Getting Started with Assignment 1b

COMP 550.001 Fall 2017

First, download the .zip file from <u>http://cs.unc.edu/~tamert/comp550-f17/hw1.zip</u>. This tutorial will use the Eclipse editor to import and run the starter code.

Import the .zip file as an Eclipse project

First, go to "File"->"Import".

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In the Import dialog, select "General"->"Projects from Folder or Archive" and click "Next >".

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< Back Next > Finish Can	cel

Next, select the "Archive..." button.

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Navigate to where you saved the hw1.zip file, select the file, and click "Open".

The Import dialog should now look like the following:

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You only need the Eclipse project, so uncheck "hw1.zip_expanded" and click "Finish".

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The project comp550_hw1 should now be listed in the Package Explorer.



Run the starter code

First, open prob1/sort/Main.java and run it. On success, it prints a message of the form:

"The sort took x.xxxxx milliseconds."

😫 Package Explorer 🛛		🛿 Main.java 🕺
 ✓ comp550_hw1 ✓ m prob1 ✓ sort > Ø Main.java > Ø Sorter.java > m prob2 > m JRE System Library [J2SE-1.5] 		<pre>1 package sort; 2 3*import java.util.ArrayList; 6 7 public class Main { 8 9// Choice of whether to display debug messages 10static final boolean DEBUG = false; 11 12// Choices of available sorting functions 13static final int INSERTION_SORT = 1; 14static final int MERGE_SORT = 2; 15static final int SERTION_SORT = 3; 16static final int SERTION_SORT = 3; 17</pre>
	1	16 ····static-final-int-BURBLE SORT-=.4:
		<pre>10 *** static final int SDBLE_SOUT = 4; 17 **** 18 ****/* Size of datasets 19 *** static final int SMALL_SIZE = 1000; 20 *** static final int SMALL_SIZE = 100000; 21 **** 22 ****/* Choices of available data to sort 23 *** static final int SMALL_ALMOST = 2; 25 *** static final int SMALL_ALMOST = 2; 25 *** static final int SMALL_ALMOST = -3; 26 *** static final int SMALL_ALMOST = -5; 28 *** static final int LARGE_SORTED = -5; 28 *** static final int LARGE_SORTED = -5; 28 *** static final int LARGE_BACKWARDS = *7; 30 *** static final int LARGE_RANDOM = -8; 31 ****/* Sort function to apply 33 *** static int sortFunctionChoice = MERGE_SORT; 34 //*** static int sortFunctionChoice = SELECTION_SORT; 34 //*** static int sortFunctionChoice = SELECTION_SORT; 35 //**** static int sortFunctionChoice = SELECTION_SORT; 36 **** static final @ Declaration @ Console 13 </pre>

Then, open prob2/maximumSubarray/Main.java and run it. On success, it prints out debug messages and a message of the form:

"The function took x.xxxxx milliseconds."

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		17	<pre>Main function, which runs either the brute-force or recursive solution to find the maximum subarray of the chosen array. @param args lic static void main(String[] args) { // Build an array of positive and negative numbers int numElements = 10; ArrayList<integer> data = generateRandomDataset(numElements); // Get the start time log startNanos = System.nanoTime(); // Find the maximum subarray MaximumSubarraySolution solution; switch (functionChoice) { Javadoc Declaration Console 3 Arian(1)[Java Application]C:\Program Files\Java\re18.0_131\bin\javaw.exe (Aug 24, 2017, 1:39:05 P : [2, -1, 3, -3, -2, 4, 0, -5, 1, -4] n took 0.785504 milliseconds. m=2): [2]</integer></pre>

Starter code structure

The starter code is broken into two separate folders and packages, one for each problem. You should read through the existing code to see how it works. Each Main.java file has a boolean DEBUG at the top that you can set to true to view additional output. In addition, both files select the algorithms to use via static ints defined before the main() function: sortFunctionChoice and datasetChoice for problem 1, and functionChoice for problem 2.

For problem 1, you should run each function-dataset combination to generate a table of timing results. You are welcome to modify existing code, but it should not be necessary.

For problem 2, you will have to fill in the function definitions of findMaximumSubarrayBruteForce() and findMaximumSubarrayRecursive() in Solver.java, and then run both with a range of input data sizes (numElements in main()) to generate a table of timing data.