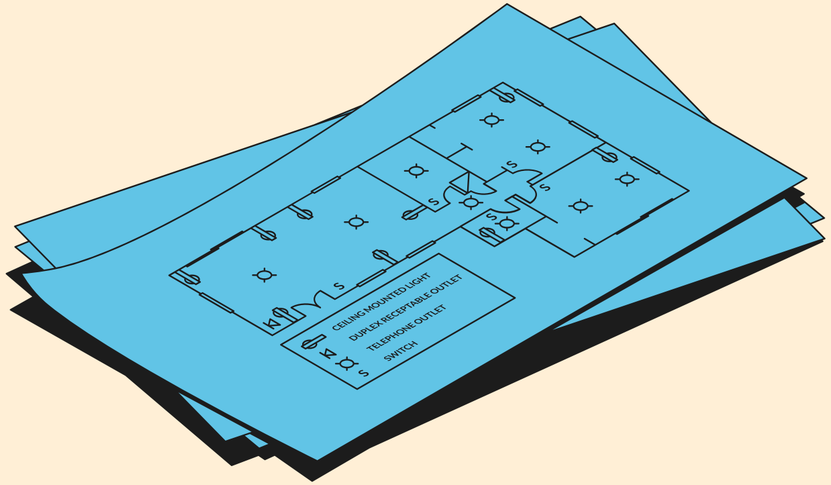
Defining our own Classes



Think of a Class as a Blueprint

A Class:

Is a Blueprint/Template for creating objects

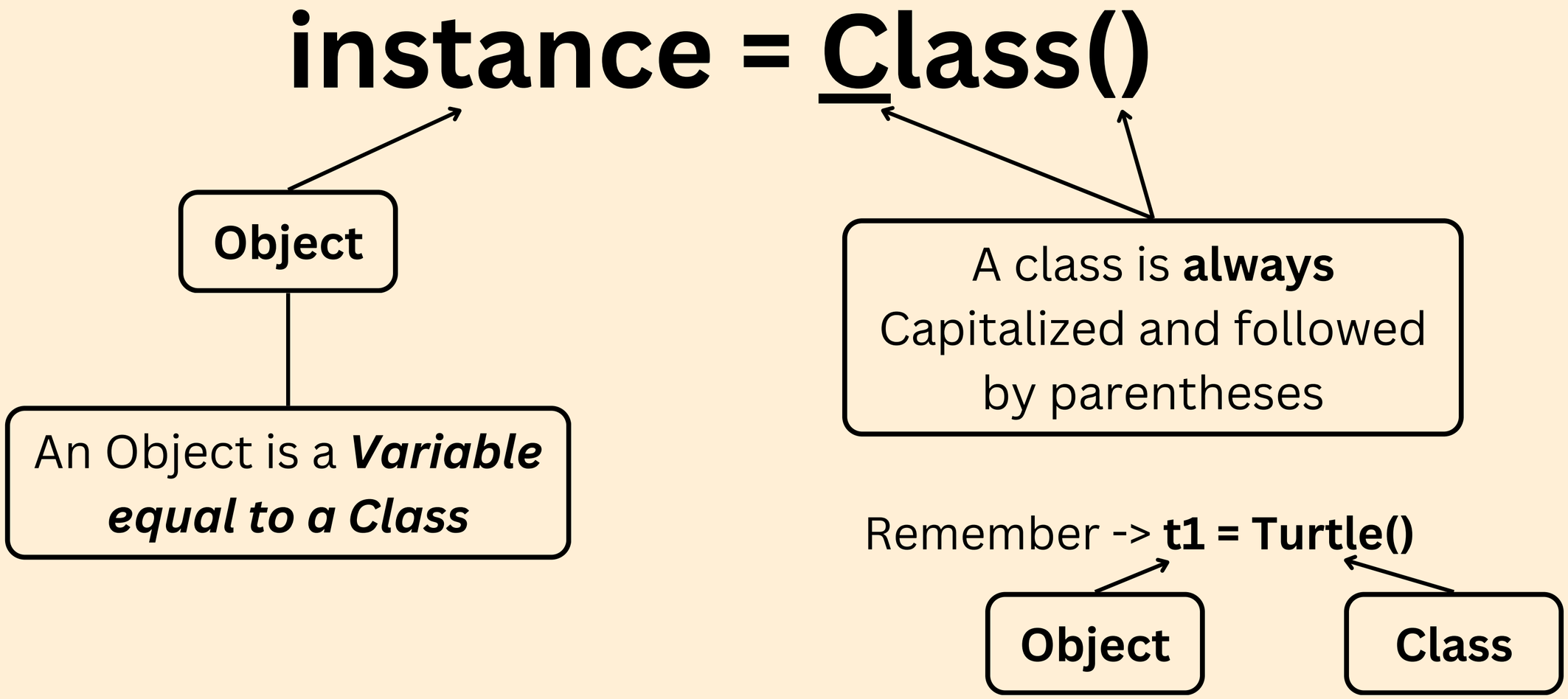
Class

Contains a general overview this type of object

Object

The final Object created from the Class using the description

An Object (instance) of a Class:



Examples of Objects:

They are **All Animals** sharing some of the same properties. **They all have additional properties and actions of their own**

Animals

-Owl

-Can Fly

-Feathers

-Raccoon

-Four Legs

-Tail

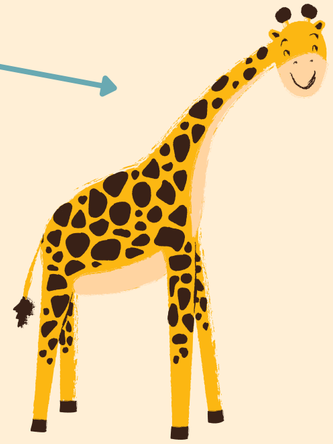
-North America

-Lion

-Four Legs

-Tail

-Africa



-Giraffe

-Four Legs

-Tail

-Africa

Examples of Objects:

They are **all Phones** sharing some of the same properties. **They all have additional properties and actions of their own**

Telephone

-Phone
-Black

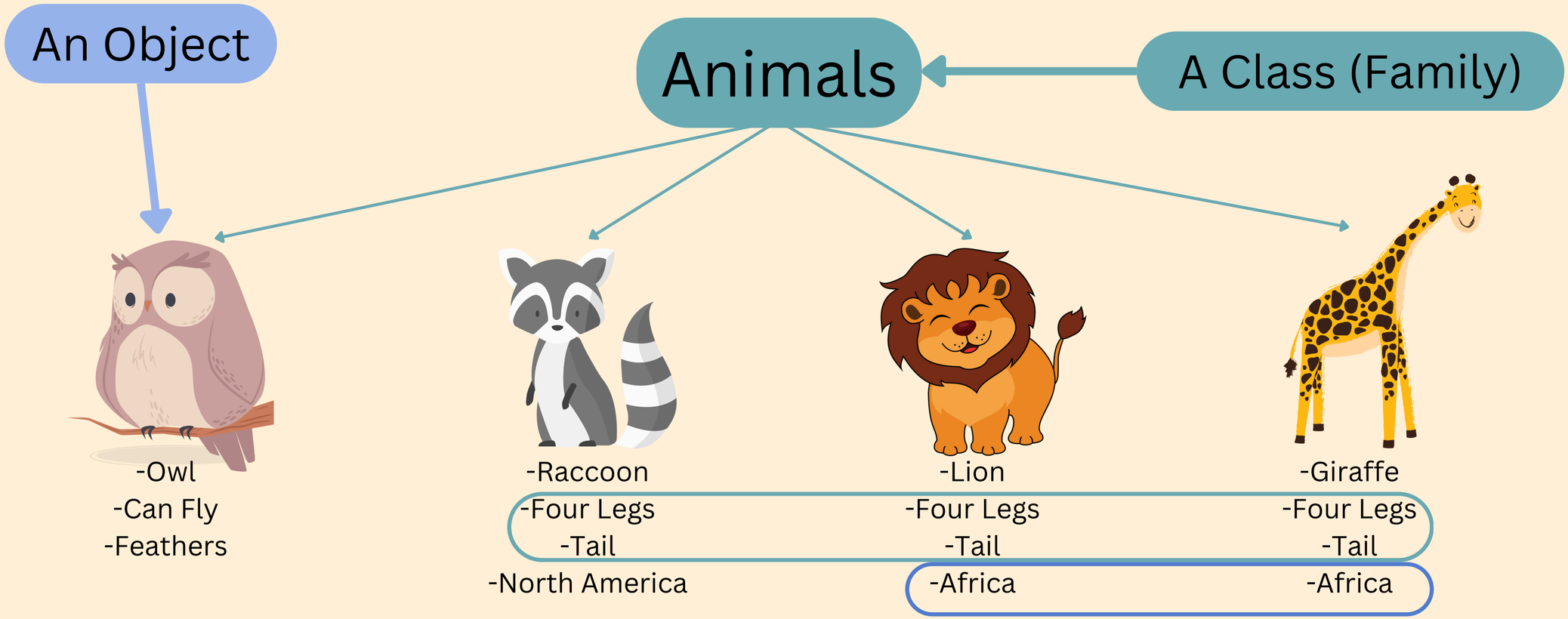
-Phone
-Black
-Wireless

-Phone
-Black
-Mobile
-Texting

-Phone
-Black
-Mobile
-Smartphone

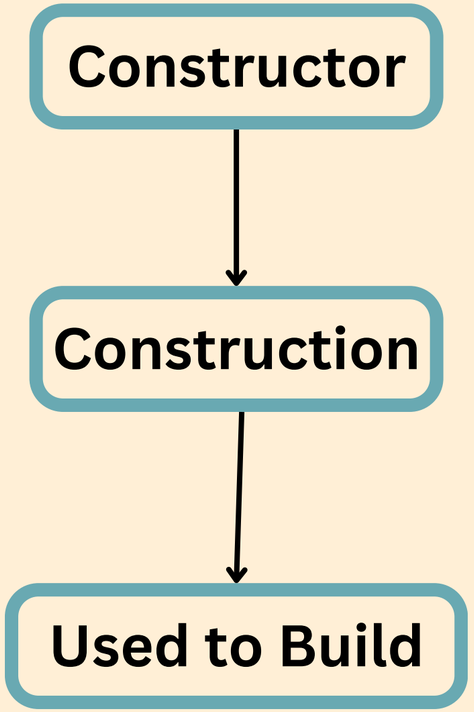
Creating a Class:

Before creating any Objects, we must first **build our class**.
A Class is where we will create any **Properties (variables)**
and **Methods (functions)** our objects will need



The Constructor Function:

It's a **method** (function) that is **automatically ran** when an object is created. It **creates an instance** of a specific class



The Constructor Function:

It's a **method** (function) that is **automatically ran** when an object is created. It **creates an instance** of a specific class

__init__()

This is the name **we must** use for our constructor function

__init__ -> Initialize -> Start

Constructor

↓

Construction

↓

Used to Build

Creating our Classes:

```
class My_class():

        def __init__(self, parameter1, parameter2):

                self.property1 = parameter1

                self.property2 = parameter2

        def drive(self):

                x = self.property1 + self.property2

                print("The speed is:" , x)
```

Creating a basic class named, My_class.

Here we **create our Constructor method** (**__init__**). This is where we define the Properties our class will need

Here is a **Method named, drive**. This method uses the values from our two properties and gets the sum.

```
car = My_class(50 , 60)

car.drive()
```

Here we **create an object** named, car. The value of an object is a Class()

Your **Arguments** must match your **parameters**

self -> Is basically **a "key"**. It **unlocks the class** so we can use the properties and methods throughout

Calling/Using the drive method we built in the class

Creating our Classes:

```
class My_class():

    def __init__(self, parameter1, parameter2):

        self.property1 = parameter1

        self.property2 = parameter2

    def drive(self):

        x = self.property1 + self.property2

        print("The speed is:" , x)
```

Creating a basic class named, My_class.

Here we **create our Constructor method** (__init__). This is where we define the Properties our class will need

Here is a **Method named, drive**. This method uses the values from our two properties and gets the sum.

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car = My_class(50 , 60)

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Here we **create an object** named, car. The value of an object is a Class()

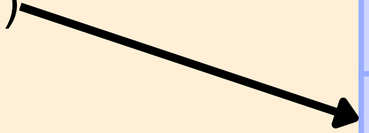
Your **Arguments** must match your **parameters**

Calling/Using the drive method we built in the class

Creating our Classes:

```
class My_class():
        def __init__(self, parameter1, parameter2):
                self.property1 = parameter1
                self.property2 = parameter2
        def drive(self):
                x = self.property1 + self.property2
                print("The speed is:" , str(x), "km/h")


car = My_class(50 , 60)
car.drive()
```



Output in Terminal
The speed is: 110 km/h

Looking at another Class:

```
class App():
        def __init__(self, users, storage, username):
                self.users = users
                self.storage = storage
                self.username = username
        def login(self):
                if self.username == "owner" and self.users >= 1:
                    print("Welcome,", self.username)
                    print("Your storage is:", self.storage)
         def increase_capacity(self, number):
                self.storage += number
                return self.storage
```

```
product_one = App(35, 256, "owner")
product_one.login()
product_one.increase_capacity(50)

product_two = App(35, 128, "josh")
product_two.login()
```

What do we think will have with product_one and product_two above?

What is the name of my class and object(s)

Looking at another Class:

Class

```
class App():
    def __init__(self, users, storage, username):
        self.users = users
        self.storage = storage
        self.username = username
    def login(self):
        if self.username == "owner" and self.users >= 1:
            print("Welcome,", self.username)
            print("Your storage is:", self.storage)
    def increase_capacity(self, number):
        self.storage += number
        return self.storage
```

Objects

```
product_one = App(35, 256, "owner")
product_one.login()
product_one.increase_capacity(50)

product_two = App(35, 128, "josh")
product_two.login()
```

What do we think will have with product_one and product_two above?

What are the value of my properties?

Looking at another Class:

```
class App():
    def __init__(self, users, storage, username):
        self.users = users
        self.storage = storage
        self.username = username
    def login(self):
        if self.username == "owner" and self.users >= 1:
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What do we think will have with product_one and product_two above?

Where are the Arguments that'll be given to my Class?

Looking at another Class:

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    def __init__(self, users, storage, username):
        self.users = users
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        self.username = username
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        if self.username == "owner" and self.users >= 1:
            print("Welcome,", self.username)
            print("Your storage is:", self.storage)
    def increase_capacity(self, number):
        self.storage += number
        return self.storage
```

These are our arguments (users, storage and username)

```
product_one = App(35, 256, "owner")
product_one.login()
product_one.increase_capacity(50)

product_two = App(35, 128, "josh")
product_two.login()
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What do we think will have with product_one and product_two above?

Where are the Arguments that'll be given to my Class?

ClassBreakdown:

```
class App():
        def __init__(self, users, storage, username):
                self.users = users
                self.storage = storage
                self.username = username
        def login(self):
                if self.username == "owner" and self.users >= 1:
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                return self.storage
product_one = App(35, 256, "owner")
product_one.login()
product_one.increase_capacity(50)

product_two = App(35, 128, "josh")
product_two.login()
```

Creating a Class called App

A condition within the login function which **checks the properties against a set value**

A **method which increases the current value** of self.storage

Creating an object called product_one and calling both methods

Class Breakdown:

```
class App():
        def __init__(self, users, storage, username):
                self.users = users
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product_one = App(35, 256, "owner")
product_one.login()
product_one.increase_capacity(50)

product_two = App(35, 128, "josh")
product_two.login()
```

Creating a Class called App

Setting up the constructor method with the properties we'll use

A condition within the login function which **checks the properties against a set value**

A **method which increases the current value** of self.storage

Creating an object called product_one and calling both methods

Creating an object called product_two and calling the login method

Class Breakdown:

```
class App():
        def __init__(self, users, storage, username):
                self.users = users
                self.storage = storage
                self.username = username
        def login(self):
                if self.username == "owner" and self.users >= 1:
                    print("Welcome,", self.username)
                    print("Your storage is:", self.storage)
                else:
                    print("Login is denied!")
         def increase_capacity(self, number):
                self.storage += number
                print("Updated storage:", self.storage)

product_one = App(35, 256, "owner")
product_one.login()
product_one.increase_capacity(50)

product_two = App(35, 128, "josh")
product_two.login()
```

product_one Terminal Output

Welcome, owner
Your storage is: 256
Updated storage: 306

product_two Terminal Output

Login is denied!

Flashback pre-object:

A class is a big group of methods that all **contain various elements** of python, such as, **Conditions, Loops, Lists, Dictionaries**, Etc...

Conditional Statements	While Loops	For Loops
if something is true, do this. Other wise do something else.	**While something is true**, keep repeating otherwise stop	**for every item inside something** do something with the current iteration item

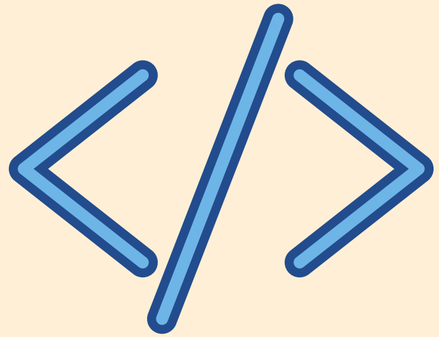
`if name != "done" or name != "quit":`
`  print("Hello,", name)`
`elif name == "josh":`
`  print("It's me Josh")`
`else:`
`  print("Goodbye")`
	`count = int(input("Enter count: "))`
	
	`while count != 0:`
	`  if count >= 10:`
	`  count -= 2`
	`  else:`
	`  count -= 1`
	`  print("Current count:", count)`
	`  count = int(input("Enter count: "))`
		`ages = [33, 25, 62, 15, 19, 33]`
		
		`for age in ages:`
		`  if age <= 17:`
		`  ages.remove(age)`
		`  print("Removed, under 18")`
		`  else:`
		`  print("Person Age:", age)`
		`ages.sort()`
		`print("Ages list:", ages)`

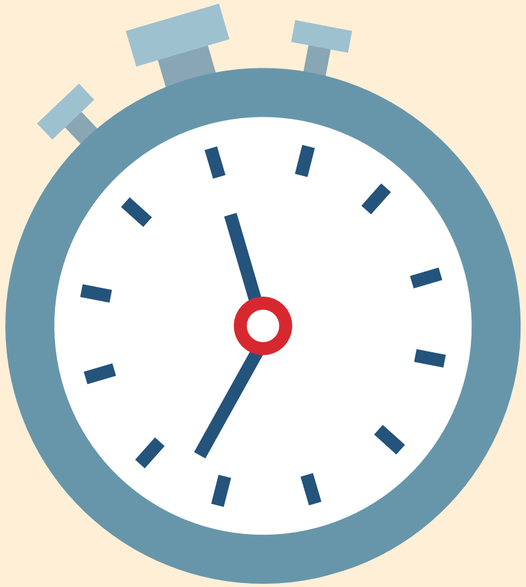
Challenge #1 in VS code:

DO NOT GO BACK!

Try to recreate the code from previous slide!

Use it as an example to build your own





One Base Class - (App)

Three methods(init, login, increase_capacity)

login -> check if username == "owner"

increase_capacity -> add a number to current storage

Create two objects, **both objects call both methods**