**Name:**

**Advanced Programming in C++**

**Lab Exercise 2/7/2025**

In this exercise, you will write several programs that will demonstrate some of the basic features of the C++ programming language. When you have completed your programs, you are to submit your documented source code as well as a sample.

1. A particular talent competition has 5 judges, each of whom awards a score between 0 and 10 for each performance. Fractional scores, such as 8.3, are allowed. A performers’ final score is determined by dropping the highest and lowest score received, then averaging the 3 remaining scores. Write a program that uses this method to calculate a contestant’s score. Include the following functions:

* void getJudgeData( ) should ask the user for the judges score, store it in a reference parameter variable, and validate it. The function should be called once by main( ) for each of the five judges.
* void calcScore( ) should calculate and display the average of the 3 scores that remain after dropping the highest and lowest scores the performer received. This function should be called just once by main( ), and should be passed the five scores.

The last two functions should be called by calcScore, which uses the returned information to determine which of the scores to drop.

* double findLowest( ) should find and return the lowest of the 5 scores passed to it.
* double findHighest( ) should find and return the highest of the 5 scores passed to it.

*Validation: Do not accept judges scores lower than 0 or higher than 10.*

1. Write a program that simulates the design shown below using a component reliability of 0.80 for components 1 and 2, and 0.95 for components 3 and 4. Print the estimate of the reliability using 5,000 simulations.

Component 1

Component 3

Component 4

Component 2