Lesson: 1.4 Modules, Packages & Libraries

In this lesson, students will learn about Python modules and libraries and how to implement and use them within the editor.

Objective

Students will be able to:

Import and use Python modules and libraries

Explain the importance of documentation

Read and use documentation

Activities

These are all the activities included in the lesson.

Activity

1.4.1 Modules, Packages and Libraries

1.4.2 Modules, Packages, and Libraries

1.4.3 Live Code - Libraries

1.4.4 Random

1.4.5 Math and Statistics

1.4.6 Emoji

1.4.7 Wikipedia

1.4.8 Documentation Hunt

1.4.9 Documentation Hunt

Solution References

Refer to the solution reference for a more detailed look at exercise solutions.

Solution Reference

1.4.2 Modules, Packages, and Libraries

1.4.7 Wikipedia

Problem Guides

Refer to the problem guides for a more in-depth look at this lesson's problems.

Problem Guide

1.4.7 Wikipedia

Vocabulary

These are the key terms for this lesson.

Term Definition

module

A file containing Python definitions and statements.

package

A collection of related modules.

library

A collection of modules and packages.

documentation

Written instructions detailing the functions, methods, and variables available and how to use them.

Planning Notes

Reading documentation can be a difficult task for students. Consider what scaffolding you may need so that students are on an even level with reading technical text. Documentation can be “chunked”, students can work together on tasks that include documentation, include the use of printed materials and highlighters, etc.

Teaching and Learning Strategies

Lesson Opener:

Have students brainstorm and write down answers to the discussion questions listed below. Students can work individually or in groups/pairs. Have them share their responses. [5 mins]

Activities:

Watch the lesson video and complete the corresponding quiz to check for understanding. [10 mins]

Watch the Live Code - Libraries video. [5 mins]

Have students take notes on important functions used and what questions they might still have.

Students can also work along with the recording by pausing it and typing out what they see in a sandbox item (or the example) to try it themselves.

Explore the Random and Math and Statistics examples. [10 mins]

Have students reference the documentation and try to use a function that is not already demonstrated in the example.

Explore the Emoji example. [10 mins]

Discuss how this example differs from the previous two examples.

Complete the Wikipedia exercise. [15 min]

Students can be paired up or put into small groups to discuss the questions in this activity.

Students may need to be reminded to include the name of the library in the requirements.txt file.

Explore the Documentation Hunt connection activity and complete the corresponding free-response activity. [15 mins]

This activity requires a high level of technical reading which may be new or difficult for students. Consider guiding students through this activity as a whole class or group students according to their reading levels or experience with technical text.

Lesson Closer:

Have students reflect and discuss their responses to the end-of-class discussion questions. [5 mins]

Prior Knowledge

Students should be familiar with functions, variables, lists, and how to use the CodeHS editor.

Video Slides

Discussion Questions

Beginning of Class:

In your own words, explain what a function is.

Sample Response: A function is a rule that a programmer creates that Python follows.

List a few functions that you have used in programming.

print(), len(), type(), max(), min(), etc

Choose one function and explain what it does and how to use it.

Sample Response: The print function displays text in the editor. To use it, type print and within the parenthesis, and in quotes, type the text that you would like to be displayed.

End of Class:

What type of python module or library would you like to create and use? It can be anything that you can envision/imagine.

Answers will vary.

Name a function that would be included in this module or library. What would this function do? Don’t worry about being technical here.

Answers will vary.

What would the documentation for this function within your module look like? Think of what users might need to know in order to use the function correctly. Again, it doesn’t have to be too technical.

Answers will vary.

Modification: Advanced

Remove the examples given in the starter code (leave the comments) to challenge advanced students to use the documentation to find the correct function.

Modification: Special Education

Have students reference and complete the tutorials provided in the activities.

Print out and “chunk” the documentation used in this lesson.

Modification: English Language Learners

Allow students to translate documentation into their native language and reference along with the English documentation.

Have students reference and complete the tutorials provided in the activities.

Print out and “chunk” the documentation used in this lesson.