**ICS 108 – Object-Oriented Programming**

**Lab # 9 – Objects and Classes**

**Objectives:**

In this lab, the following topic will be covered:

1. Objects and Classes

**Task**

Design a class named **StopWatch**. The class contains:

* Private data fields **startTime** and **endTime** with getter methods.
* A no-arg constructor that initializes **startTime** with the current time.
* A method named **start()** that resets the **startTime** to the current time.
* A method named **stop()** that sets the **endTime** to the current time.
* A method named **getElapsedTime()** that returns the elapsed time for the stopwatch in milliseconds.

Write a test program that measures the execution time of sorting 100,000 numbers (generated randomly in the range of 0 to 100) using the following selection sort method:

/\*\* The method for sorting the numbers \*/

**public** **static** **void** selectionSort(**int**[] list) {

**for** (**int** i = 0; i < list.length - 1; i++) {

// Find the minimum in the list[i..list.length-1]

**int** currentMin = list[i];

**int** currentMinIndex = i;

**for** (**int** j = i + 1; j < list.length; j++) {

**if** (currentMin > list[j]) {

currentMin = list[j];

currentMinIndex = j;

}

}

// Swap list[i] with list[currentMinIndex] if necessary;

**if** (currentMinIndex != i) {

list[currentMinIndex] = list[i];

list[i] = currentMin;

}

}

}