



## Fall 2021 AP CS A Lesson 3.1

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### 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.6

Demonstrate how at least two classic algorithms work and analyze the trade-offs related to two or more algorithms for completing the same task.



### 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:

The code segment below is intended to print the length of the shortest string in the array `wordArray`. Assume that `wordArray` contains at least one element.

```
int shortest = /* missing value */  
for (String word : wordArray)  
{  
    if (word.length() < shortest)  
    {  
        shortest = word.length();  
    }  
}  
System.out.println(shortest);
```

Which of the following should be used as the initial value assigned to `shortest` so that the code segment works as intended?

- Ⓐ Integer.MAX\_VALUE
- Ⓑ Integer.MIN\_VALUE
- Ⓒ 0
- Ⓓ word.length()
- Ⓔ wordArray.length

class: AP CS A goal: HDW recognize and identify common algorithms that utilize array traversals?

string length is counted in integers. The edge case here is the longest possible countable string, which is the max value of integers, so A is the correct answer.



### framing

- **what:** recognize and identify common algorithms that utilize array traversals to reorder arrays.
- **why:** These algorithms are widely used and will prove useful in the future!
- **where to:** Getting some practice utilizing these algorithms

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### Vocab (review)

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

#### Algorithm

A step-by-step procedure for solving a problem

#### Statement execution count

The number of times a statement is executed by a program.

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### Coding to learn

be sure to: Log in to Workstation. Work on CodeHS exercises below. Make sure to write out a plan before you start coding!

- Exercise 6.3.6: Print Odds
- Exercise 6.3.7: Largest Value
- Exercise 6.3.8: Classroom Array
- Exercise 6.3.9: Array average
- Exercise 6.4.3: Finding the minimum value
- Exercise 6.4.5: Finding the Duplicates
- Exercise 6.4.8: Most improved

Complete any exercises you don't finish here as homework!

#### A regular for loop:

```
int[] scores = {88, 92, 91, 68, 88};
for(int i = 0; i < scores.length; i++)
{
    System.out.println(scores[i]);
}
```

#### An enhanced for loop:

```
for(int score : scores)
{
    System.out.println(score);
}
```

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SOLUTION CODE (REQUIRES CODEHS):

[Exercise 6.3.6: Print Odds](#)

[Exercise 6.3.7: Largest Value](#)

[Exercise 6.3.8: Classroom Array](#)

[Exercise 6.3.9: Array average](#)

Exercise 6.4.8: Most improved

[https://codehs.com/problemguides/assignment/55325822?section\\_id=256470](https://codehs.com/problemguides/assignment/55325822?section_id=256470)

Go through student solutions at the end of class.



### Reflection: Thinking about thinking

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

1. Explain the procedure (in natural language) of how to reorder an array.
2. What is an "edge case"?
3. How can you account for edge cases?



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+Explain the procedure (in natural language) of how to reorder an array.

Create a new temp array that is the same size as the original, copy elements from the original array to the new array in the order that you want and then copy the temp array back over on top of the original array to replace it.

+What is an "edge case"?

An edge case is a situation that requires special handling. A loop may leave out an edge case in order to avoid an error.

+How can you account for edge cases?

Edge cases can be handled after the loop!