**Name**

**Advanced Programming in C++**

**Lab Exercise 3/8/2023**

In this exercise, you will work on programs that will require sorting. Download Lab Exercise 3.17.2021 starter code. Problem 1 is a sorting demo program that demonstrates a variety of sorting algorithms. The program allows you to choose the type of sort algorithm you with to use, the number and range of integers to be sorted, and reports the number of operations involved in the sort.

1. Open the solution and run the program using 1000 numbers to sort with a range of 1 to 10000. Fill in the following table:

|  |  |
| --- | --- |
| **Type of sort** | **Number of operations** |
| Bubble |  |
| Selection Sort |  |
| Insertion Sort |  |
| Merge Sort |  |
| Quick Sort |  |

Repeat the exercise with 5000 numbers to sort

|  |  |
| --- | --- |
| **Type of sort** | **Number of operations** |
| Bubble |  |
| Selection Sort |  |
| Insertion Sort |  |
| Merge Sort |  |
| Quick Sort |  |

Repeat the exercise with 10000 numbers to sort

|  |  |
| --- | --- |
| **Type of sort** | **Number of operations** |
| Bubble |  |
| Selection Sort |  |
| Insertion Sort |  |
| Merge Sort |  |
| Quick Sort |  |

What can you generalize about these sorting algorithms?

1. Write a program that generates and sorts 500 numbers in descending order. Use any algorithm you wish.
2. Write a program that will sort first names (no spaces) in ascending order.

When you have completed your programs, submit your source code and a sample output.