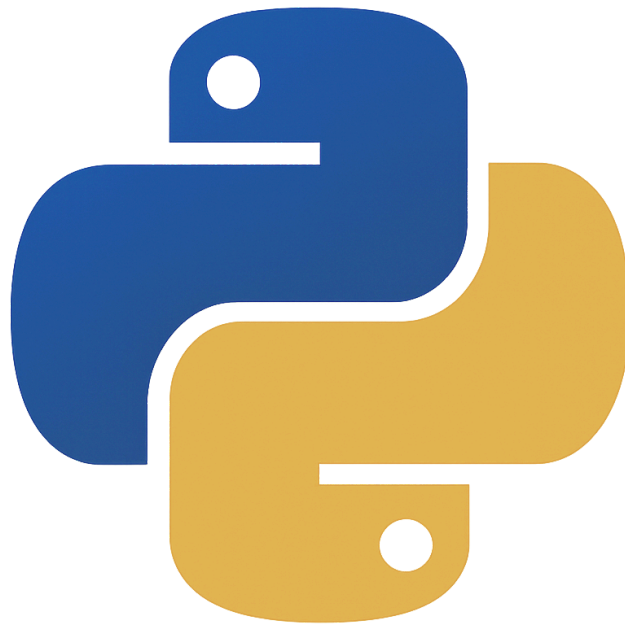# FUNDAMENTALS OF
PYTHON
PROGRAMMING
FOR BEGINNERS

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Dedicated to our beloved Family, Friends, and Teachers,

whose constant love, encouragement, and guidance have been our greatest source of strength and inspiration.

PREFACE

This book is written as a textbook on Fundamentals of Python Programming for Beginners. The primary aim is to help students grasp the basic fundamentals of Python Programming in a clear and systematic manner. The book strives to introduce students and engineers to programming in Python through simple explanations, incorporating recent developments, and drawing comparisons between theoretical concepts and real-world applications. The text employs plain and lucid language to elucidate the subject's core ideas.

This book covers the basic fundamentals of Python Programming and is designed to make concepts easy to understand with very simple examples. It includes numerous illustrations and practical demonstrations to provide essential technical knowledge in a straightforward manner, thereby facilitating easy comprehension for students. Exercises are also included at the end of chapters to test and strengthen understanding.

All five units are thoroughly addressed both theoretically and through problem-solving.

A significant number of examination-oriented problems are solved to reinforce theoretical concepts. The book's orientation towards examinations is further reflected in the inclusion of solutions to previous university question papers. This book will be valuable not only to students in engineering and polytechnic colleges but also to teachers. We warmly welcome and highly appreciate suggestions for improving this book.

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Mr. Rahul Kumar Gupta
Ms. Neha Yadav
Dr. Mayank Singh

ACKNOWLEDGEMENT

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SYLLABUS

UNIT 1: INTRODUCTION TO PYTHON
Python variables, Python basic Operators, Understanding python blocks. Python Data Types, Declaring and using Numeric data types: int, float etc.

UNIT 2: PYTHON PROGRAM FLOW CONTROL CONDITIONAL BLOCKS
if, else and else if, Simple for loops in python, For loop using ranges, string, list and dictionaries. Use of while loops in python, Loop manipulation using pass, continue, break and else. Programming using Python conditional and loop blocks.

UNIT 3: PYTHON COMPLEX DATA TYPES
Using string data type and string operations, Defining list and list slicing, Use of Tuple data type. String, List and Dictionary, Manipulations Building blocks of python programs, string manipulation methods, List manipulation. Dictionary manipulation, Programming using string, list and dictionary in-built functions. Python Functions, Organizing python codes using functions.

UNIT 4: PYTHON FILE OPERATIONS
Reading files, Writing files in python, Understanding read functions, read(), readline(), readlines(). Understanding write functions, write() and writelines() Manipulating file pointer using seek Programming, using file operations.

UNIT 5: PYTHON PACKAGES
Simple programs using the built-in functions of packages matplotlib, numpy, pandas etc. GUI Programming: Tkinter introduction, Tkinter and PythonProgramming, Tk Widgets, Tkinter examples. Python programming with IDE.