Isaac Smith

Professor Tao

Lab 2

**Lab2.c**

// lab2.c - measure execution time of C code

#include <stdlib.h>

#include <stdio.h>

#include <time.h>

int main **()**

**{**

const int MaxSize **=** 75000**;**

int i**,** j**,** temp**;**

// Part one: processing a statically allocated array

clock\_t beginStatic **=** clock**();**

int staticArray**[**MaxSize**];** // declare an array

**for** **(**i**=**0**;** i**<**MaxSize**;** i**++)** // initialize the array with a

staticArray**[**i**]** **=** MaxSize**-**i**;** // descending sequence of values

**for** **(**i**=**0**;** i**<**MaxSize**-**1**;** i**++)** // bubble sort data in the array

**for** **(**j**=**MaxSize**-**1**;** j**>**i**;** j**--)**

**if** **(**staticArray**[**j**-**1**]** **>** staticArray**[**j**])**

**{**

temp **=** staticArray**[**j**-**1**];**

staticArray**[**j**-**1**]** **=** staticArray**[**j**];**

staticArray**[**j**]** **=** temp**;**

**}**

clock\_t endStatic **=** clock**();**

double staticTime **=** **(**double**)(**endStatic **-** beginStatic**)** **/** CLOCKS\_PER\_SEC**;**

// Part two: processing a dynamically allocated array

clock\_t beginDynamic **=** clock**();**

int **\***dynamicArray**;**

dynamicArray **=** calloc**(**MaxSize**,** **sizeof(**int**));**

**for(**i**=**0**;** i**<**MaxSize**;** i**++){**

**\*(**dynamicArray **+** i**)** **=** MaxSize **-** i**;**

**}**

**for(**i **=** 0**;** i **<** MaxSize**-**1**;** i**++){**

**for(**j **=** 0**;** j **<** MaxSize**-**1**;** j**++){**

temp **=** **\*(**dynamicArray**+(**j**-**1**));**

**\*(**dynamicArray**+(**j**-**1**))** **=** **\*(**dynamicArray**+**j**);**

**\*(**dynamicArray**+**j**)** **=** temp**;**

**}**

**}**

clock\_t endDynamic **=** clock**();**

double dynamicTime **=** **(**double**)(**endDynamic **-** beginDynamic**)** **/** CLOCKS\_PER\_SEC**;**

// Display the amount of time used for each part above

printf**(**"Time spent creating/sorting static array: %lf seconds\n"**,** staticTime**);**

printf**(**"Time spent creating/sorting dynamic array: %lf seconds\n"**,** dynamicTime**);**

**return** 0**;**

**}**

**Screen Capture of Working Lab**

