**🐍 DAY 13 – HOME ASSIGNMENTS: PYTHON MODULES**

(*Importing, creating, using, exploring built-in and custom modules.*)

**🔹 Part A: Importing Standard Modules**

1. Import the math module and:
   * Print the square root of 256.
   * Print the value of math.pi.
2. Import the random module:
   * Print a random integer between 1–100.
3. Import the datetime module:
   * Print the current date and time.

**🔹 Part B: Alias and Specific Import**

1. Import the math module as m:
   * Use it to compute the log10 of 1000.
2. From the random module:
   * Import only the choice function and use it to pick a random element from a list of names.

**🔹 Part C: Creating and Using a Custom Module**

1. Create a file math\_utils.py with these functions:
   * add(a, b) – returns the sum.
   * multiply(a, b) – returns the product.
   * is\_even(n) – returns True if even.
2. In a separate script (main.py), import math\_utils and test all its functions.
3. Modify math\_utils.py:
   * Add a greet() function that takes a name and returns a greeting.
   * Import and test it in main.py.

**🔹 \*\*Part D: Understanding \_\_name\_\_ == "\_\_main\_\_"**

1. Create a file count\_words.py:
   * Defines a function count\_words(sentence).
   * If run directly (if \_\_name\_\_ == "\_\_main\_\_":), ask the user for a sentence and print the word count.
   * Import this module in another script and use count\_words().

**🔹 Part E: Explore and Practice**

1. Import the os module:
   * List all files in the current directory.
   * Get the current working directory.
2. Import the sys module:
   * Print the version of Python (sys.version).
   * Print the command-line arguments (sys.argv).
3. Import the statistics module:
   * Calculate the mean and median of the list [1, 2, 3, 4, 5, 100].

**🔹 Part F: Real-World Practice**

1. Create a string\_utils.py:
   * count\_characters(s) → returns character count.
   * count\_words(s) → returns word count.
   * reverse\_string(s) → returns the reversed version.
   * Import and test these in main.py.
2. Create a shapes.py:
   * area\_of\_rectangle(length, breadth).
   * area\_of\_circle(radius).
   * area\_of\_square(side).
   * Import and test these in main.py.
3. Create a config.py module:
   * Store variables like HOST = "127.0.0.1", PORT = 8080.
   * Import in main.py and print the settings.
4. Create a text\_utils.py:
   * Functions:
     + count\_vowels(sentence)
     + count\_consonants(sentence)
   * Import and test both.
5. Practice creating a **package**:
   * Directory structure:

myproject/

\_\_init\_\_.py

math\_utils.py

text\_utils.py

* + Import both in main.py and test their functions.