Introduction to Programming with Python

Instructed By: Abdulhafiz Ahmed

This six week course aims to spark students' interest in programming and provide them with a beginner friendly introduction to Python. Starting from the significance of learning programming and its application, students will learn the basics of Python, gain hands-on experience with Python syntax and concepts, explore popular libraries, and discover real-world projects built with Python. Then finally, students will be given guidance and recommendations on how to navigate the way forward and advance what they learned on their own. The course will include lecture sessions, interactive activities, coding exercises, and practical examples in each chapter.

Objectives

- To create an interest among students towards coding and computers in general
- To educate students on Python fundamentals
- To guide students on navigating online resources and self learning
- To help students tackle university course by giving them strong background

Pre-requisites

- Being a highschool student (9 - 12)
- Willingness and commitment to be present and attentive throughout the course
- No coding background is required

Methods

- Lectures and discussions
- Hands on activities - Problem solving
- Hand-out notes - Soft copies

Assessment

- Exercises and assignments
- Quizzes and short tests to evaluate understanding
- Collaborative coding projects for practical application
- Class participation and engagement

Course Outline

Part 1: Importance of Programming and Introduction to Python

- Importance of programming and its relevance in modern society
- Overview of Python and its applications
- Basic concepts: variables, data types, and operators
- Input and output operations

Part 2: Control Flow and Decision Making

- Conditional statements (if, else, elif)
- Looping structures (for and while loops)
- Control flow and program execution paths

Part 3: Data Structures and Functions

- Lists, tuples, and dictionaries
- Accessing and manipulating data in data structures
- Introduction to functions and their significance
- Writing and calling functions

Part 4: Libraries and Packages

- Introduction to popular Python libraries (e.g., NumPy, Pandas, Matplotlib)
- Exploring the functionalities and use cases of each library
- Hands-on exercises with library-specific tasks

Part 5: Real-World Python Projects

- Showcase major projects built with Python, emphasizing their impact and popularity
- Explore projects like Instagram, YouTube and Dropbox highlighting their Python usage
- Discuss the functionalities and key features of these projects
- Encourage students to think creatively and propose their own project ideas

Part 6: Projects and Roadmap Planning

- Collaborative coding projects inspired by real-world Python projects
- Explore additional Python resources and project ideas
- Resources for further learning and self-improvement
- Planning future projects and career paths