TITTLE: Strings in Python

DURATION: 60 Mins

CC STANDARDS: CCSS.ELA-LITERACY.RST.6-8.3, CCSS.ELA-LITERACY.RST.9-10.3, CCSS.ELA-LITERACY.RST.6-8, 9-10, 11-12. 4, CCSS.ELA-LITERACY.RST.9-10.5

MATERIALS: PowerPoint Presentation, Laptops (students can be grouped if not enough laptops are present), Internet, AeroWeb's Website.

INTRODUCTION:

- The teacher introduces the first lesson that covers the introduction into Python by telling a Python success story. (AeroWeb recommends selecting a success story from this list https://www.python.org/about/success/ that suits your class the best.)
- The teacher begins with a discussion of what the students will learn through the course and introduces the topics which are:
    - Learn what are strings in Python
    - Learn string basics in Python
    - Learn string indexing in Python

LESSON PART 1:

- The teacher explains that strings in Python are sequences of characters used to represent text information and are represented using the str type.
- The teacher explains that strings can be delimited by a single or double quote, if the same kind is used at both ends.
- The teacher explains that an empty string is simply a string with nothing between the delimiters and that in Python a character is a string of length 1.
- The teacher introduces to the class the python compiler located in the resources tab and shows the students an example such as "Hello World!".
- Teacher shows that in Python, objects of type str or any basic numeric types such as int or float are immutable.
- The students are asked what they think of an example of an object of type string with the value 'Cat' and made the object reference animal refer to it. Showing that what will happen if the character 't' at position 2 tis to be changed to character 'n', but Python does not allow that and an error that

says "'str' object does not support item assignment" is shown by the compiler, meaning we cannot change the characters already assigned to that string object.

- The teacher encourages participation and deduction from what they have learned thus far.
- Students are taught that as strings are sequences, they are "sized" objects, therefore a len() function can be called and a string can be passed as an argument to find the size (length) of that string.
- Students are shown that spaces are also considered as characters and are counted by the len() function.
- The teacher explains string conversions where a built-in function str() in Python converts a data item such as an integer or float number to a string.
- The teacher asks the students what the answer would be in a series of examples, once again encouraging deduction and analytical reasoning.
- After the examples, the teacher introduces string indexing where the number between the square brackets is called an index. The teacher shows that all Python index positions start at 0 and end at the string length minus 1.
- Then the teacher uses an example and walks the students on how that syntax is used by finding the first and the last index in the following example:
s = 'Hello World'
print(s.index('H'), s.index('d'), len(s))
Resulting in:
0, 10, 11
- Have the students notice that the first index = 0, the last index = 10 and the length of the string s = 11. So, the last index = length - 1 = 11 - 1 = 10

LESSON PART 2:

- The teacher opens the class to a group discussion as the students see how they can use strings to make sentences using the Python compiler.
- The teacher asks the students to practice on their own or in groups some of the examples given in class.
- The students proceed to work on their own computers writing the next strings and printing them in the compiler.
- Teacher helps the students If they have a tough time, and assists them by asking questions such as "Could I have misspelled something?"
- Once the students point out the mistake, the teacher makes sure that they understand the syntax.

- Teacher walks around the room monitoring students.

CONCLUSION:

- At the end of the lesson, the teacher reviews what has been learned what they accomplished.
- Asks students if there is something they did not understand, or they would like for the teacher to cover in the next class.
- Teacher moves the rocket up the path and reminds them they are getting closer to the first milestone, controlling an RC car with Python.
- Teacher concludes by giving them a challenge. To go to https://www.aeroweb.info/python/code and attempt to practice anytime they can at home.