Python Course: Pragmatic, Project Based Python Programming Course

Course Instructor:
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Days	Topics
1	❖ Introduction to Python Programming Language ➢ Introduction to Python. ➢ Comparison of Python with other modern programming languages. ➢ Career value as a Python programmer. ❖ Tools, Editors, IDEs ➢ Modern developer tools for Python programmers. ➢ Introduction to available Editors and IDEs for Python development. ➢ Why, when and which Editors, IDEs to use in your learning and career path ❖ Breaking the ice: writing the first program in Python ➢ Concept: Input, Process, Output life cycle of computer programs. ➢ Hello World program in Python. ➢ Input, Output, Processing mechanism in Python. ❖ Digging deeper into the internals ➢ How Python interacts with the computer. ➢ How Python interacts with the Operating System. ➢ How Python interacts with the hardwares. ➢ How Python interacts and communicates with other programs on the same computer. ➢ How Python interacts and communicates with other programs on remote computers. ❖ Exercise & Home Task 01
2	❖ Project 01: Employee Information Management System ➢ Students will be explained every bit of the code and in that practical way of learning they will be taught Python basics, it's syntax, and different concepts of programming. ➢ Command lines will be used as the user interface for Project 1. ➢ During developing the projects whenever a new stuff is needed students will be briefed and taught about them and later they will learn get advanced classes on them. ➢ Students will learn by doing. ❖ String - Part (01): Basics of String in Python ➢ Most essential data type that will needed from the day zero to the end of life. ❖ Numbers - part (01): Basics of various number data types in Python and how to use them. ➢ This concept will be needed in our project of this day and they will learn by doing. ❖ String <-> Number back and forth conversion in Python ➢ Students will practice in lab how to use the knowledge in the projects to be developed. ❖ Git 1: Introduction to version control systems, git, and github. ❖ Exercise & Home Task 02
3	❖ Data Types in Python ❖ Data Structures in Python

	❖ Introduction to Algorithms in Python ❖ Loops in Python ** Dedicated & advanced classes on mentioned topics will take place later ** ❖ Taking continuous input and display continuous output with user interaction with loop for Project 01 ❖ Using command line/shell: learning to use command line efficiently. ❖ Git 2: Collaborating in teams using Git ❖ Exercise & Home Task 03
4	❖ Branching in Python: if, else, elif (more classes on these will take place later and everyday students will practice everything learned in previous classes) ❖ “Truthy” and “Falsy” in Python (In depth discussion) ❖ Improving Project 01 using conditions ➢ Which values to accept, which ones to reject. ➢ Creating exit condition for continuous input output. ❖ Git 3: Forking, pull requests, synching, merging. ❖ Exercise & Home Task 03
5	❖ List - Part (01): List in Python ❖ For Loop - Part (01) ❖ Using Lists and Loops together (for & while) ❖ Storing input data in proper way into Python Lists and using the knowledge in Project 01 ❖ Adding search feature in Project 01 ➢ Overview of searching algorithms in Python ➢ Using the appropriate search algorithm(s) in Python and implementing the knowledge in Project 01 ❖ Git 4: Merge conflicts and solving them. ❖ Exercise & Home Task 05
6	❖ Persisting Data: Persisting data using Python and overview of various methods of it. ❖ Filesystem & File Operations - Part 01 ❖ Reading & Writing files - Part 01 ❖ Saving input data of Project 01 to file ❖ Git 5: Advanced git operations. ❖ Exercise & Home Task 06
7	❖ Key Value Pair data structures and algorithms in programming. ❖ Dictionary in Python ❖ Dictionary & Loops ❖ Using and practicing List, Dictionary, if, else, elif together in Python. ❖ Improving Project 01 by replacing the use of List with Dictionary ❖ Improving Project 01 using Dictionary & List together ❖ Exercise & Home Task 07
8	❖ Reusing block of code in programming. ❖ Function - Part 01 ❖ Refactoring common tasks of Project 01 into function. ❖ Using and practicing conditionals, loops, lists, dictionaries together. ❖ Exercise & Home Task 08
9	❖ Object Oriented Programming (OOP) - Part 01 ❖ Making Project 01 Object Oriented ❖ Exercise & Home Task 09
10	❖ Disaster, disaster recovery, fault tolerance in programming.

	❖ Exception and Exception handling (try, except, finally, else) in Python ❖ Discussion & demo of various real life scenario; what kind of exceptions there might be and how they are handled. ❖ Google, Uber, Facebook: exceptions and how they leverage the power of exception handling. ❖ Making Project 01 fault tolerant. ❖ Exercise & Home Task 10
11	❖ Complete CRUD operations for Project 01 ❖ Final improvement to Project 01 using all the knowledge earned until now. ❖ Finishing touches to Project 01 ❖ Exercise & Home Task 11
12	❖ String - Part 02: Advanced use of string, algorithms, and various operations. ❖ Number - Part 02 ❖ Project 02: Developing a guessing game. ❖ Exercise & Home Task 12
13	❖ Advanced Loops ➢ While - Part 02 ➢ For - Part 02 ❖ List - Part 02: Advanced list, algorithms, various operations. ❖ Project 03: Developing a strong Password Generator ❖ Exercise & Home Task 13
14	❖ Advanced OOP - Part 02 ❖ Modular programming. ❖ Introduction to Python modules. ❖ Exercise & Home Task 14
15	❖ Network/HTTP Programming. ❖ What roles Python play at different network layers. ❖ Project 04: Developing a web page source code viewer. ❖ Finding information from HTML source and extending Project 04 ❖ Exercise & Home Task 15
16	❖ Project 05: HTML report generator ❖ Exercise & Home Task 16
17	❖ Regular Expressions (RegEx) ❖ Python re module. ❖ Project 06: Contact information finder from plain text and HTML documents. ❖ Exercise & Home Task 17
18	❖ Introduction to Graphical User Interfaces ❖ Introduction to GUI application development in Python ❖ Project 07: Re-engineering Project 01 as desktop GUI app with WxPython ❖ Exercise & Home Task 18
19	❖ Introduction to web app development with Python and Django ❖ Project 08: Combining & Implementing Project 01 & Project 05 as a web app. ❖ Exercise & Home Task 19
20	❖ Introduction to Mobile App Development with Python ❖ Project 09: Android Phonebook application with Python
21	Final Exam

Python Programming Course in Bangladesh
Best Course Plan from Md. Sabuj Sarker