What is a Module?

- A **module** is simply a **Python file (.py)** that contains functions, variables, or classes that we can use in another program.
- Think of it as a **toolbox**: instead of writing all tools again, you import the toolbox and use the tools directly.

Why use Modules?

- **Code Reusability** → Write once, use multiple times.
- **Better Organization** → Keep your code clean and structured.
- **Large Projects** → Split big code into smaller files.
- **Community Support** → Use already built modules like math, random, os, etc.

Types of Modules in Python

1. **Built-in Modules** → Already included in Python.
    - Example: math, os, datetime, random
    - import math
    - print(math.sqrt(16)) # Output: 4.0
2. **User-defined Modules** → Made by us.
    - # file: calculator.py
    - def add(a, b):

      return a + b
    - import calculator
    - print(calculator.add(10, 5))
3. **Third-party Modules** → Installed using pip.
    - Example: numpy, pandas, requests

- import requests
- response = requests.get("https://api.github.com")
- print(response.status_code)

Downloading A Module if not available:-

If a module is not built-in, you install it with pip (Python's package manager).

Command in terminal/command prompt :-

pip install module_name

Importing Modules

Different ways to import:

1. **Normal Import**

   import math

   print(math.pi)

2. **Import with Alias**

   import numpy as np

   print(np.array([1,2,3]))

3. **Import Specific Function**

   from math import sqrt

   print(sqrt(25))

4. **Import All Functions**

   from math import *

   print(sin(90))