KOENIG
step forward

KOENIG SOLUTIONS · COURSE OUTLINE

Python Projects: Hangman, Caesar Cipher & Blackjack

Learn to build Python programs using variables, control flow, loops and functions, from a Band Name Generator to a Blackjack capstone.

5 Days	14	81
8 HOURS A DAY	MODULES	TOPICS

COURSE OVERVIEW

This course begins with core Python building blocks such as print statements, input, variables, data types and string manipulation, applied through tasks like a BMI calculator and tip calculator. It then covers control flow, logical operators, randomisation, lists, loops and functions, building projects such as Treasure Island, Rock Paper Scissors and a password generator. Later modules apply these foundations to Hangman, a Caesar Cipher, dictionaries and nesting in a Secret Auction program, function outputs, and a Blackjack capstone project. The final modules address variable scope, a number guessing game, finding and fixing errors, and a higher-level game project.

WHO THIS COURSE IS FOR

Aspiring Python Developers | **Programming Beginners** | **Software Developers** | **Coding Students**

LEARNING OBJECTIVES

- Apply print, input and variable concepts to build simple programs
- Explain Python data types and perform string and number manipulation
- Implement control flow using if/else, elif and logical operators
- Apply randomisation and list operations to build interactive tasks
- Implement loops, including for and while, to solve repetitive tasks
- Develop functions with parameters and return values
- Build projects such as Hangman, Caesar Cipher and Blackjack
- Identify and fix errors using debugging techniques

TRAINING APPROACH

This hands-on class is approximately 80/20 lab to lecture ratio, combining engaging lecture, demos, group activities and discussions with comprehensive machine-based practical programming labs and project work.

COURSE SYLLABUS

14 Modules, 81 Topics

01

Print, Input and Variables

TOPICS

Print to Console · Python Input Function · Python Variables · Variable Naming · Project 1 – Band Name Generator

02

Data Types and Manipulate Strings

TOPICS

- Python Data Types
- Type Error, Type Checking and Type Conversion
- Mathematical Operations in Python
- Task - BMI Calculator
- Number Manipulation and F Strings in Python
- Task - Life in Weeks
- Project – Tip Calculator

03

Control Flow and Logical Operators

TOPICS

- Control Flow with If/Else and Conditional Operators
- Task – Odd or Even
- Nested If Statements and Elif Statements
- Task – BMI 2.0
- Task – Leap Year
- Multiple If Statements in Succession
- Task – Pizza Order Practice
- Logical Operators
- Task – Love Calculator
- Project – Treasure Island

04

Randomisation and Python Lists

TOPICS

- Random Module
- Task – Heads or Tails
- Understanding the Offset and Appending Items to Lists
- Task – Who Will Pay the Bill
- IndexErrors and Working with Nested Lists
- Task – Treasure Map
- Project – Rock Paper Scissors

05

Python Loops

TOPICS

Using the Loop with Python Lists · Task – Average Height · Task – High Score · For Loop and Range Function · Task - Adding Even Numbers · Project – Create a Password Generator

06

Functions and While Loop

TOPICS

- Defining and Calling Python Functions
- The Hurdles Loop Challenge
- Indentation in Python
- While Loops
- Challenge - Hurdles Challenge using While Loops
- Challenge – Jumping Over Hurdles with Variable Heights
- Project – Escaping the Maze

07

Hangman

TOPICS

- How to Break a Complex Problem Down into a Flow Chart
- Challenge 1 – Picking a Random Words and Checking Answers
- Challenge 2 – Replacing Blanks with Guesses
- Challenge 3 – Checking if Player has Won
- Challenge 4 – Keeping Track of the Player Lives
- Challenge 5 – Improving the User Experience

08

Function Parameters and Caesar Cipher

TOPICS

Functions with Inputs · Positional vs Keyword Arguments · Task – Paint Area Calculator · Task – Prime Number Checker · Caesar Cipher Encryption · Caesar Cipher Decryption · Caesar Cipher Recognizing our Code

09

Dictionaries, Nesting and the Secret Auction

TOPICS

Python Dictionary – Deep Dive · Task – Grading Program · Nesting Lists and Dictionaries · Task – Dictionary in List · The Secret Auction Program Flow Chart

10

Functions with Output

TOPICS

- Functions with Outputs
- Multiple Return Values
- Task – Days in Month
- Docstrings
- Calculator – Combining Dictionaries and Functions
- Print vs Return
- While Loops, Flags and Recursion
- Calculator Finishing Touches and Bug Fixes

11

Blackjack Capstone Project

TOPICS

Blackjack Program Requirements and Game Rules · Refactoring and Calling Calculate_score()

12

Scope and Number Guessing Game

TOPICS

Namespaces: Local vs Global Scope · How to Modify a Global Variable · Python Constants and Global Scope · Project – Number Guessing Game

13

Finding and Fixing Errors

TOPICS

Describe the Problem · Reproduce the Game · Play Computer and Evaluate Each Line · Fixing Errors and Watching for Red Underlines · Squash Bugs with print Statement · Debugging Tips

14

Higher Level Game Project

TOPICS

- Introduction and Program Requirements for the Higher Lower Game

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.

FLEXIBLE DELIVERY

Learn the Way That Suits You

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