Lesson 5: Working with CSV Files

In this lesson, students will learn how to work with CSV (Comma-Separated Values) files. They will understand what a CSV file is and how it differs from a standard text file. Through guided instruction and hands-on practice, students will learn how to read data from a CSV file using Python and the split() method. They will also learn how to store the data into lists or 2D lists for further processing. Additionally, students will be challenged to select specific data from the CSV files they have loaded. By the end of the lesson, students will have a solid understanding of how to work with CSV files and the practical applications of this skill in various fields.

## **Objectives:**

- Students will be able to describe what a CSV file is.

- Students will be able to read data from a CSV file.

- Students will be able to use the split() method to separate data in a CSV file.

- Students will be able to select specific data from a collection of values in a CSV file.

## **Materials:**

- Computers with text editors and internet access

- Projector or smartboard

- Handouts with sample CSV files

## **Bell-Ringer Activity (5 minutes):**

- Display a sample CSV file on the projector or smartboard.

- Ask students to discuss with a partner what they think the file represents and how they would read the data from it.

- After a few minutes, ask a few students to share their thoughts with the class.

## **Introduction (10 minutes):**

- Explain to students that they are already familiar with text files and how to read data from them.

- Introduce the concept of a CSV (Comma-Separated Values) file as a type of text file that is commonly used to store and exchange data.

- Explain that while a CSV file is still a text file, it is structured in a way that allows for easier organization and manipulation of data.

- Discuss some common use cases for CSV files, such as storing data from spreadsheets or databases.

- Emphasize that the same methods and modes used to read data from a standard text file can be used with a CSV file.

## **Direct Instruction (20 minutes):**

- Demonstrate how to read data from a CSV file using Python.

- Show students how to open a CSV file using the `open()` function and the appropriate file mode.

- Explain the concept of a delimiter, which is a character used to separate the values in a CSV file (usually a comma, but it can also be a tab or a semicolon).

- Demonstrate how to use the `split()` method to separate the values in a CSV file based on the delimiter.

- Show students how to store the data from a CSV file into a list or a 2D list for further processing.

- Provide examples and explanations throughout the demonstration to ensure understanding.

## **Guided Practice (30 minutes):**

- Distribute handouts with sample CSV files to each student.

- Instruct students to work in pairs or small groups to read the data from the CSV files and store it into lists or 2D lists.

- Circulate the classroom to provide assistance and answer any questions.

- Encourage students to discuss their approaches and findings with their peers.

## **Independent Practice (20 minutes):**

- Assign a challenge to the students where they need to select specific data from the CSV files they have loaded into lists or 2D lists.

- Provide clear instructions and examples for the challenge.

- Allow students to work individually or in pairs to complete the challenge.

- Monitor their progress and provide guidance as needed.

## **Exit Ticket (5 minutes):**

- Ask students to write a brief summary of what they have learned about working with CSV files.

- Collect the exit tickets before the end of the class.

## **Closure (5 minutes):**

- Recap the main points covered in the lesson, including the definition of a CSV file, reading data from a CSV file, using the split() method, and selecting data from a collection of values.

- Emphasize the practical applications of working with CSV files and how it can be useful in various fields.

- Encourage students to continue exploring and practicing their skills in working with CSV files outside of the classroom.

## **Common Core Standards:**

- CCSS.ELA-LITERACY.RST.9-10.3: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

- CCSS.ELA-LITERACY.RST.9-10.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.