Aim	How can we determine the index of a substring in a string in Python?
Standards	**9-12.CT.2** Collect and evaluate data from multiple sources for use in a computational artifact. **9-12.CT.5** Modify a function or procedure in a program to perform its computation in a different way over the same inputs, while preserving the result of the overall program.
Objectives	By the end of the lesson, the students will be able to: 1. Compare two string methods: find() and index() by observing the use of them. 2. Determine a string method that is appropriate for a given data structure. 3. Create an interactive computer program that uses the index of substring in a string by using the two string methods.

Possible Misconceptions with Essential Questions	● Students may think that the case of a letter does not matter.
	   ○ Emphasize that the two methods perform case-sensitive search.
	   ○ "Will the case of a letter matter when using find() and index()?" - Yes, it will differentiate the lower case and the upper case.
	● Students may not recall the syntax for the input() method.
	   ○ "How do we ask a user for their name and store it in a variable?" - Use the input() method:
	     name = input("What is your name?")
	● Students may think that index() can be used with a conditional statement.
	   ○ Emphasize that the error message will not allow the program to use a conditional statement
	   ○ "Which method allows us to use a conditional statement? How does it work?" - As the find() method returns -1 when the substring is not found in the string, we can use that in a conditional statement. However, index() throws a value error, so we cannot use a conditional statement.
	● (Activity 2 - Number One Fan CHALLENGE) Students may not recognize that they need to cast an integer to a string to concatenate the strings.
	   ○ Include the syntax for casting in the worksheet and also emphasize that they should cast the integer with str() if they would like to concatenate strings.

Materials	● Google Slides ● Worksheet 1 with questions and tables for Activity 1 ● Worksheet 2 with questions and tables for Activity 2 ● Padlet ● Replit - Activity 1 ● Replit - Activity 2 - starter code ● Exit Ticket
Development(Do Now)	**[3 min]** **Do Now:** 1. Write your name on the index card, fold it in half and place it on your table so that I can see your name😀 2. Write down the names of your top 3 favorite artists/athletes.
Development(Activity 1)	**[15 min]** 1. Students will go to www.tinyurl.com/8tcuhdry for the Padlet page.

	2. Students will click on "Activity 1- Exploration code" link and make a copy of the code by forking the file. Ms. Park will demonstrate how they can fork a file. **[2 min]** 3. The teacher will ask the students to pair up with a partner to work on the questions on the worksheet. If anyone is missing a partner, the teacher will pair them up. 4. Students will work with a partner to answer the questions in the worksheet and also compare the two methods by filling out the graphic organizer in the backside of the worksheet. **[8 min]** 5. The teacher will circulate the classroom to check student work and answer any questions. 6. The class will review the questions and the table. Students will raise their hands to answer the questions and they will call on each other to answer the next question. The teacher will take notes on the Smartboard. **[5 min]**

Development(Activity 2)	**[15 min]**
	1. The teacher will distribute the lab worksheet and the class will go over the instruction. **[2 min]**
	2. Students will go to Padlet to access the starter code and work on the lab with their partner. **[8 min]**
	3. The teacher will circulate the classroom to check student work and answer any questions. The teacher will introduce input() function as needed.
	    a. "How do we ask a user for their name and store it in a variable?"
	    b. "Which method allows us to use a conditional statement? How does it work?"
	4. The teacher will ask one or two students to present their work in the front. **[5 min]**
	    a. "How do we determine which string method to use for each part of the lab?"

Closing/Summary	**[5 min]** ● How can we determine the index of a substring in a string in Python? ● What are some similarities and differences between find() and index() methods? ● How can we determine which method to use given a specific data structure?

Differentiation	● Scaffolds:
	    ○ Students will have the choice to finish the lab with or without the challenge tasks.
	● Guided notes
	    ○ Students will have the worksheet with notes where they have to fill in the blanks for keywords.
	● Starter code
	    ○ Students will be given a starter code with instructions in comments and the data set preloaded.
	● Functions/Concepts You Might Need table
	    ○ Students will have access to possible functions or concepts that they may need to complete the lab.
	● Challenge tasks
	    ○ Students who finish the lab question #1 for each part will be encouraged to work on the challenge tasks.

Assessment	● Circulating the classroom while students work in pairs ● Checking student work in their Repl file ● Questioning during the class discussion ● Lab (links to their lab will be collected) ● Exit Ticket