

ELEC 3150 – Object-Oriented Programming
Lab 1 - Array Reversal with Functions

The task of creating an array of twenty elements with each elements value corresponding to the elements index in the array is completed by initializing an integer array, iterating over each index of the array, and populating the value of the element at each index.

A seperate function was created to print the array index and corresponding value for each element in the array to the console. Using this function, the initial array order was verified to have length of twenty and values corresponding to each elements index in the array.

To reverse the array, the first highest index (length - 1), the first lowest index (0), and the median index (at which reversal would be complete) are identified. The first half of the array indices are iterated over. The value at the current lowest index (the loop counter) is stored in a local variable. After the value is stored, the current value at the highest index replaces the value at the current lowest index. The stored value in the variable, originally the value at the lowest index, then replaces the value in the current highest index. After swapping the values for the current pair of indices, the highest index is decremented, the lowest index is incremented, and the new lowest index is compared to the median index terminating the loop if it has been reached.

In order to verify the reversal of the array, the array is printed again following the array reversal function. The resulting array length, indices, and values printed to the console are of the same length and index ordering as the original array with reversed values verifying that the algorithm functions correctly. (See screenshot of console output on following page.)

```
bennetts4@turing:~/Lab01$ nano arrayReversal.cpp
bennetts4@turing:~/Lab01$ g++ -g -o arrayReversal arrayReversal.cpp
bennetts4@turing:~/Lab01$ ./arrayReversal
```

```
A[ 0 ] = 0
A[ 1 ] = 1
A[ 2 ] = 2
A[ 3 ] = 3
A[ 4 ] = 4
A[ 5 ] = 5
A[ 6 ] = 6
A[ 7 ] = 7
A[ 8 ] = 8
A[ 9 ] = 9
A[ 10 ] = 10
A[ 11 ] = 11
A[ 12 ] = 12
A[ 13 ] = 13
A[ 14 ] = 14
A[ 15 ] = 15
A[ 16 ] = 16
A[ 17 ] = 17
A[ 18 ] = 18
A[ 19 ] = 19
```

```
A[ 0 ] = 19
A[ 1 ] = 18
A[ 2 ] = 17
A[ 3 ] = 16
A[ 4 ] = 15
A[ 5 ] = 14
A[ 6 ] = 13
A[ 7 ] = 12
A[ 8 ] = 11
A[ 9 ] = 10
A[ 10 ] = 9
A[ 11 ] = 8
A[ 12 ] = 7
A[ 13 ] = 6
A[ 14 ] = 5
A[ 15 ] = 4
A[ 16 ] = 3
A[ 17 ] = 2
A[ 18 ] = 1
A[ 19 ] = 0
```