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IT FDN 110 A Wi 24: Foundations of Programming: Python

Assignment07

<https://github.com/ajawhar24/IntroToProg-Python-Mod07>

Classes and Objects

Introduction

In Assignment 07, we apply the skills learned in Module 7. In Module 7, we learned about how to use functions, arguments, returns, classes, and implement constructors and properties. We also learned specifically the concept of separation of classes based on the specific tasks each class does.

Creating the Script

In Python, functions are blocks of reusable code that perform a specific task. They help in organizing code, making it modular and easier to understand. Functions are defined using the `def` keyword, followed by a function name, parameters, and a block of code. Arguments are values passed to a function when it is called. Classes are a way to bundle data and functionality together. Separation of concerns is a design principle that suggests breaking a program into distinct sections, each addressing a specific concern. This often involves organizing code into modules or classes, with each module or class responsible for a specific functionality. In Python, constructors and properties are essential concepts in object-oriented programming. Constructors are special methods in a class that are automatically called when an object of the class is created. In Python, the constructor method is named `__init__`. It is used to initialize the attributes (variables) of an object with values provided during object creation. Constructors play a crucial role in setting up the initial state of an object. Properties are attributes of a class that define its characteristics or features. In Python, properties are typically implemented using instance variables. Accessing and modifying these variables is often controlled by getter and setter methods, allowing for better encapsulation and control over the class's behavior.

Summary

In conclusion, in Python, functions are modular blocks of reusable code designed to perform specific tasks, aiding in code organization and clarity. Defined with the `def` keyword, functions include a name, parameters, and a code block. Arguments, or values, are passed to functions when called. Classes serve to bundle data and functions, creating a blueprint for object creation. Separation of concerns, a design principle, advocates breaking a program into distinct sections or classes, each addressing specific concerns, fostering code modularity and maintainability. In Python's object-oriented programming, constructors are special methods, denoted as `__init__`, that automatically execute when creating an object. They initialize the object's attributes with values provided during creation, playing a vital role in establishing the initial state. Properties, representing a class's characteristics, are implemented using instance variables. Accessing and modifying these variables is regulated through getter and setter methods, enhancing encapsulation and control over the class's behavior. Constructors and properties collectively facilitate effective object instantiation and management in Python.