**Daily Lesson Plan For Python Section**

**Savvy Coders Python For Data Analysis 2021**

4 weeks (4 classes per week) = 12 nights of classes

1.5 hr presentation / 1.5 hr practice per class, exercises during AND after presentation

**Pre-Work**: Installation: <https://github.com/Mystified131/SavvyCodersDAPPreWork>

(please allow 2-3 hours for this)

**WEEK 1**

**CLASS 1**

General Introduction, Hello

General goals, tactics, timeline

CLI worksheet:

<https://github.com/savvy-coders/sc-curriculum/blob/master/Week2-IntroTojavaScript/2.1-EssentialDevTools/2.1-EssentialDevTools.md>

CH. 1 Runestone

[1. General Introduction](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/toctree.html)

* [1.1. The Way of the Program](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/intro-TheWayoftheProgram.html)
* [1.2. Algorithms](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/Algorithms.html)
* [1.3. The Python Programming Language](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/ThePythonProgrammingLanguage.html)
* [1.4. Executing Python in this Book](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/SpecialWaystoExecutePythoninthisBook.html)
* [1.5. More About Programs](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/MoreAboutPrograms.html)
* [1.6. What is Debugging?](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/WhatisDebugging.html)
* [1.7. Syntax errors](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/Syntaxerrors.html)
* [1.8. Runtime Errors](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/RuntimeErrors.html)
* [1.9. Semantic Errors](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/SemanticErrors.html)
* [1.10. Experimental Debugging](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/ExperimentalDebugging.html)
* [1.11. Formal and Natural Languages](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/FormalandNaturalLanguages.html)
* [1.12. A Typical First Program](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/ATypicalFirstProgram.html)
* [1.13. Comments](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/Comments.html)
* [1.14. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/Glossary.html)

CH. 2 Runestone Half

[2. Simple Python Data](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/toctree.html)

* [2.1. Variables, Expressions and Statements](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/intro-VariablesExpressionsandStatements.html)
* [2.2. Values and Data Types](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/ValuesandDataTypes.html)
* [2.3. Type conversion functions](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/Typeconversionfunctions.html)
* [2.4. Variables](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/Variables.html)
* [2.5. Variable Names and Keywords](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/VariableNamesandKeywords.html)
* [2.6. Statements and Expressions](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/StatementsandExpressions.html)
* [2.7. Operators and Operands](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/OperatorsandOperands.html)

From Chapter One:

* [1.15. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/GeneralIntro/Exercises.html)

**CLASS 2**

CH. 2 Runestone Half

[2. Simple Python Data](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/toctree.html)

* [2.8. Input](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/Input.html)
* [2.9. Order of Operations](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/OrderofOperations.html)
* [2.10. Reassignment](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/Reassignment.html)
  + [2.10.1. Developing your mental model of How Python Evaluates](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/Reassignment.html#developing-your-mental-model-of-how-python-evaluates)
* [2.11. Updating Variables](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/UpdatingVariables.html)
* [2.12. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/Glossary.html)

CH. 3 Runestone

[3. Debugging Interlude 1](https://runestone.academy/runestone/books/published/thinkcspy/Debugging/toctree.html)

* [3.1. How to be a Successful Programmer](https://runestone.academy/runestone/books/published/thinkcspy/Debugging/intro-HowtobeaSuccessfulProgrammer.html)
* [3.2. How to Avoid Debugging](https://runestone.academy/runestone/books/published/thinkcspy/Debugging/HowtoAvoidDebugging.html)
* [3.3. Beginning tips for Debugging](https://runestone.academy/runestone/books/published/thinkcspy/Debugging/BeginningtipsforDebugging.html)
* [3.4. Know Your Error Messages](https://runestone.academy/runestone/books/published/thinkcspy/Debugging/KnowyourerrorMessages.html)
  + [3.4.1. ParseError](https://runestone.academy/runestone/books/published/thinkcspy/Debugging/KnowyourerrorMessages.html#parseerror)
  + [3.4.2. TypeError](https://runestone.academy/runestone/books/published/thinkcspy/Debugging/KnowyourerrorMessages.html#typeerror)
  + [3.4.3. NameError](https://runestone.academy/runestone/books/published/thinkcspy/Debugging/KnowyourerrorMessages.html#nameerror)
  + [3.4.4. ValueError](https://runestone.academy/runestone/books/published/thinkcspy/Debugging/KnowyourerrorMessages.html#valueerror)
* [3.5. Summar](https://runestone.academy/runestone/books/published/thinkcspy/Debugging/Summary.html)y

From Chapters Two And Three:

* [2.13. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/SimplePythonData/Exercises.html)
* [3.6. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/Debugging/Exercises.html)

**CLASS 3**

CH. 4 Runestone

* [4. Python Turtle Graphics](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/toctree.html)
* [4.1. Hello Little Turtles!](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/intro-HelloLittleTurtles.html)
* [4.2. Our First Turtle Program](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/OurFirstTurtleProgram.html)
* [4.3. Instances — A Herd of Turtles](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/InstancesAHerdofTurtles.html)
* [4.4. The **for** Loop](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/TheforLoop.html)
* [4.5. Flow of Execution of the for Loop](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/FlowofExecutionoftheforLoop.html)
* [4.6. Iteration Simplifies our Turtle Program](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/IterationSimplifiesourTurtleProgram.html)
* [4.7. The range Function](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/TherangeFunction.html)
* [4.8. A Few More turtle Methods and Observations](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/AFewMoreturtleMethodsandObservations.html)
* [4.9. Summary of Turtle Methods](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/SummaryofTurtleMethods.html)
* [4.10. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/Glossary.html)

From Chapter 4:

* [4.11. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/PythonTurtle/Exercises.html)

**CLASS 4**

CH. 5 Runestone

[5. Python Modules](https://runestone.academy/runestone/books/published/thinkcspy/PythonModules/toctree.html)

* [5.1. Modules and Getting Help](https://runestone.academy/runestone/books/published/thinkcspy/PythonModules/modules.html)
* [5.2. More About Using Modules](https://runestone.academy/runestone/books/published/thinkcspy/PythonModules/MoreAboutUsingModules.html)
* [5.3. The math module](https://runestone.academy/runestone/books/published/thinkcspy/PythonModules/Themathmodule.html)
* [5.4. The random module](https://runestone.academy/runestone/books/published/thinkcspy/PythonModules/Therandommodule.html)
* [5.5. Creating Modules](https://runestone.academy/runestone/books/published/thinkcspy/PythonModules/CreatingModules.html)
* [5.6. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/PythonModules/Glossary.html)

From Chapter 5:

* [5.7. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/PythonModules/Exercises.html)

*Weekend Homework: Revisit goals, cover questions looking ahead to next week*

**WEEK 2**

**CLASS 5**

CH. 6 Runestone

[6. Functions](https://runestone.academy/runestone/books/published/thinkcspy/Functions/toctree.html)

* [6.1. Functions](https://runestone.academy/runestone/books/published/thinkcspy/Functions/functions.html)
* [6.2. Functions that Return Values](https://runestone.academy/runestone/books/published/thinkcspy/Functions/Functionsthatreturnvalues.html)
* [6.3. Unit Testing](https://runestone.academy/runestone/books/published/thinkcspy/Functions/UnitTesting.html)
  + [6.3.1. Choosing Good Unit Tests](https://runestone.academy/runestone/books/published/thinkcspy/Functions/UnitTesting.html#choosing-good-unit-tests)
* [6.4. Variables and Parameters are Local](https://runestone.academy/runestone/books/published/thinkcspy/Functions/Variablesandparametersarelocal.html)
* [6.5. The Accumulator Pattern](https://runestone.academy/runestone/books/published/thinkcspy/Functions/TheAccumulatorPattern.html)
  + [6.5.1. The General Accumulator Pattern](https://runestone.academy/runestone/books/published/thinkcspy/Functions/TheAccumulatorPattern.html#the-general-accumulator-pattern)
  + [6.5.2. A Variation on the Accumulator Pattern](https://runestone.academy/runestone/books/published/thinkcspy/Functions/TheAccumulatorPattern.html#a-variation-on-the-accumulator-pattern)
* [6.6. Functions can Call Other Functions](https://runestone.academy/runestone/books/published/thinkcspy/Functions/Functionscancallotherfunctions.html)
* [6.7. Flow of Execution Summary](https://runestone.academy/runestone/books/published/thinkcspy/Functions/FlowofExecutionSummary.html)
* [6.8. Using a Main Function](https://runestone.academy/runestone/books/published/thinkcspy/Functions/mainfunction.html)
* [6.9. Program Development](https://runestone.academy/runestone/books/published/thinkcspy/Functions/ProgramDevelopment.html)
* [6.10. Composition](https://runestone.academy/runestone/books/published/thinkcspy/Functions/Composition.html)
* [6.11. A Turtle Bar Chart](https://runestone.academy/runestone/books/published/thinkcspy/Functions/ATurtleBarChart.html)
* [6.12. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/Functions/Glossary.html)

From Chapter Six:

* [6.13. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/Functions/Exercises.html)

CH. 7 Runestone

* [7. Selection](https://runestone.academy/runestone/books/published/thinkcspy/Selection/toctree.html)
  + [7.1. Boolean Values and Boolean Expressions](https://runestone.academy/runestone/books/published/thinkcspy/Selection/BooleanValuesandBooleanExpressions.html)
  + [7.2. Logical operators](https://runestone.academy/runestone/books/published/thinkcspy/Selection/Logicaloperators.html)
  + [7.3. Precedence of Operators](https://runestone.academy/runestone/books/published/thinkcspy/Selection/PrecedenceofOperators.html)
  + [7.4. Conditional Execution: Binary Selection](https://runestone.academy/runestone/books/published/thinkcspy/Selection/ConditionalExecutionBinarySelection.html)
  + [7.5. Omitting the else Clause: Unary Selection](https://runestone.academy/runestone/books/published/thinkcspy/Selection/OmittingtheelseClauseUnarySelection.html)
  + [7.6. Nested conditionals](https://runestone.academy/runestone/books/published/thinkcspy/Selection/Nestedconditionals.html)
  + [7.7. Chained conditionals](https://runestone.academy/runestone/books/published/thinkcspy/Selection/Chainedconditionals.html)
  + [7.8. Boolean Functions](https://runestone.academy/runestone/books/published/thinkcspy/Selection/BooleanFunctions.html)
    - [7.8.1. More Unit Testing](https://runestone.academy/runestone/books/published/thinkcspy/Selection/BooleanFunctions.html#more-unit-testing)
  + [7.9. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/Selection/Glossary.html)

From Chapter 7:

* + [7.10. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/Selection/Exercises.html)

**CLASS 6**

Chapter 8 Runestone Half

* [8. More About Iteration](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/toctree.html)
  + [8.1. Iteration Revisited](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/intro-IterationRevisited.html)
  + [8.2. The **for** loop revisited](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/Theforlooprevisited.html)
  + [8.3. The **while** Statement](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/ThewhileStatement.html)
  + [8.4. Randomly Walking Turtles](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/RandomlyWalkingTurtles.html)
  + [8.5. The 3n + 1 Sequence](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/The3n1Sequence.html)
  + [8.6. Newton’s Method](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/NewtonsMethod.html)
  + [8.7. The Accumulator Pattern Revisited](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/accumulatorRevisited.html)
  + [8.8. Other uses of **while**](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/SentinelValuesAndValidation.html)
    - [8.8.1. Sentinel Values](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/SentinelValuesAndValidation.html#sentinel-values)
    - [8.8.2. Validating Input](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/SentinelValuesAndValidation.html#validating-input)
  + [8.9. Algorithms Revisited](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/AlgorithmsRevisited.html)
  + [8.10. Simple Tables](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/SimpleTables.html)
  + [8.11. 2-Dimensional Iteration: Image Processing](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/2DimensionalIterationImageProcessing.html)
    - [8.11.1. The RGB Color Model](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/2DimensionalIterationImageProcessing.html#the-rgb-color-model)
    - [8.11.2. Image Objects](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/2DimensionalIterationImageProcessing.html#image-objects)
    - [8.11.3. Image Processing and Nested Iteration](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/2DimensionalIterationImageProcessing.html#image-processing-and-nested-iteration)
  + [8.12. Image Processing on Your Own](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/ImageProcessingonYourOwn.html)
  + [8.13. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/Glossary.html)

From Chapter 8:

* + [8.14. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/MoreAboutIteration/Exercises.html)

**CLASS 7**

Chapter 9 Runestone

* [9. Strings](https://runestone.academy/runestone/books/published/thinkcspy/Strings/toctree.html)
  + [9.1. Strings Revisited](https://runestone.academy/runestone/books/published/thinkcspy/Strings/StringsRevisited.html)
  + [9.2. A Collection Data Type](https://runestone.academy/runestone/books/published/thinkcspy/Strings/ACollectionDataType.html)
  + [9.3. Operations on Strings](https://runestone.academy/runestone/books/published/thinkcspy/Strings/OperationsonStrings.html)
  + [9.4. Index Operator: Working with the Characters of a String](https://runestone.academy/runestone/books/published/thinkcspy/Strings/IndexOperatorWorkingwiththeCharactersofaString.html)
  + [9.5. String Methods](https://runestone.academy/runestone/books/published/thinkcspy/Strings/StringMethods.html)
    - [9.5.1. String Format Method](https://runestone.academy/runestone/books/published/thinkcspy/Strings/StringMethods.html#string-format-method)
  + [9.6. Length](https://runestone.academy/runestone/books/published/thinkcspy/Strings/Length.html)
  + [9.7. The Slice Operator](https://runestone.academy/runestone/books/published/thinkcspy/Strings/TheSliceOperator.html)
  + [9.8. String Comparison](https://runestone.academy/runestone/books/published/thinkcspy/Strings/StringComparison.html)
  + [9.9. Strings are Immutable](https://runestone.academy/runestone/books/published/thinkcspy/Strings/StringsareImmutable.html)
  + [9.10. Traversal and the **for** Loop: By Item](https://runestone.academy/runestone/books/published/thinkcspy/Strings/TraversalandtheforLoopByItem.html)
  + [9.11. Traversal and the **for** Loop: By Index](https://runestone.academy/runestone/books/published/thinkcspy/Strings/TraversalandtheforLoopByIndex.html)
  + [9.12. Traversal and the **while** Loop](https://runestone.academy/runestone/books/published/thinkcspy/Strings/TraversalandthewhileLoop.html)
  + [9.13. The **in** and **not in** operators](https://runestone.academy/runestone/books/published/thinkcspy/Strings/Theinandnotinoperators.html)
  + [9.14. The Accumulator Pattern with Strings](https://runestone.academy/runestone/books/published/thinkcspy/Strings/TheAccumulatorPatternwithStrings.html)
  + [9.15. Turtles and Strings and L-Systems](https://runestone.academy/runestone/books/published/thinkcspy/Strings/TurtlesandStringsandLSystems.html)
  + [9.16. Looping and Counting](https://runestone.academy/runestone/books/published/thinkcspy/Strings/Loopingandcounting.html)
  + [9.17. A **find** function](https://runestone.academy/runestone/books/published/thinkcspy/Strings/Afindfunction.html)
  + [9.18. Optional parameters](https://runestone.academy/runestone/books/published/thinkcspy/Strings/Optionalparameters.html)
  + [9.19. Character classification](https://runestone.academy/runestone/books/published/thinkcspy/Strings/Characterclassification.html)
  + [9.20. Summary](https://runestone.academy/runestone/books/published/thinkcspy/Strings/Summary.html)
  + [9.21. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/Strings/Glossary.html)

From Chapter 9:

* + [9.22. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/Strings/Exercises.html)

**CLASS 8**

Chapter 10 Runestone

* [10. Lists](https://runestone.academy/runestone/books/published/thinkcspy/Lists/toctree.html)
  + [10.1. Lists](https://runestone.academy/runestone/books/published/thinkcspy/Lists/intro-Lists.html)
  + [10.2. List Values](https://runestone.academy/runestone/books/published/thinkcspy/Lists/ListValues.html)
  + [10.3. List Length](https://runestone.academy/runestone/books/published/thinkcspy/Lists/ListLength.html)
  + [10.4. Accessing Elements](https://runestone.academy/runestone/books/published/thinkcspy/Lists/AccessingElements.html)
  + [10.5. List Membership](https://runestone.academy/runestone/books/published/thinkcspy/Lists/ListMembership.html)
  + [10.6. Concatenation and Repetition](https://runestone.academy/runestone/books/published/thinkcspy/Lists/ConcatenationandRepetition.html)
  + [10.7. List Slices](https://runestone.academy/runestone/books/published/thinkcspy/Lists/ListSlices.html)
  + [10.8. Lists are Mutable](https://runestone.academy/runestone/books/published/thinkcspy/Lists/ListsareMutable.html)
  + [10.9. List Deletion](https://runestone.academy/runestone/books/published/thinkcspy/Lists/ListDeletion.html)
  + [10.10. Objects and References](https://runestone.academy/runestone/books/published/thinkcspy/Lists/ObjectsandReferences.html)
  + [10.11. Aliasing](https://runestone.academy/runestone/books/published/thinkcspy/Lists/Aliasing.html)
  + [10.12. Cloning Lists](https://runestone.academy/runestone/books/published/thinkcspy/Lists/CloningLists.html)
  + [10.13. Repetition and References](https://runestone.academy/runestone/books/published/thinkcspy/Lists/RepetitionandReferences.html)
  + [10.14. List Methods](https://runestone.academy/runestone/books/published/thinkcspy/Lists/ListMethods.html)
  + [10.15. The Return of L-Systems](https://runestone.academy/runestone/books/published/thinkcspy/Lists/TheReturnofLSystems.html)
  + [10.16. Append versus Concatenate](https://runestone.academy/runestone/books/published/thinkcspy/Lists/AppendversusConcatenate.html)
  + [10.17. Lists and **for** loops](https://runestone.academy/runestone/books/published/thinkcspy/Lists/Listsandforloops.html)
  + [10.18. The Accumulator Pattern with Lists](https://runestone.academy/runestone/books/published/thinkcspy/Lists/TheAccumulatorPatternwithLists.html)
    - [10.18.1. Accumulating the Max Value](https://runestone.academy/runestone/books/published/thinkcspy/Lists/TheAccumulatorPatternwithLists.html#accumulating-the-max-value)
    - [10.18.2. Accumulating a String Result](https://runestone.academy/runestone/books/published/thinkcspy/Lists/TheAccumulatorPatternwithLists.html#accumulating-a-string-result)
  + [10.19. Using Lists as Parameters](https://runestone.academy/runestone/books/published/thinkcspy/Lists/UsingListsasParameters.html)
  + [10.20. Pure Functions](https://runestone.academy/runestone/books/published/thinkcspy/Lists/PureFunctions.html)
  + [10.21. Which is Better?](https://runestone.academy/runestone/books/published/thinkcspy/Lists/WhichisBetter.html)
  + [10.22. Functions that Produce Lists](https://runestone.academy/runestone/books/published/thinkcspy/Lists/FunctionsthatProduceLists.html)
  + [10.23. List Comprehensions](https://runestone.academy/runestone/books/published/thinkcspy/Lists/ListComprehensions.html)
  + [10.24. Nested Lists](https://runestone.academy/runestone/books/published/thinkcspy/Lists/NestedLists.html)
  + [10.25. Strings and Lists](https://runestone.academy/runestone/books/published/thinkcspy/Lists/StringsandLists.html)
  + [10.26. **list** Type Conversion Function](https://runestone.academy/runestone/books/published/thinkcspy/Lists/listTypeConversionFunction.html)
  + [10.27. Tuples and Mutability](https://runestone.academy/runestone/books/published/thinkcspy/Lists/TuplesandMutability.html)
  + [10.28. Tuple Assignment](https://runestone.academy/runestone/books/published/thinkcspy/Lists/TupleAssignment.html)
  + [10.29. Tuples as Return Values](https://runestone.academy/runestone/books/published/thinkcspy/Lists/TuplesasReturnValues.html)
  + [10.30. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/Lists/Glossary.html)
  + [10.31. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/Lists/Exercises.html)

From Chapter 10:

* + [10.31. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/Lists/Exercises.html)

*Weekend Homework: Revisit goals, cover questions looking ahead to next week*

**WEEK 3**

**CLASS 11**

Chapter 11 Runestone Half

* [11. Files](https://runestone.academy/runestone/books/published/thinkcspy/Files/toctree.html)
  + [11.1. Working with Data Files](https://runestone.academy/runestone/books/published/thinkcspy/Files/intro-WorkingwithDataFiles.html)
  + [11.2. Finding a File on your Disk](https://runestone.academy/runestone/books/published/thinkcspy/Files/FindingaFileonyourDisk.html)
  + [11.3. Reading a File](https://runestone.academy/runestone/books/published/thinkcspy/Files/ReadingaFile.html)
  + [11.4. Iterating over lines in a file](https://runestone.academy/runestone/books/published/thinkcspy/Files/Iteratingoverlinesinafile.html)
  + [11.5. Alternative File Reading Methods](https://runestone.academy/runestone/books/published/thinkcspy/Files/AlternativeFileReadingMethods.html)
  + [11.6. Writing Text Files](https://runestone.academy/runestone/books/published/thinkcspy/Files/WritingTextFiles.html)
  + [11.7. With Statements](https://runestone.academy/runestone/books/published/thinkcspy/Files/WithStatements.html)
  + [11.8. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/Files/Glossary.html)

Chapter 12 Runestone

* [12. Dictionaries](https://runestone.academy/runestone/books/published/thinkcspy/Dictionaries/toctree.html)
  + [12.1. Dictionaries](https://runestone.academy/runestone/books/published/thinkcspy/Dictionaries/intro-Dictionaries.html)
  + [12.2. Dictionary Operations](https://runestone.academy/runestone/books/published/thinkcspy/Dictionaries/Dictionaryoperations.html)
  + [12.3. Dictionary Methods](https://runestone.academy/runestone/books/published/thinkcspy/Dictionaries/Dictionarymethods.html)
  + [12.4. Aliasing and Copying](https://runestone.academy/runestone/books/published/thinkcspy/Dictionaries/Aliasingandcopying.html)
  + [12.5. Sparse Matrices](https://runestone.academy/runestone/books/published/thinkcspy/Dictionaries/Sparsematrices.html)
  + [12.6. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/Dictionaries/Glossary.html)

From Chapters 11 and 12:

* + [11.9. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/Files/Exercises.html)
  + [12.7. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/Dictionaries/Exercises.html)

**CLASS 12**

Chapter 13 Runestone

* [13. Exceptions](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/toctree.html)
  + [13.1. What is an exception?](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/01_intro_exceptions.html)
  + [13.2. Exception Handling Flow-of-control](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/01_intro_exceptions.html#exception-handling-flow-of-control)
  + [13.3. Summary](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/01_intro_exceptions.html#summary)
  + [13.4. Standard Exceptions](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/02_standard_exceptions.html)
  + [13.5. Principles for using Exceptions](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/03_principles_for_using_exceptions.html)
  + [13.6. Exceptions Syntax](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/04_exceptions_syntax.html)
    - [13.6.1. Catch All Exceptions](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/04_exceptions_syntax.html#catch-all-exceptions)
    - [13.6.2. Catch A Specific Exception](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/04_exceptions_syntax.html#catch-a-specific-exception)
    - [13.6.3. Catch Multiple Specific Exceptions](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/04_exceptions_syntax.html#catch-multiple-specific-exceptions)
    - [13.6.4. Clean-up After Exceptions](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/04_exceptions_syntax.html#clean-up-after-exceptions)
    - [13.6.5. An Example of File I/O](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/04_exceptions_syntax.html#an-example-of-file-i-o)
  + [13.7. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/glossary.html)

From Chapter 13:

* + [13.8. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/Exceptions/Exercises.html)

**CLASS 13**

Chapter 14 Runestone

* [14. Web Applications](https://runestone.academy/runestone/books/published/thinkcspy/WebApps/toctree.html)
  + [14.1. Web Applications](https://runestone.academy/runestone/books/published/thinkcspy/WebApps/01-WebApps.html)
  + [14.2. How the Web Works](https://runestone.academy/runestone/books/published/thinkcspy/WebApps/02-HowTheWebWorks.html)
  + [14.3. How Web Applications Work](https://runestone.academy/runestone/books/published/thinkcspy/WebApps/03-HowWebApplicationsWork.html)
  + [14.4. Web Applications and HTML Forms](https://runestone.academy/runestone/books/published/thinkcspy/WebApps/04-WebApplicationsAndHtmlForms.html)
  + [14.5. Writing Web Applications With Flask](https://runestone.academy/runestone/books/published/thinkcspy/WebApps/05-WritingWebApplicationsWithFlask.html)
  + [14.6. More About Flask](https://runestone.academy/runestone/books/published/thinkcspy/WebApps/06-MoreAboutFlask.html)
  + [14.7. Input For A Flask Web Application](https://runestone.academy/runestone/books/published/thinkcspy/WebApps/07-InputForAFlaskWebApplication.html)
  + [14.8. Web Applications With a User Interface](https://runestone.academy/runestone/books/published/thinkcspy/WebApps/08-WebApplicationsWithAUserInterface.html)

**CLASS 14**

Chapter 16 Runestone

* [16. Recursion](https://runestone.academy/runestone/books/published/thinkcspy/IntroRecursion/toctree.html)
  + [16.1. What Is Recursion?](https://runestone.academy/runestone/books/published/thinkcspy/IntroRecursion/WhatIsRecursion.html)
  + [16.2. Calculating the Sum of a List of Numbers](https://runestone.academy/runestone/books/published/thinkcspy/IntroRecursion/CalculatingtheSumofaListofNumbers.html)
  + [16.3. The Three Laws of Recursion](https://runestone.academy/runestone/books/published/thinkcspy/IntroRecursion/TheThreeLawsofRecursion.html)
  + [16.4. Converting an Integer to a String in Any Base](https://runestone.academy/runestone/books/published/thinkcspy/IntroRecursion/ConvertinganIntegertoaStringinAnyBase.html)
  + [16.5. Visualizing Recursion](https://runestone.academy/runestone/books/published/thinkcspy/IntroRecursion/intro-VisualizingRecursion.html)
  + [16.6. Sierpinski Triangle](https://runestone.academy/runestone/books/published/thinkcspy/IntroRecursion/SierpinskiTriangle.html)
  + [16.7. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/IntroRecursion/Glossary.html)
  + [16.8. Programming Exercises](https://runestone.academy/runestone/books/published/thinkcspy/IntroRecursion/ProgrammingExercises.html)

From Chapter 16:

* [16.9. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/IntroRecursion/Exercises.html)

*Weekend Homework: Revisit goals, cover questions looking ahead to next week*

**CLASS 15**

Chapter 17 Runestone

* [17. Classes and Objects - the Basics](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/toctree.html)
  + [17.1. Object-oriented programming](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/Objectorientedprogramming.html)
  + [17.2. A change of perspective](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/Achangeofperspective.html)
  + [17.3. Objects Revisited](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/ObjectsRevisited.html)
  + [17.4. User Defined Classes](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/UserDefinedClasses.html)
  + [17.5. Improving our Constructor](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/ImprovingourConstructor.html)
  + [17.6. Adding Other Methods to our Class](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/AddingOtherMethodstoourClass.html)
  + [17.7. Objects as Arguments and Parameters](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/ObjectsasArgumentsandParameters.html)
  + [17.8. Converting an Object to a String](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/ConvertinganObjecttoaString.html)
  + [17.9. Instances as Return Values](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/InstancesasReturnValues.html)
  + [17.10. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/Glossary.html)

From Chapter 17:

* [17.11. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/ClassesBasics/Exercises.html)

**WEEK 4**

**CLASS 16**

Chapter 18 Runestone

* [18. Classes and Objects - Digging a Little Deeper](https://runestone.academy/runestone/books/published/thinkcspy/ClassesDiggingDeeper/toctree.html)
  + [18.1. Fractions](https://runestone.academy/runestone/books/published/thinkcspy/ClassesDiggingDeeper/Fractions.html)
  + [18.2. Objects are Mutable](https://runestone.academy/runestone/books/published/thinkcspy/ClassesDiggingDeeper/ObjectsareMutable.html)
  + [18.3. Sameness](https://runestone.academy/runestone/books/published/thinkcspy/ClassesDiggingDeeper/Sameness.html)
  + [18.4. Arithmetic Methods](https://runestone.academy/runestone/books/published/thinkcspy/ClassesDiggingDeeper/ArithmeticMethods.html)
  + [18.5. Glossary](https://runestone.academy/runestone/books/published/thinkcspy/ClassesDiggingDeeper/Glossary.html)

From Chapter 18 :

* + [18.6. Exercises](https://runestone.academy/runestone/books/published/thinkcspy/ClassesDiggingDeeper/Exercises.html)

**CLASS 17**

Chapter 19 Runestone

* [19. Inheritance](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/toctree.html)
  + [19.1. Pillars of OOP](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/01-PillarsOfOop.html)
  + [19.2. Introduction to Inheritance](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/02-IntroToInheritance.html)
  + [19.3. Extending](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/03-Extending.html)
  + [19.4. Reuse Through Composition](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/04-ReuseThroughComposition.html)
  + [19.5. Class Diagrams](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/05-ClassDiagrams.html)
  + [19.6. Composition vs. Inheritance](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/06-CompositionVsInheritance.html)
  + [19.7. Case Study: Structured Postal Addresses](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/07-CaseStudy.html)
    - [19.7.1. Storing Postal Addresses](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/07-CaseStudy.html#storing-postal-addresses)
    - [19.7.2. Storing International Addresses](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/07-CaseStudy.html#storing-international-addresses)
    - [19.7.3. Inheritance Applied](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/07-CaseStudy.html#inheritance-applied)
    - [19.7.4. A List of Addresses](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/07-CaseStudy.html#a-list-of-addresses)
    - [19.7.5. Using isinstance](https://runestone.academy/runestone/books/published/thinkcspy/Inheritance/07-CaseStudy.html#using-isinstance)

**CLASS 18-20**

Course Section Summary, Independent Coding Projects, Transition to Data Portion

Independent Coding Project:

Have them choose a coding goal, pref. Class-Object oriented, and achieve it in solo work.