Python I - Programming Fundamentals

Course Overview

This beginner programming course introduces students to the essentials of coding using Python 3, focusing on foundational concepts like data types, variables, loops, and functions. Students will learn to write Python code within the Visual Studio Code IDE, developing skills to build a simple text-based adventure game. This course lays the groundwork for more advanced studies in computer science.

Course Objectives

- Gain foundational knowledge of programming concepts including variables, conditionals, loops, and data structures.
- Develop proficiency in Python by learning syntax and writing code.
- Learn to effectively use the Visual Studio Code IDE.
- Apply problem-solving skills to tackle programming challenges.
- Understand and implement best practices in code readability and version control.
- Complete a text-based adventure game that utilizes all course concepts.

Unit 1: Data Types, Variables, and Operators

- ☐ Reading - What Is Python?
    - ☐ Download and install Python 3
- ☐ Reading - What Is an IDE?
    - ☐ Download and install VS Code
    - ☐ Install the Python extension in VS Code
- ☐ Reading - Github Setup
- ☐ Python 1 Repo - Clone this repository. Within the Python-I folder you'll find most of the readings and exercises for this course. For each section, review the reading and then complete the exercise in VS Code.
- ☐ Reading & Exercise 1.1 - Basic Syntax
- ☐ Reading & Exercise 1.2 - Data Types
- ☐ Video - Why TRUE + TRUE = 2: Data Types
- ☐ Reading & Exercise 1.3 - Variables
- ☐ Sidenote: Naming Conventions (camelCase and snake_case)
- ☐ Reading & Exercise 1.4 - Operators
- ☐ Reading & Exercise 1.5 - User Input

- [ ] Reading & Exercise 1.6 - String Manipulation
- [ ] **Unit 1 Test**

Unit 2: Control Flow and Data Structures

- [ ] Reading - What is control flow?
- [ ] Reading & Exercise 2.1 - Conditional Statements
- [ ] Reading & Exercise 2.2 - Loops
- [ ] Reading & Exercise 2.3 - Exception Handling
- [ ] Reading & Exercise 2.4 - Functions
- [ ] Sidenote: Data Structures
- [ ] Reading & Exercise 2.5 - Lists
- [ ] Reading & Exercise 2.6 - Tuples
- [ ] Reading & Exercise 2.7 - Dictionaries
- [ ] **Unit 2 Test**

Unit 3: Best Practices and Advanced Topics

- [ ] Reading - Best Practices
- [ ] Reading - PEP-8 Style Guide
- [ ] Video - Python Comments | Best Practices For Comments In Python
- [ ] Reading & Exercise 3.1 - Debugging
- [ ] Reading & Exercise 3.2 - Modules and Libraries
- [ ] Reading - Third-party libraries
- [ ] Reading & Exercise 3.3 - Type Hinting
- [ ] Reading 3.4 - Unit Testing
- [ ] Reading 3.5 - File I/O
- [ ] Reading & Exercise 3.6 - Regular Expressions
- [ ] **Unit 3 Test**
- [ ] **Final Project - Text Adventure Game**