

AP Computer Science A Study Guide Unit 6

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Array

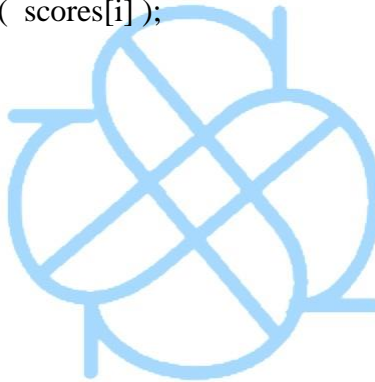
Array Creation and Access

- Arrays represent groups of related data all of the identical data type.
- The size of an array is established when created and cannot be modified.
- Arrays can store either primitive data or object reference data.
- When an array is created using the keyword new, all of its elements are initialized with a specific value based on the type of elements:
 - Elements of type int are initialized to 0
 - Elements of type double are initialized to 0.0
 - Elements of type boolean are initialized to false
 - Elements of a reference type are initialized to the reference value null. No objects are automatically created.
- Square brackets ([]) are utilized to get to and adjust a component in an Array utilizing a list. The indexed value, for instance array[index], can be utilized anywhere a normal variable can be utilized, for instance to get or assign any values or variables.
- The valid index values for an array are 0 through one less than the size of the array. Utilizing a record and index value outside of this range will give you an `ArrayIndexOutOfBoundsException`.

Traversing Arrays

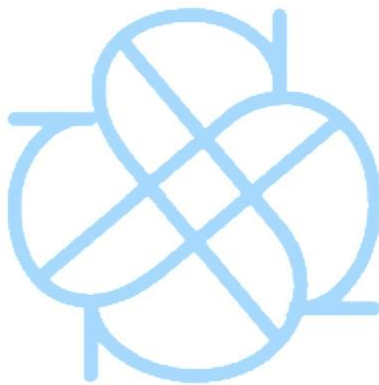
- Iteration (loops) can be utilized to get to all the components in an array, traversing through the array.
- Traversing an array with an indexed for loop or while loop expects components to be accessed with their indices.

```
public class OffByone
{
    public static void main(String[] args)
    {
        int[ ] scores = { 10, 9, 8, 7, 6};
        // Make this loop print out all the scores!
        for (int i = 1; i <= scores.length; i++)
        {
            System.out.println( scores[i] );
        }
    }
}
```



Enhanced for Loop for Arrays

- Enhanced for Loop = for each loop
 - Can be used in an array without specifying an index variable.



Developing Algorithms Using Arrays

- Determining the minimum or maximum value
- Computing a sum, average, or mode of elements
- Searching for an element in the array
- Insert elements in the ArrayList

- Delete elements in the ArrayList
- Determining whether there are duplicate/identical elements
- Changing the order of elements
- Reversing the order of elements

