Discuss at least **two** of the following topics on Lists, Stacks, Queues, and Priority Queues for your initial post. Provide a code example, where necessary, to elaborate your thoughts.

* Using foreach loops to traverse elements in a collection.
* The difference between ArrayList and LinkedList, advantages and disadvantages of each.
* Collections methods for sorting, searching, shuffling a list, finding the largest and smallest elements.
* Describe Vectors, ArrayList, and Stacks explaining the differences.

Java is very versatile, given its vast abilities. The first topic of discussion is using foreach loops to traverse elements in a collection. Using a foreach loop to traverse elements in a collection “encapsulates the iteration code itself” without programmers having to do it (Minh, 2024). A programmer only needs to “specify what-to-do in each iteration” (Minh, 2024).

Here is an example of a foreach loop traversing elements in a collection (Oracle, 2018):

**>// Returns the sum of the elements of a**>

int sum(**int[] a**) {

int result = 0;

for (**int i : a**)

result += i;

return result;

}

The second topic of focus for this discussion board is the difference between ArrayList and LinkedList, as well as the advantages and disadvantages of each. It may be tricky to remember the difference between an ArrayList and a LinkedList since they both are defined under the List interface, which extends from Collection. Something to remember with an ArrayList is that if the capacity is exceeded, a larger array is created, and all elements in the array are copied into the new array (Liang, 2019/2025, sect. 20.5.2).

If you plan on using insertion or deletion, then it is best to use a LinkedList since it can grow and shrink (Liang, 2019/2025, sect. 20.5.2). Unlike the LinkedList, an ArrayList does not automatically shrink, but it does grow automatically, like LinkedList (Liang, 2019/2025, sect. 20.5.2). An important disquisition between the two is that LinkedList is better for inserting and removing elements at the start of a list while ArrayList works better for other operations (Liang, 2019/2025, sect. 20.5.2). LinkedList allows all methods that ArrayList minus trimToSize() but ArrayList does not have the getFirst, getLast, addFirst, and addLast methods as LinkedList does (Liang, 2019/2025, sect. 20.5).

**References**

Liang, D. Y. (2025). *Introduction to Java Programming and Data Structures: comprehensive version*. Pearson. (Original work published 2019)

Minh, N. H. (2024, July 18). *5 Ways to Iterate Collections in Java*. Codejava.net. https://www.codejava.net/java-core/collections/the-4-methods-for-iterating-collections-in-java#forEach

Oracle. (2018). *The For-Each Loop*. Oracle.com. https://docs.oracle.com/javase/8/docs/technotes/guides/language/foreach.html

**Assignment Requirements and Grading:**

* 1. An initial post of approximately 250 words is due by **Thursday, 11:59 p.m., CST**.
  2. For the initial post to be considered substantive, it should be at least 250 words in length and fully cover the topics being presented. Single sentence definitions or responses will not be awarded points.
  3. Submit your post by clicking on the assignment link above, then Create Thread. You must create a thread in order to view your peers' posts. Tip: Create your post in a Word document and then copy and paste your work into the thread.
  4. A minimum of three (3) responses, to the original threads of other students, of 100-200 words each are due by **Sunday, 11:59 p.m., CST**.
  5. To view the rubric grading criteria, click on the following link: [Discussion Board Grading Rubric.](https://content.bellevue.edu/cst/csd/rubricdbv3.pdf)