**Name:**

**Advanced Programming in C++**

**Lab Exercise 3/5/2025**

In this exercise, you will be writing some programs that use the Vector class. In each of these exercises, you are to submit your source code as well as a sample output.

1. Write a program that creates a vector of 10 integers and fills them with random integers and prints them to the screen.
2. Modify Program 1 so that it changes the size of the vector to 20 integers and then fills them with random integers.
3. Write a program that creates a vector of 0 elements and then adds 5 elements containing random integers using the push\_back method.
4. Modify Program 3 so that it displays the 5 elements using the pop\_back method.
5. Write a program that creates a vector of 20 integers and displays them forward as well as backward using the reverse method.
6. Write a program that does the following:
   1. Create a structure variable that contains the result of a student exam and contains; name, student ID, test score, and letter grade. The data types are up to you.
   2. Create an array of 5 studentExam structure variables.
   3. Populate the structure variables with the name, studentID, and testScore that are read from a disk file.
   4. Your program should calculate the letter grade based on the 10 point scale and place that data in the appropriate structure variable.
   5. Report the highest, lowest and average numerical grade.