Module 13: Python - Fundamentals of Python Language

- **History:** Created by Guido van Rossum in 1991.
- **Features:**
  - Interpreted
  - Dynamically typed
  - Portable
  - Open-source
  - Large standard library
- **Advantages:**
  - Simple syntax
  - Easy readability
  - Cross-platform compatibility
- **First Program: print('Hello, World!')**
- **Basic Data Types:**
  - int
  - float
  - str
  - list
  - tuple
  - dict
  - set
- **Control Structures:**
  - if-else
  - loops (for, while)
- **Functions:** Defined using **def** keyword.
- **OOP Concepts:**
  - Class
  - Object

        - Inheritance
        - Polymorphism
        - Encapsulation
        - Abstraction

Module 14: Python - Collections, Functions and Modules

- **Collections:**
    - List
    - Tuple
    - Set
    - Dictionary
- **Functions:**
    - Built-in and user-defined
    - Improve code reusability
- **Modules:**
    - File containing Python definitions and statements
    - Import using **import** keyword
    - Common modules: Math, Random, JSON, OS
- **Validation:** Always validate user input to avoid errors.

Case Study Solution: PostBoard Application

- **Application Overview:**
    - Terminal-based PostBoard app implementation.
- **Key Components:**
    - **User Authentication:**
        - Sample users stored as a dictionary.
    - **Post Management:**
        - Create, view, and search posts.