

3. Object Oriented Programming

Object Oriented Programming

A programming methodology that uses self-contained objects, which contain programming statements(methods) and data, and which communicate with each other

Explain what is meant by Object Oriented programming

- Create classes
- ... as a blueprint for an object // objects are instances of classes
- ... that have properties/attributes and methods
- ... that can be private to the class // properties that can be only accessed by the class's methods // encapsulation
- Subclass can inherit from superclass (child and parent)
- A subclass can inherit the methods and properties from the superclass
- A subclass can change the methods from the superclass // subclass can use polymorphism
- Objects can interact with each other

Explain the difference between a class and an object¹

- A class is the blueprint/design/template (from which the object are later created)
- A class consists of properties/attributes and methods/procedures/functions
- An object is an instance of a class
- An object must be based on a class definition
- Many objects can exists for the same class

Objects:

An instance of a class that is self-contained and includes data and methods

- Many instances can exists for the same class
- Must be based on the class definition

Properties

Data and methods within an object that perform a named action

Methods

A programmed procedure that is defined as part of a class

Classes

A template/blueprint defining the methods and data of a certain type of object

Inheritance

Process in which the methods and data from one class, a superclass or base class is copied to another class, a derived class/subclass

Polymorphism

Feature of OOP that allows a method to be defined more than once in a class, so it can be used in different situations

Containment(aggregation)

Defines a `one-way` relationship / `has-a` relationship between two classes. In aggregation, the objects can exist independently with each other.

Encapsulation

Process of putting data and methods together as a single unit, a class

Getter

A method that gets the value of a property

Setters

A method used to control changes to a variable

Instances

| An occurrence of an object during the execution of a program