Eng & CS Seminar: Data Structures + Algorithms

Unit 1: Arrays vs ArrayLists

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*Consider the following scenarios. For each, indicate whether you would use an array or an ArrayList and explain why.*

1. You have a text file that contains all of William Shakespeare’s works. You’d like to find and print the 10 longest words used.
2. You want to create a data structure that contains AAPL’s daily maximum stock price for each day of the preceding quarter.
3. Your teacher wants to create a gradebook, where she can keep track of all her students’ progress and grades over the year. Each student is modeled as a Student and she starts this project after the add/drop period. How should she handle the collection of Students? How should she handle the collection of grades for each Student?

*For each of the following problems, you will write code.*

1. Write a method, public static void switch(int[] arr), that accepts an array and switches the positions of the smallest and the largest values within the array.  
   public static void switch(int[] arr){  
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
   }
2. Write a method, public static void deleteEvens(ArrayList<Integer> list), that accepts an ArrayList and deletes all even values.  
   public static void deleteEvens(ArrayList<Integer> list){  
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
   }
3. For the two preceding problems, the methods written alter the data structures. Explain why this happens even when the return type for each is void.