

CRMDA Python Workgroup (Fall 2016)

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September 2, 2016

Main Text:

Automate the Boring Stuff with Python by Al Sweigart

I will refer to the text as “The Boring Stuff” from here on

Week #1 (09/02/2016): Introduction

- Downloading and installing Anaconda
- Starting a Jupyter Notebook
- Python IDLE and IDEs
- The Boring Stuff - Chapter 1: Python Basics
 - Entering expressions into the interactive shell
 - The integer, floating-point, and string data type
 - String concatenation and replication
 - Storing values in variables
 - Assignment statements
 - Variable names
 - Your first program
 - Comments
 - The print() function
 - The input() function
 - Printing the user’s name
 - The len() function
 - The str(), int(), float() functions
- Importing Modules and sys.exit()
 - Go to Chapter 2 and use your browser’s Find function to search for ‘Importing Modules’
 - Note: Don’t be confused by the lack of information on the pyperclip module; it is discussed later (Week #4)

Week #2 (09/09/2016): Flow Control and Functions

- The Boring Stuff - Chapter 2: Flow Control * Need to provide a Jupyter Notebook with the missing code
 - Boolean values
 - Comparison operators
 - Boolean and binary boolean operators
 - The not operator
 - Mixing boolean and comparison operators
 - Conditions
 - Blocks of code
 - Program execution
 - Flow control statements
 - if, elif, and else statements
 - while Loops
 - break, continue statements
 - for Loops
 - range() function
 - * starting, stopping, stepping arguments to range()
- The Boring Stuff - Chapter 3: Functions
 - def statements, parameters, return statements, and return values
 - keyword arguments and print()
 - Local vs. Global variables
 - the global statement

Week #3 (09/16/2016): Lists, Dictionaries, and Data Structures

- The Boring Stuff - Chapter 4: Lists
 - The list data type
 - Getting individual values in a list with indices
 - Negative indices
 - Getting sublists with slices
 - Getting a list's length with len()
 - Changing values in a list with indices
 - List concatenation and list replication
 - * Copying a list with [:]
 - Removing values from lists with del statements
 - Working with lists
 - Using for loops with lists
 - The in and not in operators
 - The multiple assignment trick

- Augmented Assignment Operators
- List Methods: `index()`, `append()`, `insert()`, `remove()`, and `sort()`
- Strings and Tuples: list-like data types
- Mutable and immutable data types
- Tuples
- `list()` and `tuple()`
- References
- Passing references
- copy Module: `copy()` and `deepcopy()`
- The Boring Stuff - Chapter 5: Dictionaries and Structuring Data
 - The dictionary data type
 - Dictionaries vs. Lists
 - Dictionaries methods: `keys()`, `values()`, `items()`
 - Checking whether a key or a value exists in a dictionary
 - `get()` method
 - `setdefault()` method
 - Pretty printing with `pprint` Module
 - Using data structures to model real-world things
 - Nested dictionaries and lists

Week #4 (09/23/2016): Manipulating Strings and Regular Expressions

- The Boring Stuff - Chapter 6: Manipulating Strings
 - Working with strings
 - String literals
 - Double quotes
 - Escape characters
 - Raw strings
 - Multiline strings with triple quotes
 - Multiline comments
 - Indexing and slicing strings
 - The `in` and `not in` operators with strings
 - String methods: `upper()`, `lower()`, `isupper()`, `islower()`
 - `isX()` string method
 - `startswith()` and `endswith()`
 - `join()` and `split()`
 - Justifying text with `rjust()`, `ljust()`, and `center()`
 - Removing whitespace with `strip()`, `rstrip()`, and `lstrip()`
 - Copying and pasting strings with the `pyperclip` method

- The Boring Stuff - Chapter 7: Pattern Matching with Regular Expressions
 - Finding patterns of text without RE
 - Finding patterns of text with RE
 - Creating regex objects
 - Matching regex objects
 - Grouping with parentheses
 - Matching multiple groups with the pipe
 - optional matching with the question mark
 - Matching zero or more with the star
 - Matching one or more with the plus
 - Matching specific repetitions with curly brackets
 - Greedy and nongreedy matching
 - findall()
 - Character classes
 - Making your own character classes
 - The caret and dollar sign characters
 - The wildcard character
 - Matching everything with dot-star
 - Matching newlines with the dot character
 - Case-insensitive matching
 - Substituting strings with the sub() method
 - Managing complex regexes
 - Combining re.IGNORECASE, re.DOTALL, and re.VERBOSE

Week #5 (09/30/2016): Input/Output (I/O) Functions

- The Boring Stuff - Chapter 8: Reading and Writing Files
 - Reading and writing files
 - Files and file paths
 - Backslash on Windows and forward slash on OS X and Linux
 - The current working directory
 - Absolute vs. relative paths
 - Creating new folders with os.makedirs()
 - The os.path Module
 - Handling absolute and relative paths
 - Finding file sizes and folder contents
 - Checking path validity
 - The file reading/writing process
 - Opening files with the open() function
 - Reading the contents of files
 - Writing to files
 - Saving variables with the shelve Module
 - Saving variables with the pprint.pformat() function

Week #6 (10/07/2016): Running Programs and Debugging

- The Boring Stuff - Appendix B: Running Programs
 - Shebang line
 - Running Python programs on Windows
 - Running Python programs on OS X and Linux
- The Boring Stuff - Chapter 10: Debugging
 - Raising Exceptions
 - Getting the traceback as a string
 - Assertions
 - Example: Using an assertion in a traffic light simulation
 - Disabling assertions
 - Logging
 - Using the logging Module
 - Don't debug with print
 - Logging levels
 - Disabling logging
 - IDLE's debugger