

# Inheritance

Inheritance extends a class and supports a baseclass-subclass relationship between classes. This is also referred to as a parent-child class relationship or a super-derived class relationship or an ancestor-descendant class relationship. Every subclass extends its base class.

Inheritance:

- Can be described by “is a” relationship
- Provides a structural hierarchy showing a relationship between the classes
- Emphasises the similarities and differences between classes,
- Eliminates repetitious code in subclasses/encourages code reuse.

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*example 1 – refer to the 10-inheritance lecture video*

As an employer, you have some full-time employees and some part-time employees. Create an inheritance hierarchy with an AllEmployee parent class and with FullTimeEmployee and PartTimeEmployee child classes. What would be some fields and methods for each of these classes?

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*example 2*

- Suppose you want to build a program that simulates a zoo. You need to accommodate 6 animals: a lion, a hippo, a tiger, a dog, a cat and a wolf.
- You could build a class for each animal and have a lot of duplicate code.
- Instead start by building an Animal ancestor class that holds all the fields and methods that are common to all of our six animals.
- Next create subclasses that inherit all the fields and methods of the ancestor and contain anything that is different from the ancestor class.

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*example 3*

- All vertebrates have legs and can eat. A vertebrate can eat a quantity of a given food.
- A bird is a vertebrate, but also has a wingspan and can fly.
- Set up a Vertebrate superclass and descend a Bird subclass from it.
- Create a tweety object that is a Bird, has 2 legs and a wingspan of 7.5 metres. Make tweety eat 5 sunflower seeds and fly.
- Create a barney object that is a Vertebrate and has 4 legs. Make barney eat 4 mosquitoes.

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*example 4*

Watch:

What is object-oriented language? <https://www.youtube.com/watch?v=SS-9y0H3Si8>  
Identifying an inheritance situation? <https://www.youtube.com/watch?v=oZcLmje8-fg>

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## Task 1

Create a program that simulate example three.

- For Bird object called tweety, display the following message (or something similar) in a MessageBox – “tweety has 2 legs, a wingspan of 7.5, can eat 5 sunflower seeds and fly”.
- For the Vertebrate object called barney, display the following message (or something similar) in a MessageBox – “barney has 4 legs and can eat 4 mosquitoes”.
- Both MessageBoxes are triggered by a button click event.