Topic 54 - Classes: Starting to Build the Structure

**What**

* Classes in Python act as templates, providing a structure for creating objects (like individual patient records) with defined attributes and behaviors.
* In this example, a Patient class is created to store patient information, starting with the last name attribute.

**Why**

* **Consistency**: Classes provide a standard format for each object, ensuring that all instances have the same attributes and methods.
* **Reusability**: Once a class is defined, it can be reused to create multiple instances, simplifying code reuse and consistency across objects.
* **Scalability**: By defining data structures in a class, it becomes easier to add new attributes or methods as needed, improving program flexibility.

**How**

1. **Creating a Basic Class Structure**  
   Here’s how to create a basic Patient class to store information, like a patient's last name.

python

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class Patient:

# Initialization method to define initial attributes

def \_\_init\_\_(self, last\_name):

self.last\_name = last\_name # Assigns the last\_name attribute to each instance

* + **Class Definition**: The class starts with the class keyword, followed by the class name (Patient) and a colon.
  + **Constructor (\_\_init\_\_)**: The \_\_init\_\_ method initializes the last\_name attribute for each instance of Patient.
  + **Attribute Assignment**: Inside \_\_init\_\_, self.last\_name stores the value provided when creating a new instance of Patient.

1. **Creating an Instance of the Class**  
   After defining the class, you can create an instance (object) of Patient with a specific last name.

python

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# Creating an instance of Patient

patient1 = Patient("Doe")

print(patient1.last\_name) # Output: Doe

* + **Instantiation**: patient1 is an instance of Patient with last\_name set to "Doe".
  + **Accessing Attributes**: patient1.last\_name retrieves the last name assigned to this instance.

**Things to Remember**

* **Naming Convention**: By convention, class names like Patient are capitalized to distinguish them from other identifiers.
* **\_\_init\_\_ Method**: This special method is used for initializing objects with specific attributes when they are created.
* **Using self**: self allows each instance to access its own attributes and methods, ensuring data consistency within each object.