Topic 56 - Classes: Creating an Instance

**What**

* An **instance** is a unique object created from a class template, much like a filled-out form that contains specific data for one patient.
* In this example, we create instances of the Patient class, each representing a unique patient with a specific last\_name.

**Why**

* **Unique Identification**: Each instance, like pid4343, represents a unique patient and holds specific data, allowing for clear organization and retrieval of individual records.
* **Efficiency with Complex Data**: Using instances of a class is efficient, especially when working with multiple attributes, as it avoids the redundancy of manually creating new data structures (like dictionaries) for each new patient.
* **Consistency and Structure**: Creating instances from a class ensures all records share the same structure, simplifying data management and ensuring consistency.

**How**

1. **Creating Instances of a Class**  
   Each instance of the Patient class represents a unique patient with a last\_name attribute.

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# Creating instances of the Patient class

pid4343 = Patient("Taleb")

pid4344 = Patient("Anand")

pid4345 = Patient("Oppenheimer")

pid4346 = Patient("Lin")

pid12902 = Patient("Nilsson")

* + **Instance Naming**: Each instance (e.g., pid4343) acts as a unique identifier for a patient.
  + **Instantiation Process**: Each instance is created by calling the class name Patient with the specific last\_name value in parentheses (e.g., Patient("Taleb")).
  + **Data Assignment**: Each instance stores a unique last\_name based on the provided input.

1. **Alternative with Dictionaries**  
   Creating patient data using dictionaries is an alternative, but it lacks the efficiency and structure of class instances, especially for more complex records.

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# Creating individual patient data using dictionaries (less efficient)

pid4343 = {"last name": "Taleb"}

pid4344 = {"last name": "Anand"}

pid4345 = {"last name": "Oppenheimer"}

pid4346 = {"last name": "Lin"}

pid12902 = {"last name": "Nilsson"}

* + **Manual Structure**: Each dictionary is created individually, requiring more setup and leading to inconsistency with complex data.

**Things to Remember**

* **Instance Creation**: Creating an instance of a class is called instantiation. Each instance is a separate object with its own data.
* **Class vs. Dictionary**: Using a class to create instances is more efficient and scalable than using separate dictionaries for each record.
* **Consistency**: Instances of a class share the same structure, making them easy to work with, particularly when more attributes are added.