Fall 2021 AP CS A
Lesson 4.4

Dr. O'Brien
Herbert H. Lehman High School
3 March 2022

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.

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:

In the following code segment, assume that the `ArrayList wordList` has been initialized to contain the `String` values `["apple", "banana", "coconut", "lemon", "orange", "pear"]`.

```
int count = 0;
for (String word : wordList)
{
if (word.indexOf("a") >= 0)
{
count++;
}
}
System.out.println(count);
```

What is printed as a result of executing the code segment?

A. 1
B. 2
C. 3
D. 4
E. 5

class: AP CS A **goal:** HDW use arrayList traversal to solve computational problems?

D.
+How is the arraylist traversed? The code segment uses an enhanced for loop to traverse wordList.

+Under what conditions is count incremented? The value of count is incremented each time a word contains the character "a".

+Why is the answer D? There are four elements of wordList that contain an "a", so 4 is printed

---

framing

- **what:** use ArrayList traversal to solve computational problems
- **why:** ArrayLists are a useful means to store data. Today we'll get some practice traversing them.
- **where to:** ArrayList traversal with enhanced for loops

class: AP CS A **goal:** HDW use arrayList traversal to solve computational problems?

Vocab

be sure to: Keep your **notebook** open. These definitions should be in your Glossary. If not Copy each definition, in your Java Glossary.

ArrayList (review)
An adjustable array. We can add new items to ArrayLists, remove, and replace items.

Traversal (review)
The process of looping through a string or array or ArrayList and accessing each element sequentially

Independent work

be sure to: Complete exercises in lessons 7.1, 7.2, and 7.3 (ArrayLists) on CodeHS!

```
for(int i = 0; i < scores.size(); i++)
{
   // This prints out the ith element!
   System.out.println(scores.get(i));
}
```

i iterates from 0 - size()

Each iteration of i accesses the index of scores at index i

ArrayLists use methods to alter the state of an ArrayList:

ArrayList Method	Function	Example
boolean add(E obj)	Appends obj to end of list	arrayList.add("ADD");
void add(int index, E obj)	Inserts obj at position index, moves elements index and higher up, and adds 1 to size	arrayList.add(2, "Add");
E get(int index)	Returns element at the position index	String elem = arrayList.get(2);
int size()	Returns the number of elements in the list	int num = arrayList.size();
E set(int index, E obj)	Replaces element at index with obj. Returns replaced element	arrayList.set(2, "NowVal");
E remove(int index)	Removes element from position index. Subtracts 1 from size and moves elements index and higher down one index.	arrayList.remove(2);

class: AP CS A **goal:** HDW use arrayList traversal to solve computational problems?

Reflection:

be sure to: Answer each question below with a complete sentence. Be prepared to share out!

1. What are some unexpected challenges that you ran into while working on the activities for today's class?
2. What's one thing you understand better about traversing arrayLists?
3. What lingering questions do you have?

class: AP CS A **goal:** HDW use arrayList traversal to solve computational problems?