Classes

Arguments and Returns

Remember our Cat class?

Let’s have another look at our Cat class!

```
class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def meow(self):
    print(“Meow”)

  def birthday(self):
    self.age = self.age + 1
```

Rename that Cat

Sometimes we rename our cat - like when we first bring them home from the shelter (Emmy’s original name was Tawny)

Rename that Cat

Let’s add some code that lets us rename our cat!

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```
class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def rename(self, new_name)
    self.name = new_name
```

Rename that Cat

Let's add some code that lets us rename our cat!

```
class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def rename(self, new_name)
    self.name = new_name
```

This is called an argument - it's some extra information that we can give our object to help it do its job!

Rename that Cat

What does this code do?

```
class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def rename(self, new_name)
    self.name = new_name

cat1 = Cat("Tawny", 3, "Dark brown")
print(cat1.name)
cat1.rename("Emmy")
print(cat1.name)
```

Rename that Cat

What does this code do?

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class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def rename(self, new_name)
    self.name = new_name

cat1 = Cat("Tawny", 3, "Dark brown")
print(cat1.name)
cat1.rename("Emmy")
print(cat1.name)
```

```
Tawny

Emmy
```

Give it back!

Arguments are how we give information to the class, but how do we get information back from them? We can use a return

Give it back!

Let’s have a look at an example!

```
class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def matches_hair(self, hair_colour):
    return self.colour == hair_colour
```

Give it back!

Let’s have a look at an example!

```
class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def matches_hair(self, hair_colour):
    return self.colour == hair_colour
```

Here we use an argument to tell the class what hair colour we are trying to match with

Give it back!

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```
class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def matches_hair(self, hair_colour):
    return self.colour == hair_colour
```

Here we return whether or not the hair_colour is equal to our cats colour

Give it back!

What does matches_hair return here?

```
class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def matches_hair(self, hair_colour):
    return self.colour == hair_colour

cat1 = Cat(“Emmy”, 3, “Dark brown”)
cat1.matches_hair(“Grey”)
```

Give it back!

What does matches_hair return here?

```
class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def matches_hair(self, hair_colour):
    return self.colour == hair_colour

cat1 = Cat("Emmy", 3, "Dark brown")
cat1.matches_hair("Grey")
```

False

Give it back!

What about now?

```
class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def matches_hair(self, hair_colour):
    return self.colour == hair_colour

cat1 = Cat(“Emmy”, 3, “Dark brown”)
cat1.matches_hair(“Dark brown”)
```

Give it back!

What about now?

```
class Cat():
  def __init__(self, name, age, colour):
    self.name = name
    self.age = age
    self.colour = colour

  def matches_hair(self, hair_colour):
    return self.colour == hair_colour

cat1 = Cat(“Emmy”, 3, “Dark brown”)
cat1.matches_hair(“Dark brown”)
```

True

Cat Crimes!

Let's look at our cat crimes code again and see if we can make it better with our new code!

```
cat1 = Cat("Emmy", 3, "Dark brown")
cat2 = Cat("Saphira", 1, "Grey")

hair_colour = "Grey"

if cat1.matches_colour(hair_colour):
  print("That hair belongs to", cat1.name)
elif cat2.matches_colour(hair_colour):
  print("That hair belongs to", cat2.name)
```