01_lesson
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Lesson Objectives:
Students will be able to write a program that accesses elements at all indices of a Java array in multiple ways.

Aim:
How can we access elements of an array at targeted indices?

Warm up:
List and number your 5 favorite artists.

Time: 5 min

Lesson Content 1: (mini-lesson)
Mini-lesson on array indices (Students will learn that the index of an array starts from 0.)

Time: 5 min

Lesson Activity 1: (Basic array practice)
- Students will work individually on this assignment.
- Students will get the starter code with an array(colors) of rainbow order ROYGBIV.
- Students will be prompted to print red, green, violet. Students will need to use appropriate indices to access each color.
- CHALLENGE: The last prompt will ask the students to print violet(last item in the list) again without using the previous code (Answer: colors.length -1)
- Students are encouraged to search online how they can accomplish the CHALLENGE task.

Time: 10 min

Lesson Content 2: (mini-lesson)
Mini-lesson on array.length

The teacher will provide a mini-lesson on using array.length. Teacher will show how to use array.length as an index in searching through arrays.

Time: 5 min

Lesson Activity 2: (Treasure hunt themed practice)
- Students will work individually on this assignment.

- Students will be provided with an array of strings that form a treasure hunt along with starter code.
- Students will be told to get the 3rd element in the array, which will provide them with their next instruction.
- Each element of the array will be an instruction that leads to another element.
- The treasure hunt will also ask them to go to the last element in the array, then the 3rd to last, etc. This will provide them with an opportunity to practice using array.length.
- After several searches, the students will reach the end of the treasure hunt and will be presented with a prize.

Time: 10 min

Closing/Summary:
How can we access elements of an array at targeted indices?

Time: 5 min

Extra resource:
*****If the students wonder why the index starts from 0:

It comes from the history of programming language development.
Values for variables (including arrays) are stored in memory at a particular location (memory address).
An array starts at a particular address and then uses the memory locations next to it in a continuous line for however many spaces are needed.
The indexing is "how far away" from the start address is this value.
So, a[0] is zero memory units away from the start of the array a[1] is one memory unit away, etc.
There are a few languages that start with 1 but most start at 0.
Some languages really go with the list abstraction and try to stay away from specific locations, encouraging the use of concepts like the first element, last element, next element, etc.