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**LAB 2 - TASK:**

**Task # 1: Class Concepts:**

1. **Class vs. Object:**

**a. Difference Between a Class and an Object:**

* A **class** is a blueprint or template for creating objects. It defines properties (attributes) and actions (methods) that objects created from the class will have.
* An **object** is an instance of a class. When you create an object, you are using the class blueprint to create something that has the defined properties and actions.

In simpler terms, think of a **class** as a recipe and an **object** as the actual dish you make from that recipe.

**b. Example:**

**Defining a class**

class Dog:

def \_\_init\_\_(self, name, breed):

self.name = name

self.breed = breed

def bark(self):

print(f"{self.name} is barking!")

**Creating an object (instance) of the class Dog**

my\_dog = Dog("Buddy", "Golden Retriever")

**Accessing the object’s methods**

my\_dog.bark()

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**Dog** is the class (blueprint), and **my\_dog** is an object (instance) created from that class.

### **2. Constructor Method (init) vs. str() Function**

#### a. ****Difference Between**** \_\_init\_\_ ****and**** \_\_str\_\_:

 **\_\_init\_\_()** is a **constructor method**. It gets called automatically when you create an object from a class. It is used to initialize (set up) the object’s attributes.

####  \_\_str\_\_() is a special method that is used to provide a string representation of the object. When you use print() on an object, \_\_str\_\_() defines what gets displayed.

#### b. Example:

#### Defining a class

#### class Dog:

#### def \_\_init\_\_(self, name, breed):

#### Constructor method to initialize attributes

#### self.name = name

#### self.breed = breed

#### def \_\_str\_\_(self):

#### Provides a readable string representation of the object

#### return f"{self.name} is a {self.breed}"

#### Creating an object

#### my\_dog = Dog("Buddy", "Golden Retriever")

#### Printing the object calls \_\_str\_\_()

#### print(my\_dog)

#### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 The **\_\_init\_\_()** method initializes the name and breed attributes when you create a **Dog** object.

####  The \_\_str\_\_() method gives a nice, readable description when you print the object. Without \_\_str\_\_(), printing the object would just show a less readable memory address.