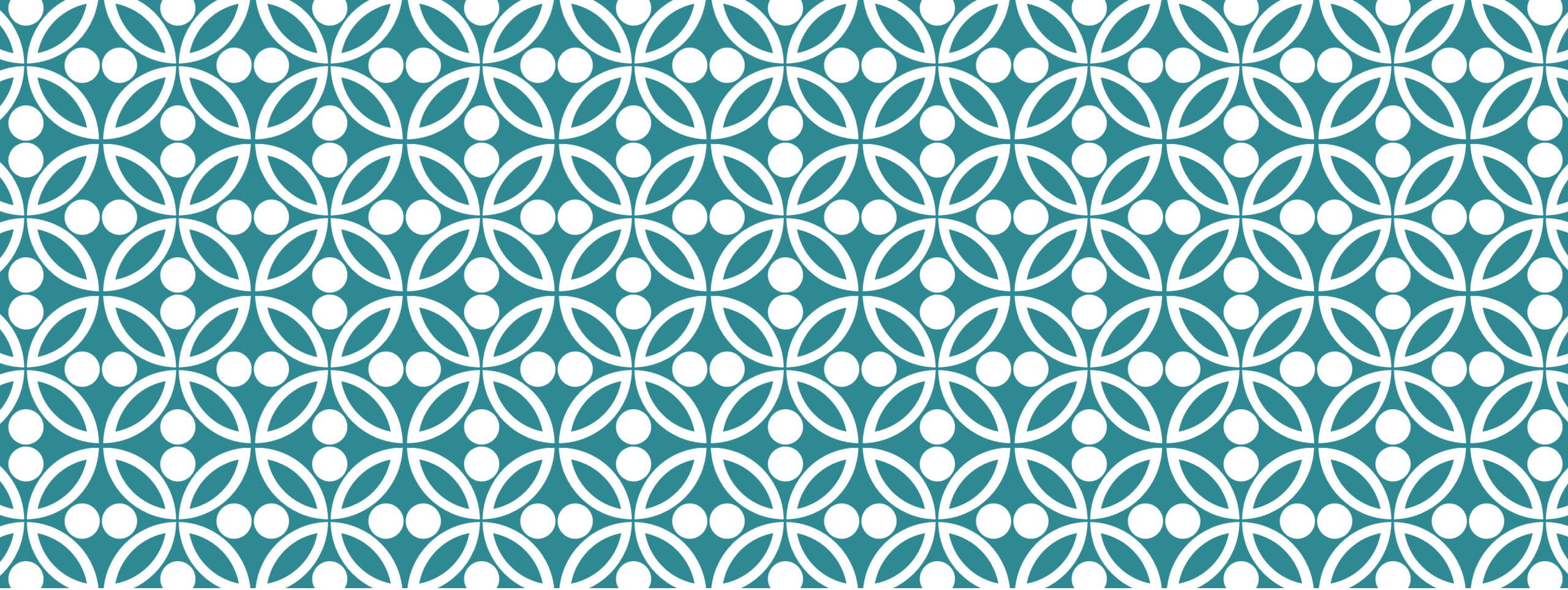


PROGRAMMING
OBJECT ORIENTED

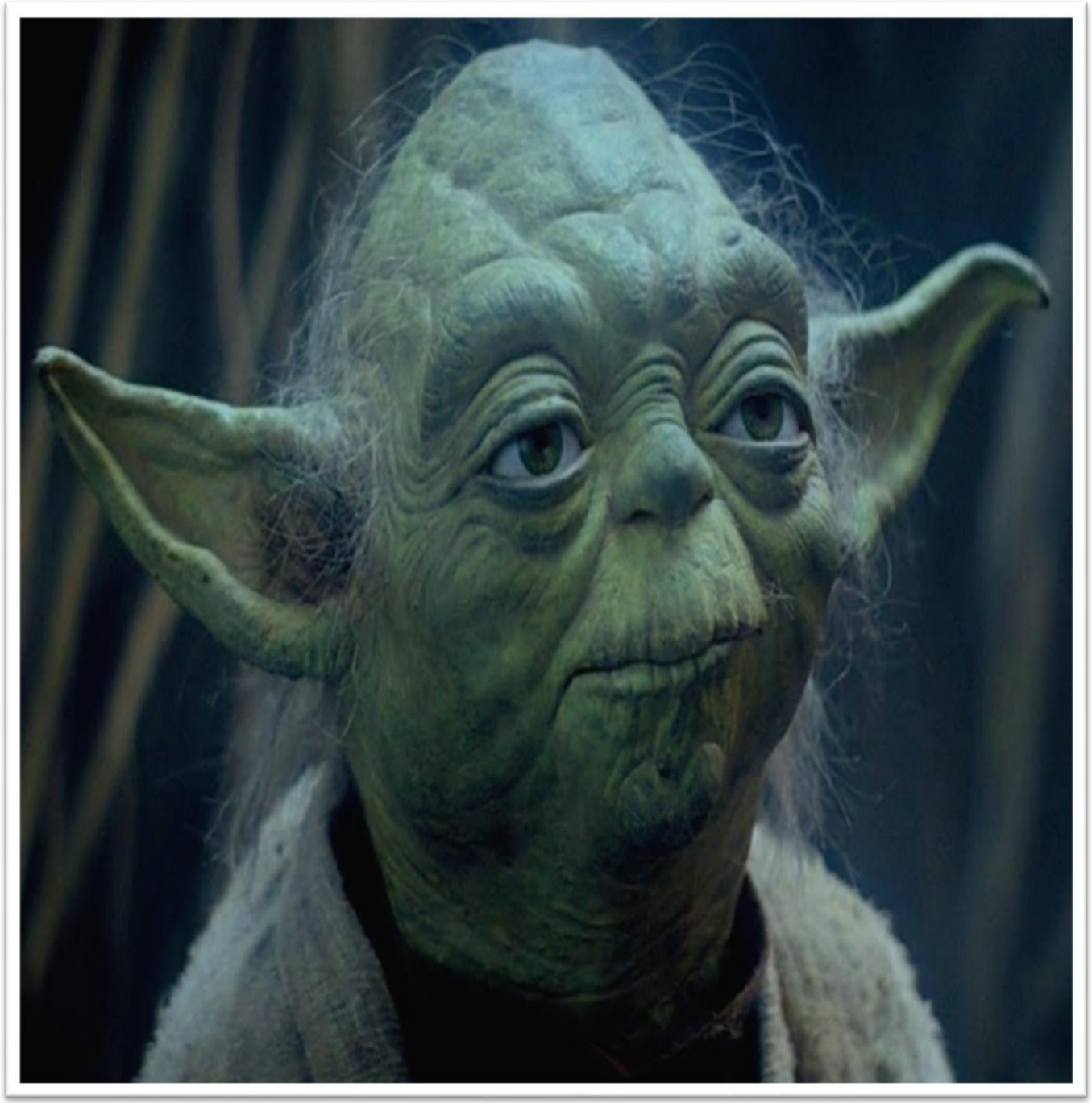
Andrew Sheehan

Boston University
Metropolitan College

WHAT IS AN OBJECT

Everything

一切



‘It is an energy field created by all living things’

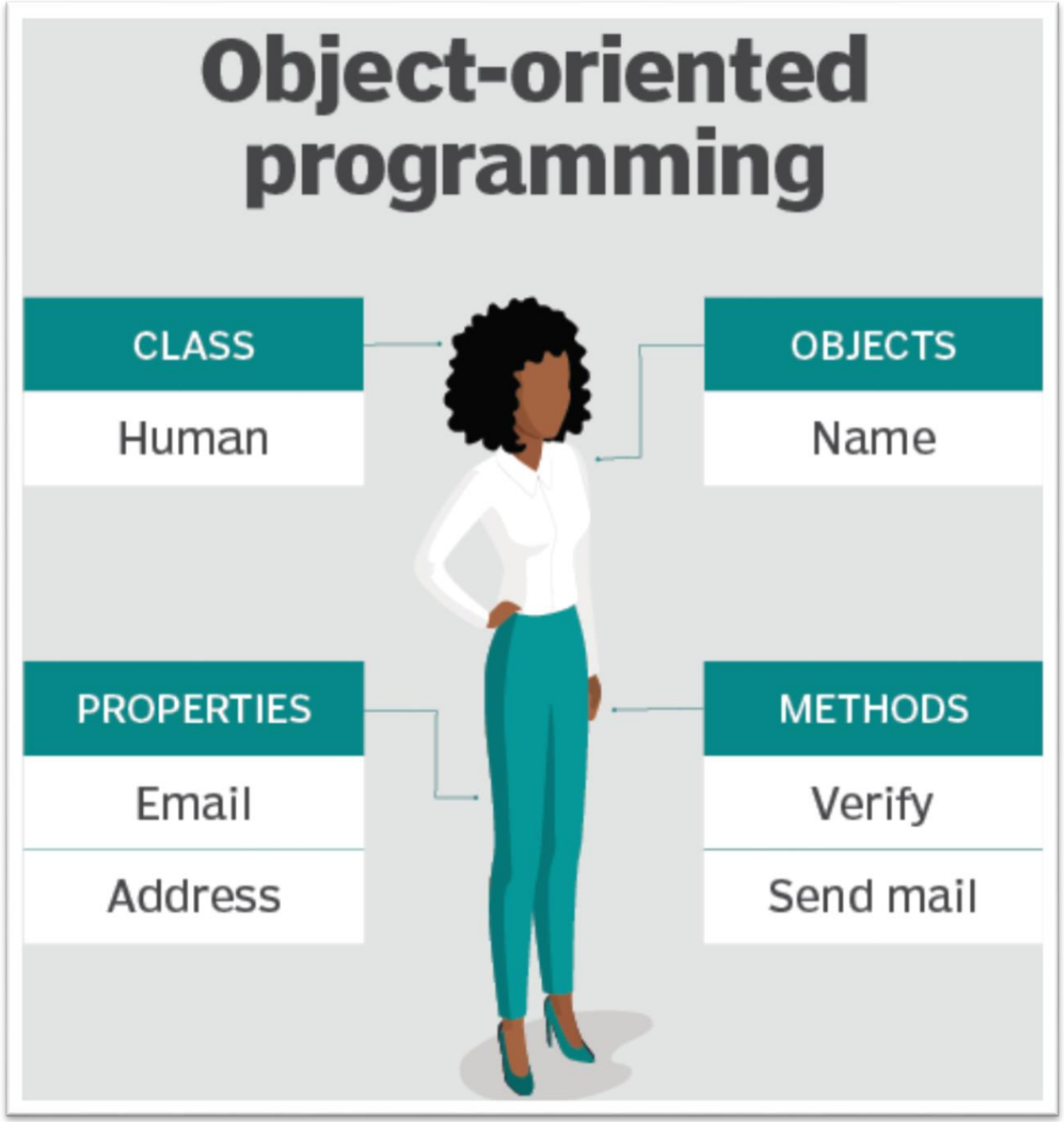
‘It surrounds us and penetrates us’

It binds the galaxy together’

Simula is credited as the first object-oriented programming language

OBJECTS

Programs organized around objects rather than functions and logic



PRINCIPALS OF OBJECT ORIENTED PROGRAMMING

Encapsulation- The implementation and state of each object are privately held inside a defined boundary, or class. Other objects do not have access to this class or the authority to make changes but are only able to call a list of public functions, or methods. This characteristic of data hiding provides greater program security and avoids unintended data corruption.

Abstraction- Objects only reveal internal mechanisms that are relevant for the use of other objects, hiding any unnecessary implementation code. This concept helps developers make changes and additions over time more easily.

Inheritance- Relationships and subclasses between objects can be assigned, allowing developers to reuse a common logic while still maintaining a unique hierarchy. This property of OOP forces a more thorough data analysis, reduces development time and ensures a higher level of accuracy.

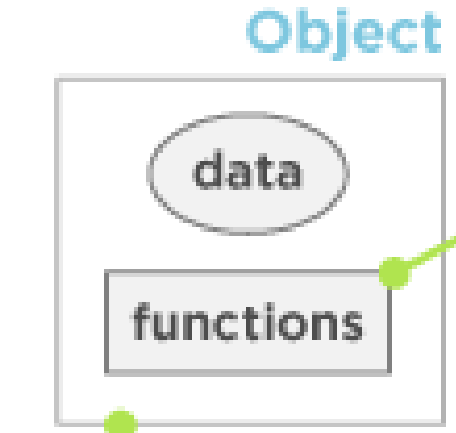
Polymorphism- Objects are allowed to take on more than one form depending on the context. The program will determine which meaning or usage is necessary for each execution of that object, cutting down on the need to duplicate code.

WHY BOTHER
OBJECT ORIENTED PROGRAMMING

‘Mastering OOP is essential for any developer who wants to build a high quality software’

Omar Elgabry

DATA AND METHODS
CORE PRINCIPALS



Class Methods (behaviors):

Functions of the class are shared with other objects in the same class.

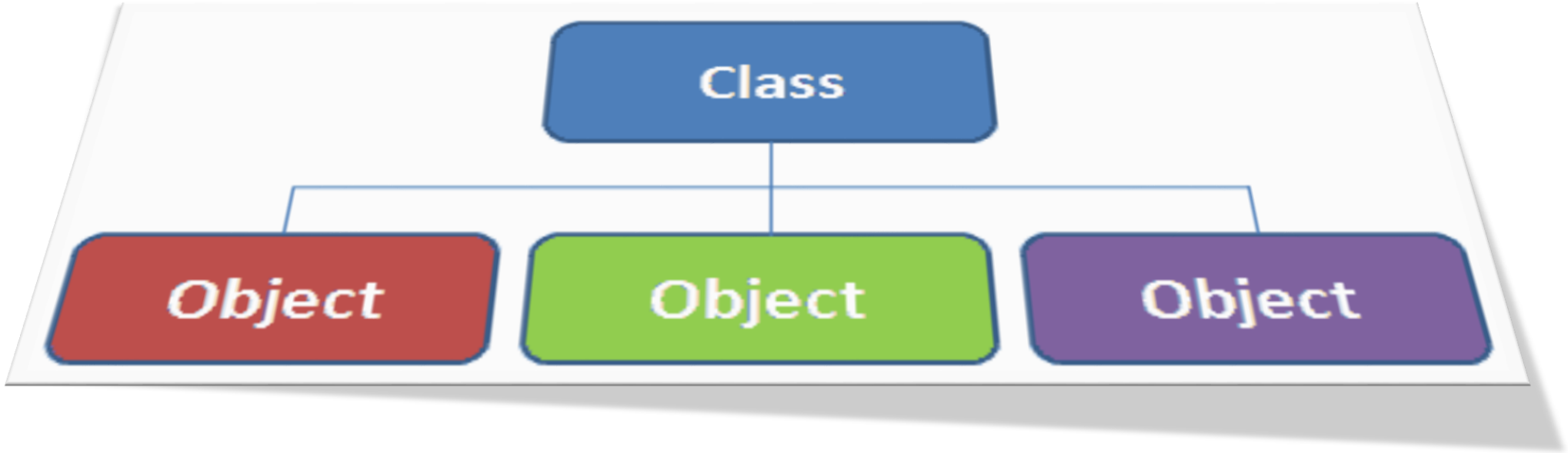
For example, all cars:

- Drive
- Transport people
- Start and stop

Objects:

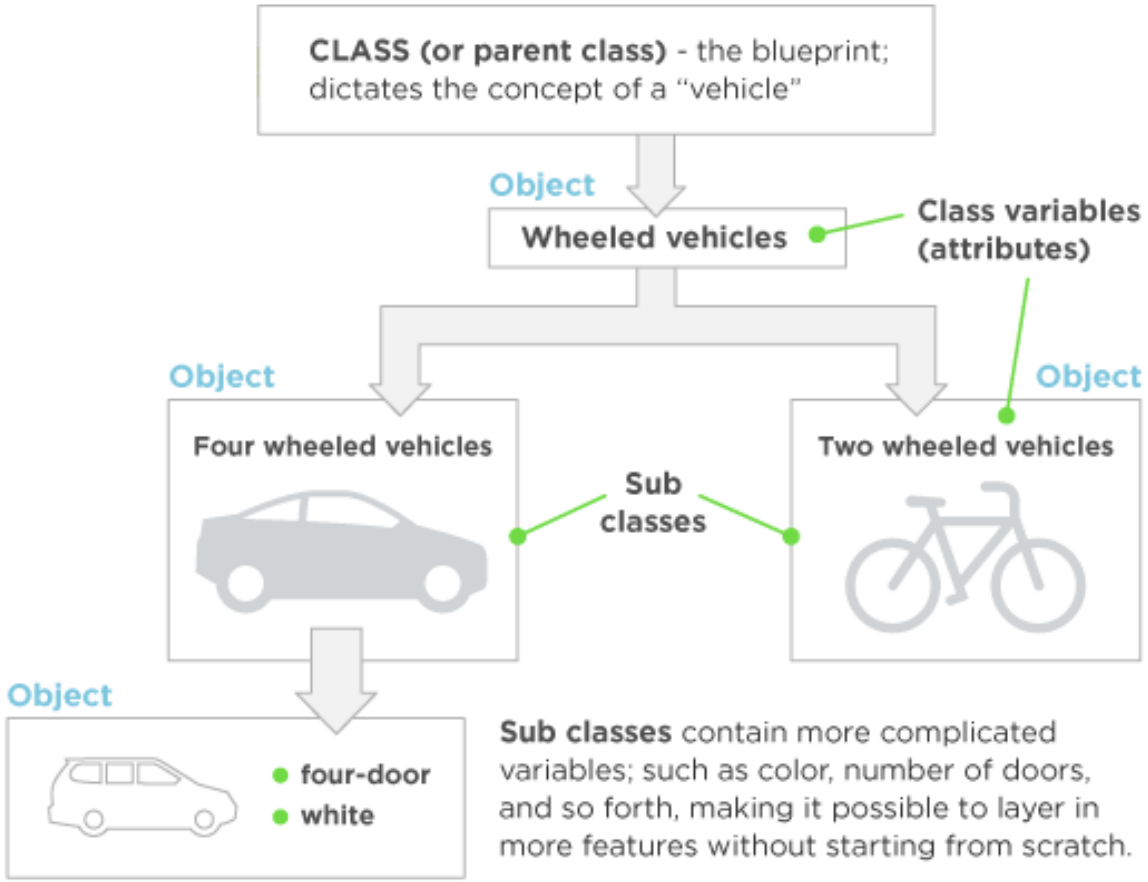
Instances of the class

DISTINCTION
OBJECT & INSTANCES

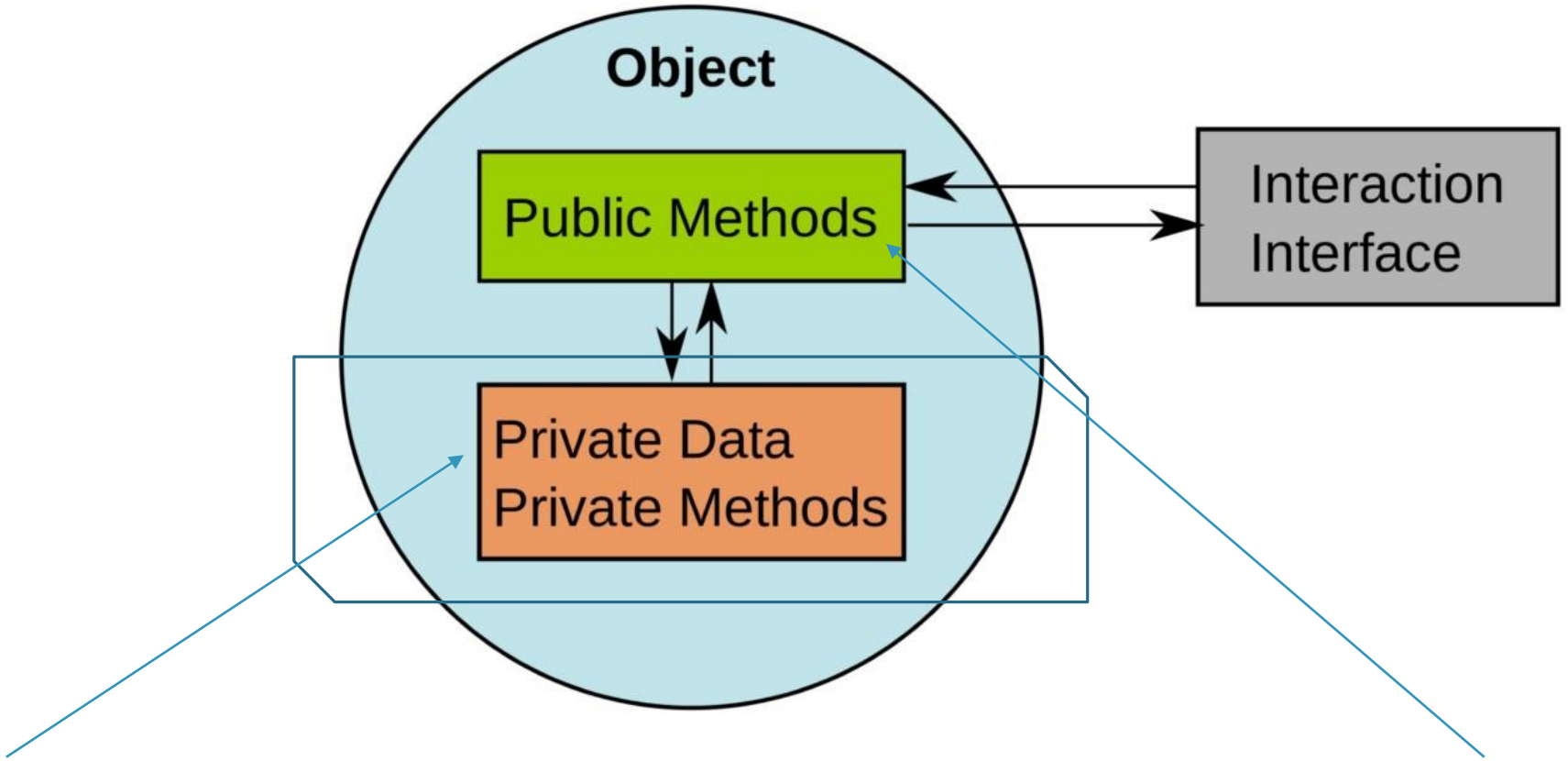


Instances are created from its class.

THE CLASS AND INSTANCES

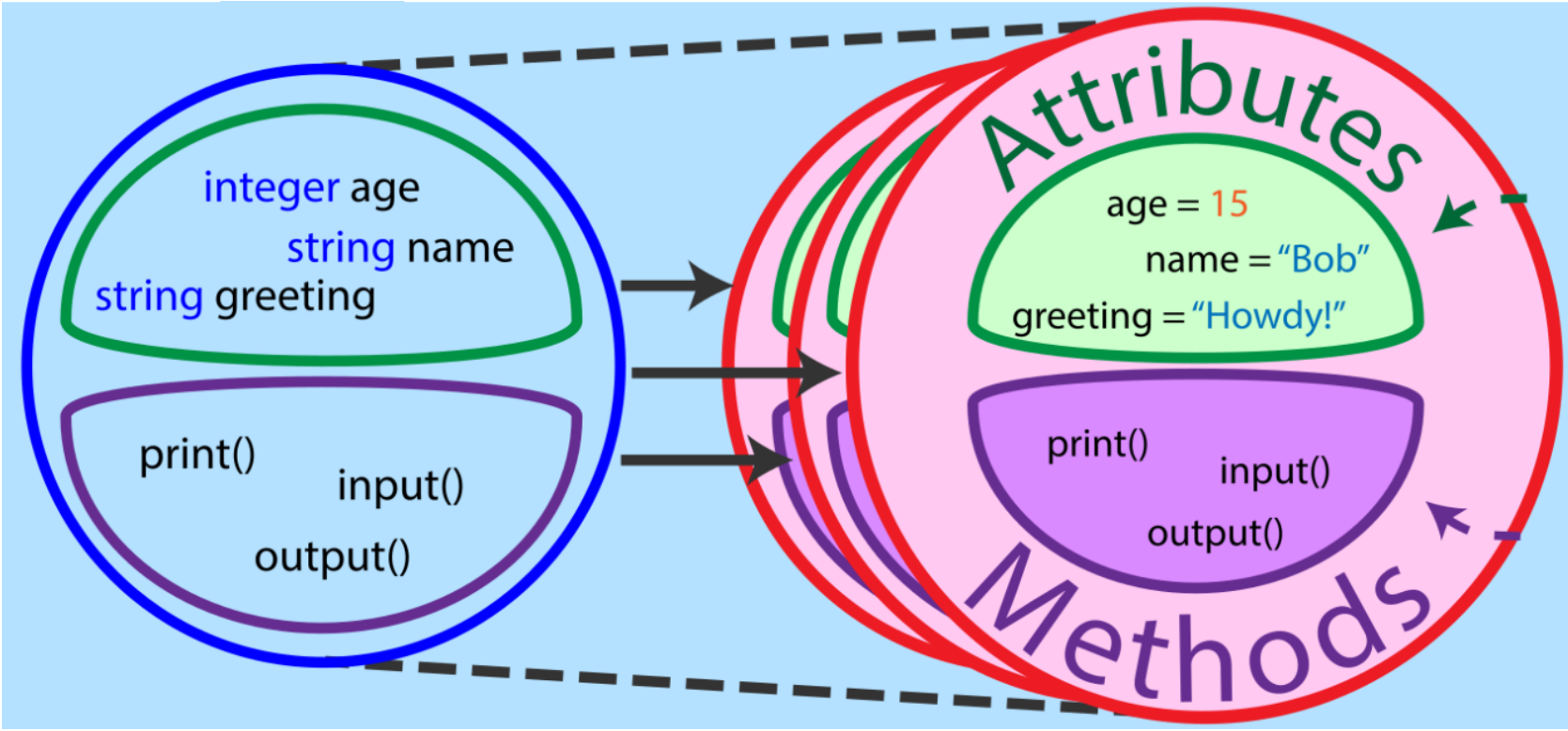


OBJECT
‘PUBLIC’ IS THE API

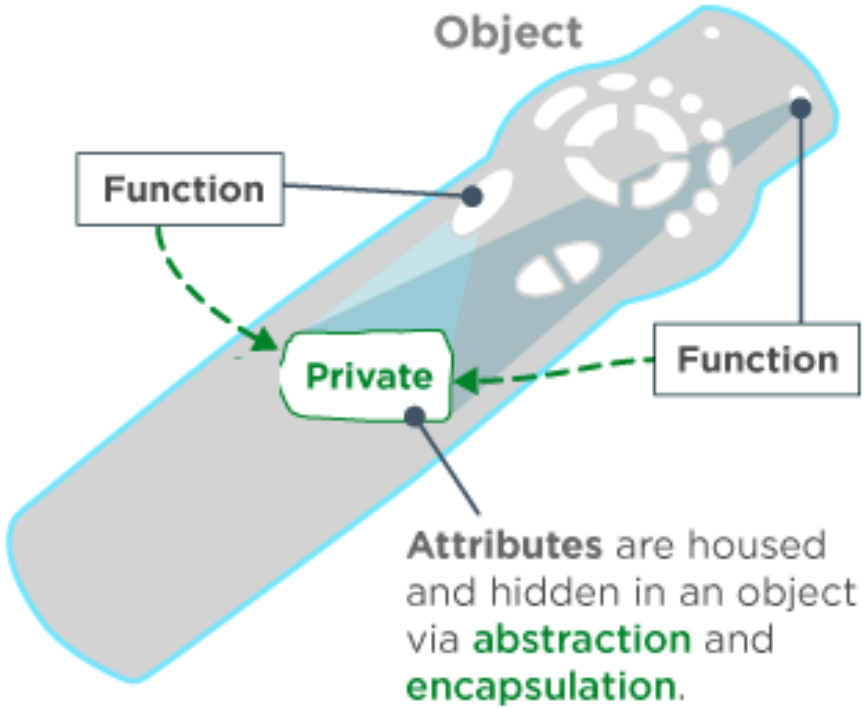


Attributes are State. Methods are Behavior.

OBJECT
ATTRIBUTES & BEHAVIOR



OBJECT
ENCAPSULATE AND ABSTRACT



OBJECT ORIENTATION
BENEFITS

- Ease of design
- Programming efficiency
  (frameworks and open source alternatives)
- Ability to test
  (more options/better methodologies)
- Classes are reusable.