**Name:**

**Advanced Programming in C++**

**Lab Exercise 3/4/2025**

In this exercise you will write programs that demonstrate the use of arrays in the C++ programming language. For each program assigned you are to submit the documented source code as well as a sample output and attach it to this handout and place in the PM session turn-in folder.

1. Write a program that lets the use enter 10 values of type double into an array. The program should then display the largest, smallest, and average value stored in the array.
2. Write a program that reads in from a data file the rainfall for each of twelve months into an array of doubles. The program should then calculate and display the average and total rainfall for the year as well as the month that had the largest and smallest rainfall. Note: You will need to create your own data file.
3. Write a program that will count the number of each type of character in the play Hamlet. A file called hamlet.txt can be found in the data files folder on the server. You program should report the percentage of each character. Consider ‘A’ and ‘a’ to be equivalent. Hint: consider using a 26 element array.
4. Use a one-dimensional array to solve the following problem. A company pays sales people on a commission basis. The salespeople each receive $200 per week plus 9 percent of their gross sales for the week. For example, a salesperson who grosses $5000 in sales in a week receives $200 plus 9 percent of $5000, or $650. Write a program using an array of counters that determines how many of the salespeople earned salaries in each of the following ranges:
5. $200 – 299
6. $300 – 399
7. $400 – 499
8. $500 – 599
9. $600 – 699
10. $700 – 799
11. $800 – 899
12. $900 – 999
13. $1000 and over

5. Write a program that let’s a maker of chips and salsa keep track of their sales of five different types of salsa they produce: mild, medium, sweet, hot, and zesty. It should use two 5-element parallel arrays: an array of strings that holds the five salsa names and an array of integers that holds the number of jars sold in the past month for each salsa type. The salsa names should be stored using an initialization list at the time the name array is created. The program should prompt the user to enter the number of jars sold for each type. Once the sales data has been entered, the program should produce a report that displays the sales for each type, total sales and the names of the highest and lowest selling products. Use good structured programming techniques when writing this program (i.e. using functions).