🐍 Python for Beginners: A Fun & Easy Guide! 🎉

🔢 **1. Data Types:** The Different Kinds of Information in Python.
Think of data types like different kinds of snacks! 🍕🍎🍫

- 🍎 Integer (int): Whole numbers (positive & negative)
  Example: 5, -10, 100
  Why it's useful? Helps when counting things like score points in a game.

- 🍫 Float (float): Numbers with decimals
  Example: 3.14, -2.5, 99.99
  Why it's useful? Helps with measurements like height, temperature, or money!

- 📜 String (str): Words or sentences (always in quotes " ")
  Example: "Hello!", "Python is fun"
  Why it's useful? Great for storing names, messages, and text.

- ✅ Boolean (bool): True or False (Yes or No)
  Example: True, False
  Why it's useful? Computers make decisions based on True/False conditions.

🔍 Test it in Python!

```
print(type(10))  # Integer
print(type(3.14))  # Float
print(type("Hi!"))  # String
print(type(True))  # Boolean
```

- 📦 List: A collection of multiple items stored together (ordered and changeable)
  Example: fruits = ["apple", "banana", "cherry"]
  Why it's useful? Great for storing lists of items like a to-do list or shopping list.

- 📊 Dictionary: A collection of key-value pairs (unordered, changeable)
  Example: student = {"name": "Alex", "age": 10, "grade": "5th"}
  Why it's useful? Helps in storing related information together, like profiles in an app.

- 📚 Tuple: A list that cannot be changed (immutable list)
  Example: colors = ("red", "blue", "green")
  Why it's useful? Good for storing fixed values like days of the week.

- 📈 Set: A collection of unique items (unordered)
  Example: numbers = {1, 2, 3, 3, 4, 5}
  Why it's useful? Ensures that data has no duplicates, useful in checking unique entries.

- 🔢 Array: Similar to lists but optimized for numerical operations (requires numpy library)
  Example:
  import numpy as np
  arr = np.array([1, 2, 3, 4])
  Why it's useful? Faster calculations and efficient storage of large datasets.

➕➖ 2. Operators: Math & Comparison in Python

📌 Operators are like action words that help us do things with numbers or text!

🔢 Arithmetic Operators (Used for calculations 🧮)

Symbol	Action	Example (a = 10, b = 5)	Result
+	Add	a + b	15
-	Subtract	a - b	5
*	Multiply	a * b	50
**	Exponential (Power)	a ** b	
/	Divide	a / b	2.0
/	Floor division	a // b	2
%	Modulus (Remainder)	10 % 3	1

📌 Example Code:

```
a = 10
b = 5
print(a + b)  # Adds numbers
print(a * 2)  # Multiplies a by 2
```

🔍 Comparison Operators (Used for asking questions 🤔)

The result is always a Boolean type (True or False)

Symbol	Meaning	Example (x = 8, y = 5)	Result
==	Equal to	x == y	False
!=	Not equal	x != y	True
>	Greater than	x > y	True
>=	Greater than or equal to	x >= y	True
<	Less than	x < y	False
<=	Less than or equal to	x <= y	False

📌 Example Code:
python
CopyEdit
x = 8
y = 5
print(x > y) # Is 8 greater than 5?

Logical Operators: Working with Boolean Logic

Operator	Meaning	Example	Result
AND	Both conditions must be True	True AND False	False
OR	At least one condition must be True	True OR False	True
NOT	Inverts the Boolean value	NOT True	False

Assignment Operators: Assigning Values to Variables

Operator	Example	Equivalent To
=	x = 5	Assigns 5 to x
+=	x += 3	x = x + 3
-=	x -= 3	x = x - 3
*=	x *= 3	x = x * 3
/=	x /= 3	x = x / 3
//=	x //= 3	x = x // 3
%=	x %= 3	x = x % 3
**=	x **= 3	x = x ** 3

🧐 Challenge: What will 10 == 10 print? 🤔