Overview

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Advanced Python Language Constructs

Introduction

This lesson covers several advanced Python language constructs and problem solving strategies, some of which are unique to Python. At several points these techniques bridge the gap between object oriented programming and functional programming, albeit the specific methods might lean toward one side or the other.

Learning Objectives

Upon successful completion of this lesson, you will be able to:

- construct decorators
- use context managers
- design and code a recursive algorithm
- articulate the drawbacks of recursion in Python

New Words or Concepts

- Decorator
- Context Manager
- Contextlib
- Recursion

Prerequisites

To be successful in this lesson you will need to be very familiar with the following concepts, covered earlier in the class:

1. All object oriented content covered to date
2. All functional programming content covered to date

Before you Start

Read the following articles and optional book chapters in preparation for this lesson.

Required Reading

Decorators
https://en.wikipedia.org/wiki/Python_syntax_and_semantics#Decorators
Context Managers
https://docs.python.org/3/library/stdtypes.html#typecontextmanager
https://github.com/jeffknupp/blog/blob/master/content/2016-03-07-python-with-context-managers.md
Recursion
https://en.wikipedia.org/wiki/Recursion_(computer_science)
Optional Reading

- Lott, S. (2015) Chapter 11. Decorator Design Techniques. In Functional Python Programming.

- Lott, S. (2015) Chapter 6. Recursions and Reductions. In Functional Python Programming.

Decorators
https://wiki.python.org/moin/PythonDecorators
https://dbader.org/blog/python-decorators
Context Managers
https://docs.python.org/3/library/contextlib.html
https://www.python.org/dev/peps/pep-0343/
Recursion
https://pointlessprogramming.wordpress.com/tag/tail-call-optimization/

Suggested Workflow

- Explore the "Before you Start" readings and video
- Work through the lesson content pages

- Watch the required videos
- Do the practice activity
- Submit your assignment

At the End of the Lesson

What material in this lesson do you still feel unclear about? Please use the discussion forum for this lesson to

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