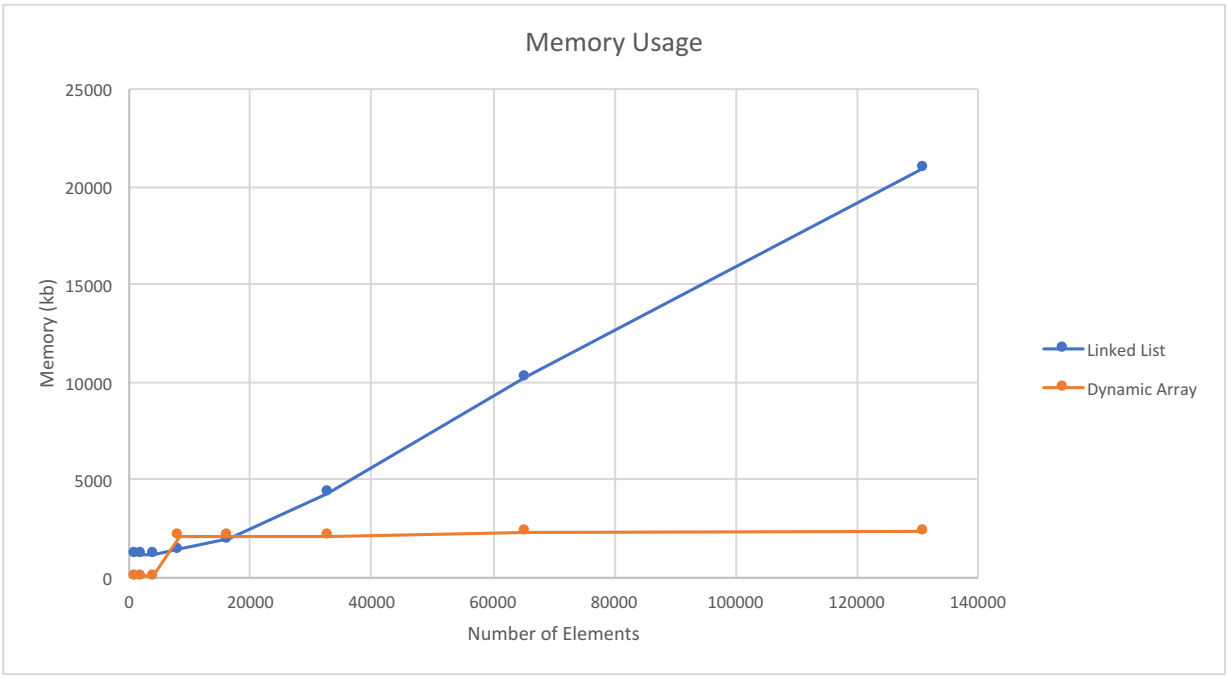
CS261 Assignment 3
Problem 2

Test Results					
power	n	Linked List		Dynamic Array	
		Memory Usage (KB)	Running Time (ms)	Memory Usage (KB)	Running Time (ms)
10	1024	1180	20	100	30
11	2048	1180	70	100	80
12	4096	1180	300	100	320
13	8192	1436	1170	2148	1260
14	16384	1964	4610	2148	4810
15	32768	4340	18450	2148	19300
16	65536	10276	74090	2328	77190
17	131072	20964	292600	2376	307750



Answers to Questions:

1. Which implementation uses more memory?

   Linked list uses significantly more memory. This is because there is a lot of associated logistical memory outside of the "data" itself that is required for the linked list to function. This include the front and back pointers, sentinels, etc. Whereas, with a dynamic array you only have the array and the data it contains.

2. Which Implementation is Fastest

   I expected dynamic array to be faster than the linked list when it comes to the contains function as you do not need to mess with pointers, all you are doing is comparing the value within the array. However, it would appear that the linked list is slightly faster when it running the contains function . I believe that the results are erroneous and that the dynamic array should be faster.

3. Would you expect anything to change if the loop performed remove() instead of contains()? If so, why?

   I would expect the linked list to be signifincatly faster than the dynamic array implementation. When the remove function is called with the dynamic array. There is the potential that the entire array would need to be copied (if the first element in the array is going to be removed). Whereas with a linked list, it is simply the case of changing a few pointers and freeing the link.