Hi! Everyone ! Welcome !

python script learning for system admin tasks and automation from Basics

Below is the Syllabus:-

Chapter 1: Python Basics

- **Topics**: Data types, variables, operators, conditionals (if, elif, else), and loops (for, while).
- **Project**: *System Health Checker* – A simple script to simulate CPU, memory, and disk health checks, printing a "healthy" or "alert" status based on threshold values.

Chapter 2: Functions and Modules

- **Topics**: Functions, scope, modules, and libraries (intro to `os`, `sys`, and `platform` for system operations).
- **Project**: *Automated Log Organizer* – A script to organize log files into folders by date, which could help simplify log analysis.

Chapter 3: File Handling

- **Topics**: Reading/writing files, handling CSV and JSON, file paths, exception handling.
- **Project**: *Log Analyzer* – A script to parse log files, extract specific information (e.g., error messages), and save it in a structured format like JSON or CSV.

Chapter 4: Working with APIs

- **Topics**: HTTP requests, handling API responses (JSON), API authentication.
- **Project**: *API Status Monitor* – A script to monitor the status of a list of APIs, logging responses and alerting if any return an error.

Chapter 5: Data Structures

- **Topics**: Lists, tuples, dictionaries, sets, list comprehension.
- **Project**: *Configuration Manager* – A tool that stores server configuration details (like IP, hostname, status) in structured data formats (e.g., lists and dictionaries), allowing easy updates and retrieval.

Chapter 6: Error Handling and Logging

- **Topics**: Exception handling (`try`, `except`, `finally`), logging with Python's `logging` module.
- **Project**: *Enhanced Health Checker* – Improve the health checker with logging and error handling for better traceability and fault tolerance.

Chapter 7: Regular Expressions

- **Topics**: Basic regex, extracting patterns, validating inputs (IP addresses, email).
- **Project**: *Log Scraper* – A script that scans log files for specific patterns, such as IP addresses or error codes, and stores matched entries.

Chapter 8: Automation with Python

- **Topics**: Scheduling tasks, using Python with cron jobs (Linux) or Task Scheduler (Windows), executing shell commands with `subprocess`.
- **Project**: *Automated Backup Script* – A script that automates backing up files from one directory to another, compresses them, and optionally emails a report.

Chapter 9: Networking and Sockets

- **Topics**: Working with IPs and hostnames, basic socket programming.
- **Project**: *Port Scanner* – A basic scanner to check if specific ports on a list of servers are open, useful for basic network troubleshooting.

Chapter 10: Python for Cloud and DevOps Tools

- **Topics**: Intro to using Python with AWS (boto3), Docker (Docker SDK), and Kubernetes (kubernetes-client).
- **Project**: *AWS Resource Monitor* – A script to fetch and log details of EC2 instances, such as status and IPs, helping track cloud infrastructure.
