

# Object Orientation

Construction and encapsulation

# Classes

- A class is a template or blueprint for creating objects
- A class contains:
  - *attributes (data)*
  - *methods (behaviours/ its sub-routines)*
- Classes represented as a diagram:
  - *Name*
  - *Attributes*
  - *Methods*
    - *Constructor*: – procedure to ‘build’ an object when created
    - *Getters*: – functions that access and get an attribute’s value
    - *Setters*: – procedures that change an attribute’s value

## Dog

int age  
char gender  
Breed breed

Dog(Breed given\_breed, char  
gender)  
Bark()  
setAge(int age)  
getAge()  
setGender(char gender)  
getGender()  
getBreed()

# Encapsulation

- The whole point of having our data and methods contained in their own classes is that this means it's protected / 'hidden'
- It means the data in a class can't be changed by anything other than it's own setter methods
- So only classes that have access to those setters, can use them and change data

# Constructors

- Every time we create an instance of a class – an object – we need to build it
- This means we set any attribute values it has or settings it needs when it's created
- The constructor procedure tends to be named the same as the class
- e.g. This calling code constructs a Dog of the breed collie of the male gender, when the program is run. Then it sets the age of the dog to 4 and gets the gender.

```
// Constructor in pseudocode
```

```
public procedure  
Dog(given_breed, given_gender)  
{  
    breed = given_breed;  
    age = 0;  
    gender = given_gender;  
}
```

```
// Calling code
```

```
Dog lassie = new Dog(collie, 'M');  
lassie.setAge(4);  
  
char gender = lassie.getGender();
```

# Computer Science A Level

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## Java - Object Oriented

 Greenfoot Tutorials Session 1 - Ship Game Session 2 - AirRaid Session 3 - CannonGame Session 4 - Creating your own game Object-Oriented Theory - key terms

NB:

Copy the code folders to your area on the N:\ drive

Avoid saving to your 'Documents' folder while some technical issues are being investigated