

🎯 Topic: Python Scope & Variable Lifetime (LEGB Rule)

☑ First: What is "Scope"?

A **scope** defines **where a variable can be accessed** in your code.

📦 Think of it like **rooms inside a big mall (Amazon App)**:

- Some items are only available inside a shop (function)
 - Some items are available on the whole floor (module/global)
-

⌚ LEGB Rule = The 4 Levels of Scope in Python

When Python sees a variable, it searches in this order:

L → E → G → B

☑ 1. L = Local (Inside a function)

- ◆ Variables defined inside a function.

💻 **Real-Life Analogy (Zomato):**

You order food inside a restaurant.

The waiter knows your **table number** (local to the restaurant only).

💻 **Example:**

```
def order():
    food = "Burger"    # Local variable
    print("You ordered:", food)

order()
```

```
# print(food) ✗ Error! food is local
```

- ✓ You **can't access** `food` outside the `order()` function.
-

☒ 2. E = Enclosing (Nested Functions)

- ◆ Variable defined in an outer function but used in an inner function.

🛒 Real-Life Analogy (Flipkart):

You're in a specific **department inside a mall**.

The inner section can access department rules (enclosing), but not the whole mall.

💡 Example:

```
def cart():
    discount = 10    # Enclosing

    def checkout():
        print("Applying discount:", discount)

    checkout()

cart()
```

- ✓ `checkout()` has access to `discount`, even though it's not defined inside it.
-

☒ 3. G = Global (Top-level in the file)

- ◆ Variable defined at the top of your Python file — available to all functions.

📦 Real-Life Analogy (Amazon):

You log in once — your **user_id** is available to **all pages** in the app.

💻 Example:

```
user_id = "Gowtham123" # Global

def homepage():
    print("Welcome,", user_id)

def profile():
    print("Profile for:", user_id)

homepage()
profile()
```

- ✓ **user_id** is available everywhere in the file.
-

☒ 4. B = Built-in (Default Python keywords & functions)

- ◆ These are variables/functions **already defined by Python**.

📦 Real-Life Analogy (Swiggy):

The app already has built-in **features** like maps, payment gateway, etc. — you didn't code it, but you can use it.

💻 Example:

```
print(len("Zomato")) # len is a built-in function
```

-
- ✓ You didn't define **len**, but Python knows it.
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Python Searches Variables in This Order:

L → E → G → B

Local → Enclosing → Global → Built-in

If it doesn't find the variable in L, it looks in E, then G, then B.

If it still doesn't find it — ✗ NameError



Real-Time Mini Use Case: Zomato Order Flow

```
delivery_partner = "Swiggy Genie" # Global

def restaurant():
    item = "Pizza" # Enclosing

    def order_now():
        quantity = 2 # Local
        print(f"Ordering {quantity} {item} using
{delivery_partner}")

    order_now()

restaurant()
```



Ordering 2 Pizza using Swiggy Genie



All three scopes used:

- `quantity` → Local
 - `item` → Enclosing
 - `delivery_partner` → Global
-

🔥 Summary Table

Scope	Level	Example Name	Access
Local	Inside function	<code>quantity</code>	Only inside that function
Enclosing	Outer function	<code>item</code>	Inner functions can access
Global	Top of file	<code>user_id, partner</code>	All functions in file can access
Built-in	Python default	<code>len(), print()</code>	Always available

Want me to turn this into:

- 🎬 Video script with storytelling?
- 📺 Slide format with real-time visuals?
- 🏃 A small **LEGB-based coding challenge**?

⌚ What are built-in variables in Python?

✓ Built-in Variables in Python (B in LEGB)

These are **predefined variables** and constants that **exist in Python's global namespace** without you creating them.

They are always available — you don't need to import or define them.

⌚ Some examples of built-in variables:

Name	Purpose
<code>__name__</code>	Tells if the script is run directly or imported
<code>__file__</code>	Path of the current Python file
<code>__doc__</code>	Returns the docstring of a module/function
<code>__builtin__</code>	Contains all built-in functions/objects
<code>S__</code>	
<code>True</code> , <code>False</code>	Boolean constants (yes, these are vars!)
<code>None</code>	Special built-in value (no value)
<code>Ellipsis</code>	... object (used in slicing or as placeholder)

✓ Example 1: Using `__name__` (most common)

```
print(__name__) # Output: "__main__" when run directly
```

✓ Example 2: Checking all built-in names

```
print(dir(__builtins__))
```

🧠 This shows a list of all built-in:

- functions like `print()`, `len()`
- variables like `True`, `False`, `None`

🧠 Recap for LEGB (Built-in Scope):

Type	Is It Built-in?	Example
Function	<input checked="" type="checkbox"/> Yes	<code>len()</code> , <code>print()</code>
Constant Variable	<input checked="" type="checkbox"/> Yes	<code>True</code> , <code>False</code> , <code>None</code>
Special Variable	<input checked="" type="checkbox"/> Yes	<code>__name__</code> , <code>__doc__</code>

Gowtham SB

www.linkedin.com/in/sbgowtham/

Instagram - @dataengineeringtamil

About the Author

Gowtham SB is a **Data Engineering expert, educator, and content creator** with a passion for **big data technologies, as well as cloud and Gen AI**. With years of experience in the field, he has worked extensively with **cloud platforms, distributed systems, and data pipelines**, helping professionals and aspiring engineers master the art of data engineering.

Beyond his technical expertise, Gowtham is a **renowned mentor and speaker**, sharing his insights through engaging content on **YouTube and LinkedIn**. He has built one of the **largest Tamil Data Engineering communities**, guiding thousands of learners to excel in their careers.

Through his deep industry knowledge and hands-on approach, Gowtham continues to **bridge the gap between learning and real-world implementation**, empowering individuals to build **scalable, high-performance data solutions**.

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🤝 **Connect for 1:1** - <https://topmate.io/dataengineering/>

✉️ **LinkedIn** - <https://www.linkedin.com/in/sbgowtham/>

🌐 **Website** - <https://codewithgowtham.blogspot.com>

Gowtham SB

www.linkedin.com/in/sbgowtham/

Instagram - @dataengineeringtamil

 **GitHub** - <http://github.com/Gowthamdataengineer>

 **Whats App** - <https://lnkd.in/g5JrHw8q>

 **Email** - atozknowledge.com@gmail.com

 **All My Socials** - <https://lnkd.in/gf8k3aCH>