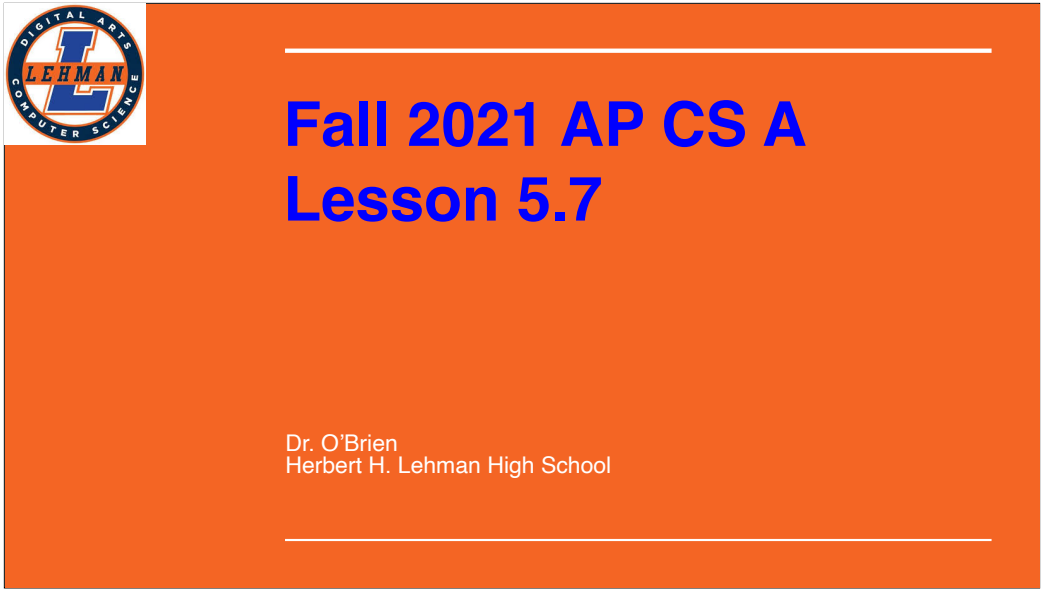


STANDARDS REFERENCED:

CSTA 11-12th grade standards: 3B-AP-12: Compare and contrast fundamental data structures and their uses.

NY State: 9-12.CT.7
Design or remix a program that
utilizes a data structure to maintain
changes to related pieces of data.

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.

Do now

be sure to: Get out your **binder**. Copy **goal** and answer **do now** questions below. Show all work or write a complete sentence for each answer:

Examine the code to your right.

1. Do you think it will work correctly? Explain why or why not?
2. Do you think it's possible to add new elements to an array? Explain your thinking.

```
int[] grades = {78, 92, 89, 56, 47};
grades[5] = 99;
```

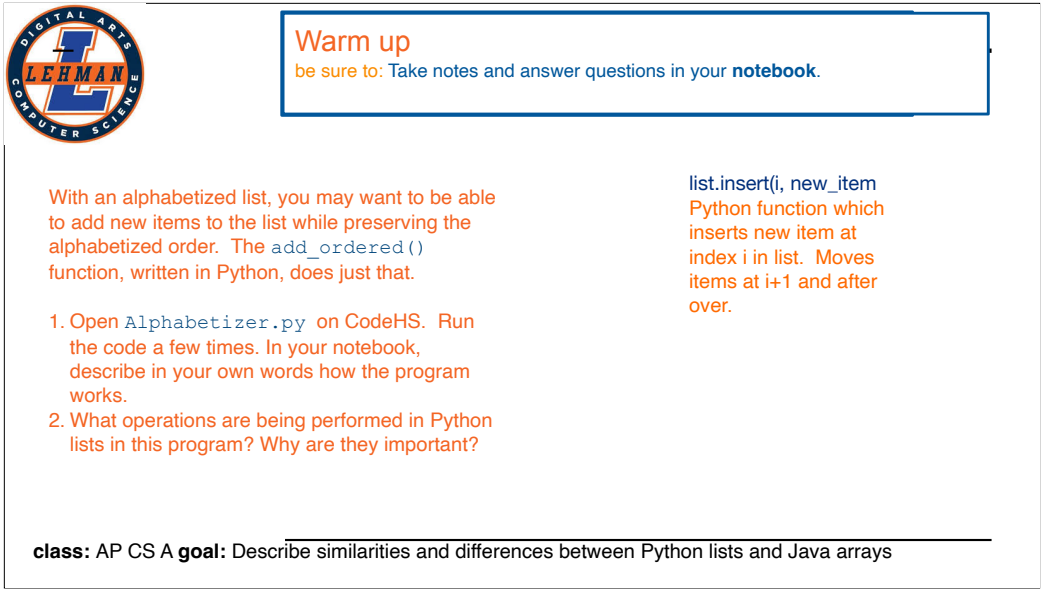
class: AP CS A **goal:** Describe similarities and differences between Python lists and Java arrays

1. no, it will throw an array index out of bounds exception.
2. No, arrays have a fixed length in Java.

framing

- **what:** Describe similarities and differences between Python lists and Java arrays
- **why:** Today we'll explore some limitations of Java Arrays by comparing them to Python lists
- **where to:** build our own `SuperArray` class that shares some properties with Python lists.

class: AP CS A **goal:** Describe similarities and differences between Python lists and Java arrays

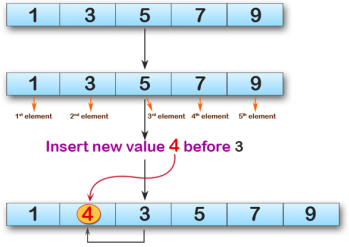


1. The program traverses a loop, checking if the item to be added precedes the current item alphabetically. If it does, it is inserted at that location. The edge case is if the new item will come at the end of the list. This is taken care of by the if statement, where this item will be appended to the end of the list.
2. Insert and append. This are basic python operations that are used in this program.

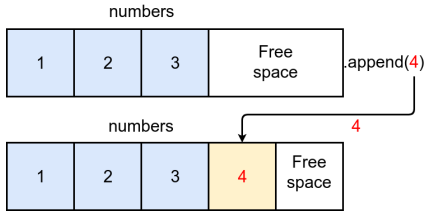
Vocabulary

be sure to: Take notes and answer questions in your **notebook**.

list.insert(i, new_item)
Python function which inserts new item at index i in list. Moves items at i+1 and after over.



list.append(new_item)
Python function appends new item to end of a list.



class: AP CS A **goal:** Describe similarities and differences between Python lists and Java arrays

Activity

be sure to: Take notes and answer questions in your **notebook**.

Examine the starter code in `Alphabetizer.java`. Then follow the directions below:

1. What issues to you anticipate running into if you try to implement the methods `append()` and `insert()` in Java?
2. Work with your partner to implement a strategy that can get around these issues.
3. Try implementing your solution in Java. How successful was it?

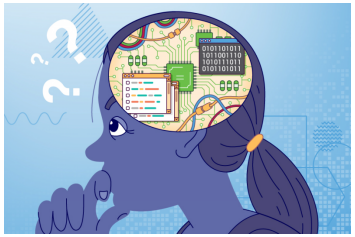
class: AP CS A **goal:** Describe similarities and differences between Python lists and Java arrays

1. The main issue is that arrays in Java are fixed in length. This means we can't directly add new items to an existing array.
2. One solution is to make a new array with length of length+1. Insert or append as needed, then replace new array for old array.
3. Answers will vary.

Reflection: Thinking about thinking

be sure to: Answer each question below with a complete sentence.

1. What did you find most challenging about today's activity?
2. What are some advantages of Python lists over Java arrays?
3. Are there any advantages of Java arrays over Python lists?



class: AP CS A **goal:** Describe similarities and differences between Python lists and Java arrays