Response for Week 1 Interview Questions

1. What is an advantage of dynamic arrays compared to traditional, static arrays?
2. What is a disadvantage of dynamic arrays compared to traditional, static arrays?

Q1:

Consider the characteristics of the size of both a static array and a dynamic array. Static arrays have a fixed size, which cannot be changed once it is initialized, in other words, its size is constant. If the size is changed, then it will not be the same static array. But for a dynamic array, its size can be changed, in other words, it is resizable. When more elements or items are added to a dynamic array, its size is automatically expanded to hold the corresponding number of elements or items. This creates an advantage over static arrays as the same variable can be used, but with static arrays, if it must be expanded to hold more elements or items, a new static array, which is a new variable must be created, and it might cause misunderstanding as there will be multiple variables in the code.

Q2:

Consider the characteristics of memory allocation of both a static array and a dynamic array. In the previous question, it is mentioned that a static array has a fixed size. Since memory is allocated for a static array when created. If a static array of size 10 is created, 40 bytes of memory is allocated, and it will not be changed for this static array, and there is no excess memory. For dynamic arrays, although it is mentioned that their size is variable, a dynamic array can only grow in size of exponents of 2. For example, a dynamic array can be in sizes of 0, 1, 2, 4, 8, 16, etc. If a dynamic array of size 8 is created, then all of the memory allocated will be used up. Let’s say we have to add another element into the dynamic array, causing it to hold 9 elements. But since dynamic arrays can only grow in size of exponents of 2. It will grow into the next exponent of 2, which is 16. But since we only have 9 elements in that dynamic array. There will be an excess of memory allocation, 28 bytes of excess memory will be allocated to that dynamic array, which affects the file size.