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**Topic 44 - Functions: Assigning Default Values to Parameters**

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**What**

In Python, you can assign a **default value** to a parameter in a function, making that parameter optional in the function call. If no argument is provided, Python uses the default value.

**Why**

Default values make functions more versatile by allowing you to define **optional parameters**. This is especially useful when you often pass the same value for a parameter but still want the flexibility to override it if necessary.

**How**

1. **Defining a Default Value**:
   * Use the **assignment operator** = in the parameter list to set a default value.
   * The parameter with the default value must be a **keyword parameter** (not a positional parameter).
   * Parameters with default values should come **after all non-default parameters** in the function definition.

python

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def calc\_tax(sales\_total, tax\_rate=0.04):

print(sales\_total \* tax\_rate)

# Calling without tax\_rate uses the default value 0.04

calc\_tax(sales\_total=101.37) # Output: 4.0548

1. **Overriding the Default Value**:
   * If you need a different tax rate, just provide a value for tax\_rate in the function call.

python

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calc\_tax(sales\_total=101.37, tax\_rate=0.075) # Output: 7.60275

1. **Using an Empty Default Value for Optional Parameters**:
   * Sometimes, a parameter is optional and might be left blank. You can set it to an **empty string** or None as a default.

python

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def print\_order(product\_name, color, size, engraving\_text=""):

print(f"Product: {product\_name}, Color: {color}, Size: {size}")

if engraving\_text:

print(f"Engraving: {engraving\_text}")

else:

print("No engraving.")

# Example calls

print\_order("Mug", "Blue", "Large", "Happy Birthday")

# Output: Engraving: Happy Birthday

print\_order("Mug", "Blue", "Large")

# Output: No engraving.

**Things to Remember**

* Default values make parameters optional.
* Always place parameters with default values **after** parameters without defaults.
* Use default values like "" or None for optional text or arguments that may be left blank.

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