*INFO-3135, F2025*

Week 2 Practice Exercise

**From the Stacks and Lists Lecture and Demonstration**

**Review Questions:**

1. At any point, how many elements are there on the stack?
2. Where does a stack grow and shrink?
3. What is the advantage of having the bottom (rather than the top) of the stack be at index 0?
4. What happens when the stack is empty?
5. Can a stack be full?
6. What are two advantages of linked lists?
7. How do we access an element’s successor in a list?
8. How do we access, say, the third element in the list?
9. What does the last element in the list point to?
10. Can a list be full?
11. Why is inserting a node at the front a special case?

**Coding Practice:**

Create a new VS2022 solution.   
Name the solution, project, and source file: **Vector**

1. Write a dynamic array-implemented Vector class with the following private attributes: capacity, size, array.
2. Write these public operations for your Vector class:

* constructor
* destructor
* isempty
* getsize
* getcapacity
* push\_back
* pop\_back
* at
* print
* clear

1. Write this private operation:

* expandCapacity

1. Write a tester file with a main() to test your Vector class and its operations, for example:

* Create a vector with capacity of 5
* Check if empty
* Print size and capacity
* Add 5 elements to the end of the vector
* Print the vector
* Print size and capacity
* Remove the last element
* Print the vector using the at function
* Add more elements beyond the capacity