

KOENIG SOLUTIONS • COURSE OUTLINE

Certified Professional Python Programming Level 2 (PCPP2)

Learn to package Python code, apply design patterns, manage interprocess communication, and build network and database applications.

3 Days

DURATION

5

MODULES

33

TOPICS

COURSE OVERVIEW

This course covers creating and distributing Python packages, including directory structure, setup files, documentation, licensing, and testing with unittest and Pytest. It then examines object-oriented design patterns such as Singleton, Factory, Façade, Proxy, Observer, Command, Template Method, Model-View-Controller, and State. The course also addresses interprocess communication using multiprocessing, threading, subprocess, and synchronisation tools such as queue, socket, and mmap. It concludes with network programming using the Python socket module and database access with MySQL, including building a CRUD application.

WHO THIS COURSE IS FOR

Python Developers

Software Engineers

Backend Developers

Application Developers

Database Developers

LEARNING OBJECTIVES

- Create and distribute Python packages using pip and setup.py
- Apply testing principles using unittest and Pytest
- Explain object-oriented design principles and design patterns
- Apply patterns such as Singleton, Factory, and Observer
- Implement interprocess communication using multiprocessing and threading
- Configure synchronisation using queue, socket, and mmap
- Develop network applications using the Python socket module
- Build a CRUD application with MySQL database access

5 Modules, 33 Topics

01

Creating and Distributing Packages

TOPICS

Using pip · Basic directory structure · The setup.py file · Sharing, storing, and installing packages · Documentation · License

TESTING PRINCIPLES AND TECHNIQUES

unittest – Unit testing framework · Pytest – framework to write tests

02

Design Patterns

TOPICS

- Object-oriented design principles and the concept of design patterns
- The Singleton Design Pattern
- The Factory Pattern
- The Façade Pattern
- The Proxy Pattern
- The Observer Pattern
- The Command Pattern
- The Template Method Pattern
- Model-View-Controller
- The State Design Pattern

03

Interprocess Communication

TOPICS

multiprocessing — Process-based parallelism · threading — Thread-based parallelism · subprocess — Subprocess management

MULTIPROCESSING SYNCHRONISATION

queue — A synchronized queue class · socket — Low-level networking interface · mmap — Memory-mapped file support

04

Python Network Programming

PYTHON SOCKET MODULE

Introduction to sockets · Server Socket Methods · Client socket methods · General socket methods · Client-Server vs. Peer-to-peer · Other Internet nodules

05

Python-MySQL Database Access

TOPICS

- Relational databases – fundamental principles and how to work with them
- MySQL vs. rest of the world
- CRUD Application

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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