

(<http://csmatters.org/pd-new>) P - 07

0bP - 0b111

Python: Simulation, File I/O, and Data Analysis



Unit Programming

Revision Date: Jan 09, 2018

Duration: 75 50-minute sessions

Lesson Summary

Summary: The instructor will tell the teachers the outline for the lesson. The teachers will then do the Guided Activity on File I/O, paying particular attention to any modifications that they would make when deploying the lesson for their own classes. They will then discuss their findings in their groups. Time permitting, the instructor can introduce more I/O operations, such as stripping lines of whitespace or using a for loop to read in a file.

Objectives:

- Teachers will learn how Python handles files.
- Teachers will go through Lesson 4.4, and discuss possible improvements.

Overview:

1. Introduction (2 min)
2. Guided Activity (60 min)
3. Discussion (13 min)

Learning Objectives

Teacher Resources

Student computer usage for this lesson is: **required**

PROG07_Python Simulation, File I/O, and Data Analysis Folder (<https://drive.google.com/open?id=0B5vAY-fhOT-iVlpYNnRrY0dMZzg>)

Lesson Plan

TOTAL: 75 min

Introduction (2 min)

The instructor will go over the lesson plan for the lesson using the PowerPoint. They can also use the PowerPoint to display the instructions for the Guided Activity.

Guided Activity (60 min)

Note: This section follows the "Fine Input/Output in Python" Powerpoint.

At the start of this session, the instructor should:

1. Go to the link for "Python for Informatics", click on Interactive HTML on Trinket.io
2. Click on Chapter 7: Files
3. Open up another tab and navigate to Lesson 4.4 in the CS Matters Curriculum
 - Also open Pycharm or the Runestone coding environment and create a new .py file
 - Also have the two files: mbot.txt and mbox-short.txt saved in the same folder as their python file for the lesson.

The teachers will code the examples in the book as the instructor proceeds through the activity.

As they go through the lesson, they should take note of:

- What they like about the lesson
- What they would modify
- Any points of potential confusion for the students

Note: The instructor should proceed through the lesson more slowly than in the CS Matters lesson to give the teachers extra time to consider modifications and additions to the lesson.

Discussion (13 min)

In their groups, the teachers will discuss any modifications they would make to the lesson, as well as what they liked. Time permitting, each group can then share their thoughts with the rest of the class.

Options for Differentiated Instruction

Teachers can go through the guided activity in pairs.

For a group of teachers that needs more scaffolding: work as a group on the Guided Activity. "Have students take turns around the room to read aloud the brief text in each section in Chapter 7. Do the short exercises together with a "row captain" assigned to each row (or group) in the classroom who is in charge of checking that everybody in their row has completed each short task and has gotten the help needed to finish. Row captains help each other until the entire class has

successfully completed each task. Report out on what challenges were encountered, recording problems and solutions at the front of the classroom as the class works. Rotate the role of row captain for each section." - from CS Matters curriculum

For live-coding, students may have difficulty simultaneously listening to the instructor dictate the code, writing the code, and understanding what the code does. This occurs both in the classroom with students and in professional development sessions with teachers. As a method of differentiated instruction, mention that for students, an instructor can physically print the code that will be produced in the live-coding session for the students that exhibit this difficulty.



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