

KingTech Coding Clinic



PYTHON PROGRAMMING MENTORSHIP (FULL 6-MONTH OUTLINE)

MONTH 1: PYTHON FUNDAMENTALS (BEGINNER STAGE)

Goal:

Build a **solid foundation** and remove fear of programming

Topics:

- Introduction to Programming
- What is Python & where it is used
- Installing Python & VS Code
- Writing your first Python program
- Variables and Data Types
- Input and Output
- Operators (Arithmetic, Comparison, Logical)
- Conditional Statements (if, elif, else)
- Loops (for, while)
- Lists
- Tuples
- Sets
- Dictionaries

Mini Projects:

- Simple Calculator
 - Student Grade Checker
 - Number Guessing Game
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MONTH 2: CORE PROGRAMMING + OOP (FOUNDATION TO STRUCTURE)

Goal:

Introduce **structured programming and object thinking**

Topics:

Core Programming

- Functions (definition, parameters, return values)
- Scope (local vs global)
- Error Handling (try, except, finally)
- Modules and Imports
- File Handling (read/write files)

OOP (Introduction)

- What is Object-Oriented Programming
- Classes and Objects
- Attributes and Methods
- Constructors (`__init__`)
- Encapsulation

Mini Projects:

- CLI Contact Book (using functions)
- File-based Login System

- Simple Banking System (OOP-based)
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MONTH 3: ADVANCED OOP + AUTOMATION

Goal:

Apply OOP to **real-world tasks and automation**

Topics:

Advanced OOP

- Inheritance
- Polymorphism
- Class vs Instance Variables
- Magic Methods (`__str__`, etc.)

Automation with Python

- Working with Dates & Time
- File & Folder Automation
- Working with Excel files (intro to openpyxl / pandas)
- Sending Emails using Python
- Task Automation concepts

Mini Projects:

- File Organizer Script
 - Excel Report Generator
 - Bulk Email Sender
 - OOP-based Task Manager
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MONTH 4: DATABASES & SYSTEM DESIGN

Goal:

Teach how to **store, manage, and structure data**

Topics:

- Introduction to Databases
- SQLite (beginner-friendly database)
- CRUD Operations (Create, Read, Update, Delete)
- Connecting Python to Database
- Structuring applications (combining OOP + DB)

Mini Projects:

- Student Management System (CLI + Database)
 - Expense Tracker (Database-driven)
 - Inventory Management (basic)
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MONTH 5: WEB DEVELOPMENT WITH DJANGO

Goal:

Move from scripts → **real web applications**

Topics:

- Introduction to Web Development
- Django Installation & Project Setup
- Django Project Structure
- Models (database structure)
- Views (logic)
- Templates (frontend basics)
- Forms & User Input Handling

- User Authentication (Login/Signup system)
- Django Admin Panel

✂ Mini Projects:

- Personal Blog Website
- User Registration & Login System

🟡 MONTH 6: ADVANCED DEVELOPMENT + CYBERSECURITY INTRO + FINAL PROJECT

🎯 Goal:

Build **complete real-world applications** + **introduce security awareness**

📖 Topics:

Advanced Concepts

- API Integration (basic)
- Deployment Basics (local/intro to hosting)
- Debugging Techniques
- Code Optimization & Best Practices

Introduction to Cybersecurity with Python

- Importance of Cybersecurity
- Password Hashing
- Basic Encryption Concepts
- Secure Coding Practices
- Common vulnerabilities (basic awareness)

🏆 FINAL PROJECT (CAPSTONE PROJECT)

Goal:

Build a **complete real-world system**

Students will choose ONE:

- Loan Management System
 - School Management System
 - Inventory / POS System
 - Online Registration System
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Final Project Requirements:

- Use Python + Database
 - Apply OOP concepts
 - Functional user interface (CLI or Web)
 - Authentication (for web projects)
 - Clean and structured code
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LEARNING APPROACH (WEEKLY STRUCTURE)

Each week follows:

- **Friday:** Concept Teaching
 - **Saturday:** Practice + Exercises
 - **Sunday:** Project Implementation + Assignment
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EXPECTED OUTCOME AFTER 6 MONTHS

Students will be able to:

- ✓ Write Python programs confidently
- ✓ Apply Object-Oriented Programming
- ✓ Build automation tools
- ✓ Work with databases
- ✓ Develop web applications using Django
- ✓ Understand basic cybersecurity principles
- ✓ Build and present real-world projects

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PYTHON MENTORSHIP PROGRAM – OFFICIAL TIMETABLE (6 MONTHS)

GENERAL CLASS SCHEDULE

- **Days:** Thursday, Friday, Saturday
 - **Time:** 8:00 PM – 10:00 PM
 - **Mode:** Live Online Sessions (Zoom, Google Meet)
 - **Duration:** 6 Months (24 Weeks)
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WEEKLY LEARNING STRUCTURE

- **Thursday:** Concept Teaching
 - **Friday:** Practical Exercises
 - **Saturday:** Project Work + Assignment
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MONTH 1: PYTHON FUNDAMENTALS

Week	Topics	Project/Practice
Week 1	Introduction to Python, Installation, First Program, Variables	Simple Output Programs
Week 2	Data Types, Input/Output, Operators	Basic Calculator

Week	Topics	Project/Practice
Week 3	Conditional Statements (if, elif, else)	Student Grade Checker
Week 4	Loops (for, while), Lists, Tuples, Sets, Dictionaries	Number Guessing Game

🟡 MONTH 2: CORE PROGRAMMING + OOP

Week	Topics	Project/Practice
Week 5	Functions (parameters, return values)	Function-based Calculator
Week 6	Scope, Error Handling, Modules	CLI Quiz App
Week 7	File Handling (read/write files)	File-based Login System
Week 8	OOP Basics (Classes, Objects, Methods, Constructors, Encapsulation)	Simple Banking System

🟢 MONTH 3: ADVANCED OOP + AUTOMATION

Week	Topics	Project/Practice
Week 9	Inheritance, Polymorphism, Class vs Instance Variables	OOP Task Manager
Week 10	Magic Methods, OOP Practice	Improve Previous Projects

Week	Topics	Project/Practice
Week 11	Automation: Files, Dates, Excel (openpyxl/pandas intro)	Excel Report Generator
Week 12	Email Automation, File Organization	Bulk Email Sender + File Organizer

🟡 MONTH 4: DATABASES & SYSTEM DESIGN

Week	Topics	Project/Practice
Week 13	Introduction to Databases, SQLite Setup	Simple DB Connection
Week 14	CRUD Operations	Student Record System
Week 15	Python + Database Integration	Expense Tracker
Week 16	Structuring Applications (OOP + DB)	Inventory System

🔴 MONTH 5: DJANGO WEB DEVELOPMENT

Week	Topics	Project/Practice
Week 17	Introduction to Web & Django Setup	First Django App
Week 18	Models, Views, Templates	Blog System (Part 1)
Week 19	Forms, User Input Handling	Blog System (Part 2)

Week	Topics	Project/Practice
Week 20	Authentication, Admin Panel	Login & Registration System

MONTH 6: ADVANCED + FINAL PROJECT + CYBERSECURITY

Week	Topics	Project/Practice
Week 21	APIs, Deployment Basics	API Integration Demo
Week 22	Cybersecurity Basics (hashing, encryption, secure coding)	Password Security Demo
Week 23	Final Project Development (Guided)	Build System
Week 24	Final Project Completion & Presentation	Project Submission

FINAL PROJECT PHASE

During the last 2–3 weeks, students will build:

- Loan Management System
 - OR School Management System
 - OR Inventory / POS System
 - OR Online Registration System
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IMPORTANT NOTES FOR STUDENTS

- Attendance is **mandatory**

- Assignments must be submitted via the portal
 - Active participation is required
 - Final project completion is required for certification
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CERTIFICATION REQUIREMENTS

To receive the certificate:

- Attend at least 80% of classes
- Complete assignments
- Successfully complete and present final project