1. Source Code (`.py file`)

```
#addiiton
print("addition two number")
num1=int(input("enter first number:"))
num2=int(input("enter second number:"))
sum=num1+num2
print("sum of two number is:",sum)
```

FRONT END

A. Tokenizer:

- **What it does:** Breaks your line of code into "words" (tokens)
- **For this code:** It sees `sum`, `=`, `num1`, `+`, `num2`.

B. Parser:

- **What it does:** Checks if the words are correct and builds a tree (AST/CFG).
- **For this code:** It confirms that `num1 + num2` is a valid math operation and that the result is being saved into `sum`.

C. Compiler:

- **What it does:** Converts that tree into **Byte Code** .This is a special low-level language that only Python understands

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Backend

- **A. Optimisation –** byte code will be further optimised for virtual machine.
- **B. Virtual Machine (PVM):**
  - **What it does:** It reads the Byte Code one step at a time.
  - **For thiscode:** It sees `BINARY_ADD` and calculates the result (e.g., `10 + 20 = 30`).

- **C. Running on OS:**

What it does: The Virtual Machine talks to your computer hardware (Windows/Mac/Linux) to do the physical work (showing text on screen, using memory).
For this code: When it reaches `print(sum)`, it tells OS to display `30` on your screen.

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