1️⃣ Data Types in Python

Python has several **built-in data types**. They define the type of value a variable holds.

Type	Example	Description
int	x = 10	Whole numbers (positive or negative)
float	y = 3.14	Numbers with decimals
str	name = "Saumya"	Sequence of characters
bool	flag = True	Logical values: True or False

🟦 **Note:** Use the type() function to check a variable's data type.

```python
x = 10
print(type(x))

# <class 'int'>
```

Practice Question:

Write a Python program that takes your age as input and prints:

- The value entered

- Its data type

2️⃣ Keywords in Python

Keywords are **reserved words** that have special meaning in Python and **cannot be used as variable names**.

Examples of common keywords:

and	as	assert	break	class
continue	def	del	elif	else
except	False	finally	for	from
global	if	import	in	is
lambda	None	nonlocal	not	or
pass	raise	return	True	try
while	with	yield		

🧠 **Tip:** Use help("keywords") in Python shell to list all current keywords.

Practice Question:
Try to create a variable named for in Python. What error do you get and why?

3 Print Sum Program

Example program to **input two numbers** and print their sum:

```python
# Program to find sum of two numbers
a = int(input("Enter first number: "))
b = int(input("Enter second number: "))
sum = a + b
print("The sum is:", sum)
```

🧩 **Explanation:**

- input() takes user input as a string

- int() converts it to an integer

- print() displays the result

Practice Question:
Modify this program to find the **average** of two numbers instead of the sum.

4 Type Conversions

Type conversion means **changing one data type to another.**

a. Implicit Conversion (Automatic)

Python automatically converts smaller data types to larger ones to prevent data loss.

```python
x = 5      # int
y = 2.5    # float
z = x + y  # Python converts int → float
print(z)   # 7.5
```

b. Explicit Conversion (Manual)

Manually convert data types using built-in functions:

```python
x = "10"
y = int(x)      # str → int
print(y + 5)     # Output: 15
```

🧠 **Common Functions:** int(), float(), str(), bool()

Practice Question:

Take a number as input, convert it to a float, and print both the **original** and **converted** values with their data types.

5 Operators in Python

Operators perform operations on variables and values.

Type	Example	Description
Arithmetic	+ - * / % **	Math operations (** for power)
Comparison	== != > < >= <=	Compare values, returns True or False
Logical	and or not	Combine conditions

Assignment	= += -= *= /=	Assign or modify values

🎛️ **Example:**

```
x = 5
y = 3
print(x + y)   # 8
print(x > y)   # True
print(x > 0 and y < 20)  # True (both conditions are True)
```

Practice Question:
 Write a program that takes two numbers and prints:

- Their sum, difference, and product

- Whether the first number is greater than the second

✅ **Summary**

- **Data types** define what kind of value a variable can hold.

- **Keywords** are reserved words with predefined meanings.

- **Print sum program** helps understand input, conversion, and output.

- **Type conversion** can be implicit (auto) or explicit (manual).

- **Operators** perform actions like math, comparison, logic, etc.

Python Chapter 2 Assignment

📘 Section A: Theory Questions

(Answer in short)

1. What are **data types** in Python? List any 4 with examples.

2. What is the difference between **implicit** and **explicit type conversion**? Give one example of each.

3. What are **operators** in Python? Explain any three types with examples.

💻 Section B: Coding Questions

1️⃣ Smart Temperature Converter

Take input in Celsius and print its equivalent in Fahrenheit and Kelvin.
(Use explicit type conversion and arithmetic operators.)
 Formula:

*   Fahrenheit = (C × 9/5) + 32

*   Kelvin = C + 273.15

Example:

```
Enter temperature in Celsius: 25
Output:
Fahrenheit: 77.0
Kelvin: 298.15
```

2️⃣ Bill Split Calculator

Write a program that takes **total bill amount** and **number of friends** as input.
Calculate **how much each person will pay**.
Also print the **data type** of each variable used.

(Hint: use float() and division operator)

```
Total bill: 1000
Friends: 4
Each will pay: 250.0
```

🧠 Section C: Application / Output-Based

1. Predict the output:

```python
x = 5
y = 2.0
print(x // y)
print(x ** y)
```

2.

Identify and correct the error:

```python
if = 10
print(if)
```