Day 27

How import works in Python:

What Is import in Python?

import is used to load code from another module (file) so you can use its functions, variables, or classes.

Example: importing a module.

```
1   import math
2   print(math.sqrt(16))

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL

PS E:\Python\Day21-30\Day27> python main.py
4.0
```

Example: importing specific items

```
4   from math import sqrt, pi
5   print(sqrt(25))
6   print(pi)

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL

PS E:\Python\Day21-30\Day27> python main.py
5.0
3.141592653589793
```

Example: Import Everything (Not Recommended)

```
8   from math import *
9
```

Example: importing with alias

```
10  import math as m
11  print(m.factorial(5))
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS E:\Python\Day21-30\Day27> python main.py
120
```

Example: using ‘dir’ to know the function inside the module.

```
13  import math
14  print(dir(math))
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS E:\Python\Day21-30\Day27> python main.py
['__doc__', '__loader__', '__name__', '__package__', '__spec__', 'acos', 'acosh', 'asin', 'asinh', 'atan', 'atan2', 'atanh', 'cbrt', 'ceil', 'comb', 'copysign', 'cos', 'cosh
', 'degrees', 'dist', 'e', 'erf', 'erfc', 'exp', 'exp2', 'expm1', 'fabs', 'factorial', 'floor', 'fma', 'fmod', 'frexp', 'fsum', 'gamma', 'gcd', 'hypot', 'inf', 'isclose', 'i
sfinite', 'isinf', 'isnan', 'isqrt', 'lcm', 'ldexp', 'lgamma', 'log', 'log10', 'log1p', 'log2', 'modf', 'nan', 'nextafter', 'perm', 'pi', 'pow', 'prod', 'radians', 'remainde
r', 'sin', 'sinh', 'sqrt', 'sumprod', 'tan', 'tanh', 'tau', 'trunc', 'ulp']
PS E:\Python\Day21-30\Day27>
```

Example: importing your own file(modules)

A.py:

```
A.py > ...
1   def greet():
2       print("Hello")
3
```

B.py:

```
B.py
1   import A
2   A.greet()
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS E:\Python\Day21-30\Day27> python B.py
Hello
```

How Python Finds a Module (Import Search Path)

Python searches in this order:

1. Current directory
2. Built-in modules
3. Installed packages
4. Paths in sys.path

if __name__ == "__main__" in Python:

What Is __name__?

- __name__ is a special built-in variable in Python
- It tells how the Python file is being executed

Key Values of __name__:

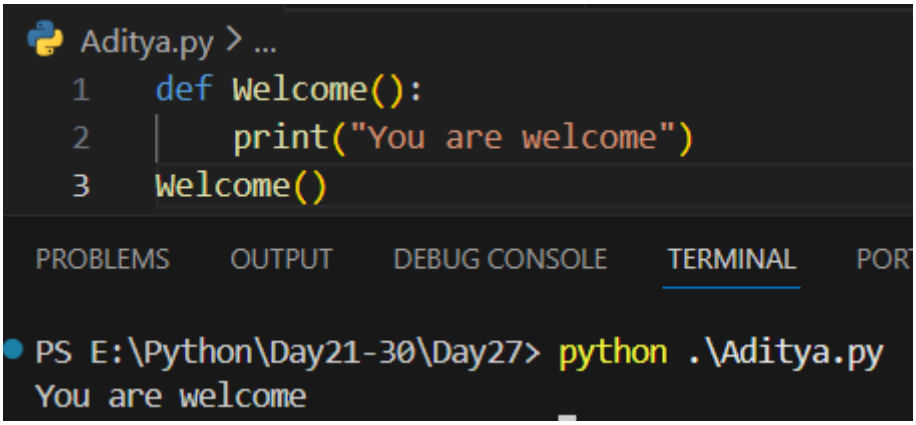
How file is run	__name__ value
Directly executed	"__main__"
Imported as a module	Module name (e.g., "utils")

Why Use if __name__ == "__main__"?

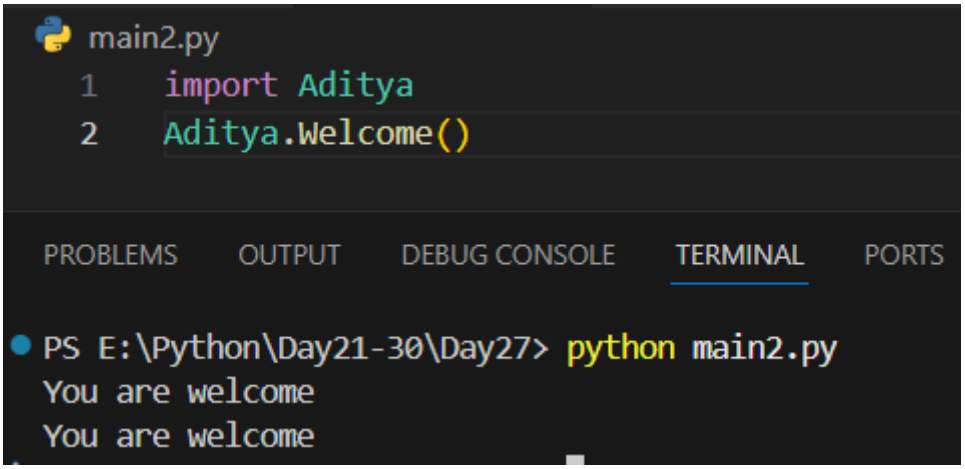
- To control code execution
- Code inside this block runs only when file is executed directly
- Prevents code from running when file is imported

Let's us first understand the issue without it:

Aditya.py:

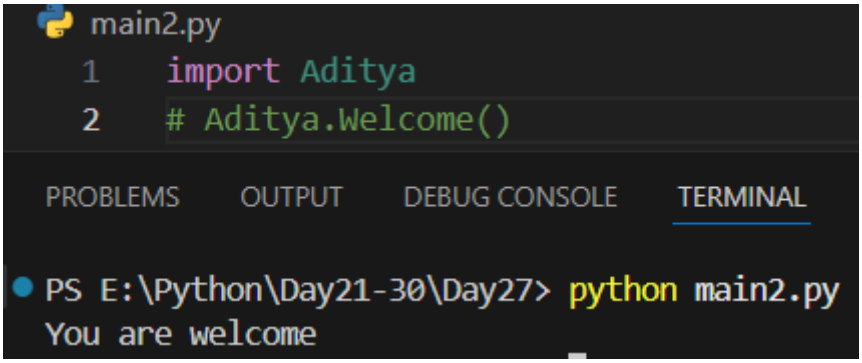


Main2.py:



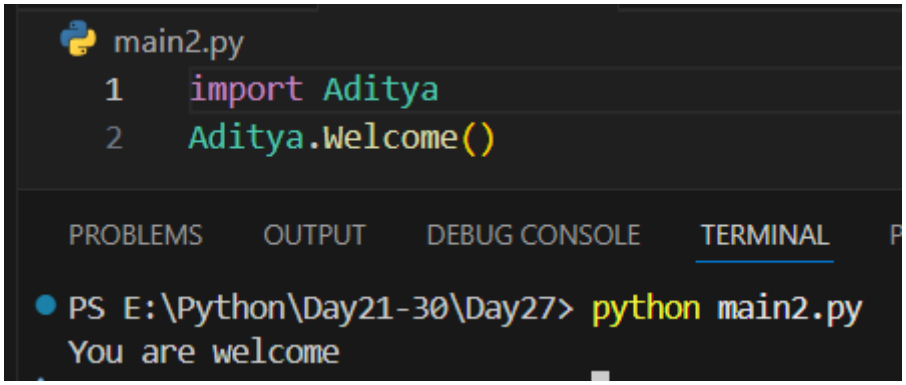
Clearly, when main2.py was run, it printed the output twice, once because of “Aditya.welcome()” and one because “welcome()” was called in Aditya.py.

What if we commend out “Aditya.welcome()”? Only once it will print.



But, is this the solution? No, it means that every function inside the Aditya.py will get executed if main2.py was run.

Solution:



Real-World Use Case

- Python scripts often contain functions, classes, and test code
- Use if __name__ == "__main__" to run test/demo code only when needed

--The End--