**CS 232: DATA STRUCTURE – FINAL PROJECT**

**QUESTIONS FOR C LEVEL**

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1. **Which version of the list-based Priority Queue did you implement?**

The version of the list-based Priority Queue is *“A PQ where the enqueue method always appends an item to the end of the list, and the dequeue method searches the list for the highest-priority item and removes it from wherever it is”.*

1. **What are the Big O times for the enqueue(), dequeue(), size(), str(), and is\_empty() functions for the PQ you implemented? Explain your answers.**

* \_\_str\_\_ is O(n) because it has to print everything in the queue list, and we don't know how long that will be.
* The dequeue() method is O(n) because it uses a loop to find the highest-priority item, which will go through all items in the list and we don’t know how long that will be. Moreover, this is also because in the case that the highest\_priority item is at position 0, it modifies the list at position 0, which means that every time something is removed the entire rest of the list has to move as well.
* The enqueue() method is O(1) because it modifies (adds item) the end of the list, and changes to that end don't affect anything else.
* \_\_init\_\_ is O(1) since this function creates an empty LinkedQueue and does not relate to the growth rate.
* size() is O(1 because it returns the value of the length of the LinkedQueue and doesn't affect anything else.
* is\_empty is O(1) since it simply checks whether the Queue is empty or not, which takes a constant amount of time.