Week 6 - Overview

Our data structures are increasing in complexity this week. Beginning with trees, we are building a foundation for future abstract data types.

Trees originate from a root and branch into nodes, which are the children of the higher level nodes. At the bottom of the tree, nodes without children are known as leaves. Trees are hierarchical, children are independent, and leaves are unique.

Objectives

During this week, you will:

- State the advantage of the tree data structure.
- Illustrate the effectiveness of both linear and tree data structures.
- Demonstrate the use of the `buildParseTree` function.

Readings

You will be responsible for reading the following chapters this week:

- *Data Structures and Algorithms in Python* by Michael Goodrich
  - 8. Trees

Additional pages are available in this module reviewing:

- **Introduction to Trees (https://maryville.instructure.com/courses/43640/pages/introduction-to-trees)**
- **Examples of Trees (https://maryville.instructure.com/courses/43640/pages/examples-of-trees)**

- **List Representations (https://maryville.instructure.com/courses/43640/pages/list-representations)**
- **Nodes and References (https://maryville.instructure.com/courses/43640/pages/nodes-and-references)**
- **Parse Tree (https://maryville.instructure.com/courses/43640/pages/parse-tree)**
- **Tree Traversals (https://maryville.instructure.com/courses/43640/pages/tree-traversals)**
- **Binary Search Trees (https://maryville.instructure.com/courses/43640/pages/binary-search-trees)** *(including **Binary Search Tree Analysis (https://maryville.instructure.com/courses/43640/pages/binary-search-tree-analysis)**)*

Resources

This week highlights resources available through Runestone Interactive. This open education resource provides open source textbooks for computer science and programming content. The materials are licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Licence. You may access the source material using the link below.

- Miller, B. & Ranum, D. (2011). *Problem solving with algorithms and data structures using python* (2nd ed.). Retrieved from **http://interactivepython.org/runestone/static/pythonds/index.html (http://interactivepython.org/runestone/static/pythonds/index.html)**