Python provides several built-in modules that help with various functionalities such as mathematical operations, system interactions, date/time handling, and statistical computations. Below is an overview of the modules you mentioned:

**1. math Module**

The math module provides mathematical functions like trigonometry, logarithms, and power calculations.

**Common Functions:**

import math

print(math.pi) # 3.141592653589793

print(math.e) # 2.718281828459045

print(math.sqrt(16)) # 4.0

print(math.factorial(5)) # 120

print(math.sin(math.radians(30))) # 0.5

print(math.log(10)) # Natural log (ln)

print(math.log10(100)) # Base-10 log

**2. os Module**

The os module allows interaction with the operating system, such as handling files, directories, and environment variables.

**Common Functions:**

import os

print(os.name) # 'posix' for Linux/Mac, 'nt' for Windows

print(os.getcwd()) # Get the current working directory

os.mkdir("new\_folder") # Create a new directory

os.rmdir("new\_folder") # Remove a directory

print(os.listdir(".")) # List files in the current directory

**3. date and time Modules**

The date, time, and datetime modules handle date and time-related operations.

**time Module**

import time

print(time.time()) # Get current time in seconds since the epoch

print(time.ctime()) # Get a human-readable timestamp

time.sleep(2) # Pause execution for 2 seconds

**datetime Module**

from datetime import datetime, date, time

now = datetime.now()

print(now) # Current date and time

today = date.today()

print(today) # Current date

custom\_time = time(14, 30, 0) # Create a time object (14:30:00)

print(custom\_time)

formatted = now.strftime("%Y-%m-%d %H:%M:%S")

print(formatted) # 'YYYY-MM-DD HH:MM:SS'

**4. random Module**

The random module generates random numbers, selects random elements, and shuffles data.

**Common Functions:**

import random

print(random.randint(1, 10)) # Random integer between 1 and 10

print(random.random()) # Random float between 0 and 1

print(random.uniform(1, 5)) # Random float between 1 and 5

my\_list = [1, 2, 3, 4, 5]

print(random.choice(my\_list)) # Randomly pick an element

random.shuffle(my\_list) # Shuffle the list in place

print(my\_list)

**5. statistics Module**

The statistics module provides functions for calculating statistical properties of data.

**Common Functions:**

import statistics

data = [1, 2, 3, 4, 5, 6, 7, 8, 9]

print(statistics.mean(data)) # Average (mean)

print(statistics.median(data)) # Median

print(statistics.mode([1, 2, 2, 3])) # Mode (most frequent value)

print(statistics.stdev(data)) # Standard deviation

print(statistics.variance(data)) # Variance

**6. sys Module**

The sys module provides functions and variables that interact with the Python interpreter.

**Common Functions:**

import sys

print(sys.version) # Python version

print(sys.platform) # OS platform (e.g., 'win32', 'linux')

sys.exit() # Exit the program

print(sys.argv) # Command-line arguments