Assignment 2

Submitted By:
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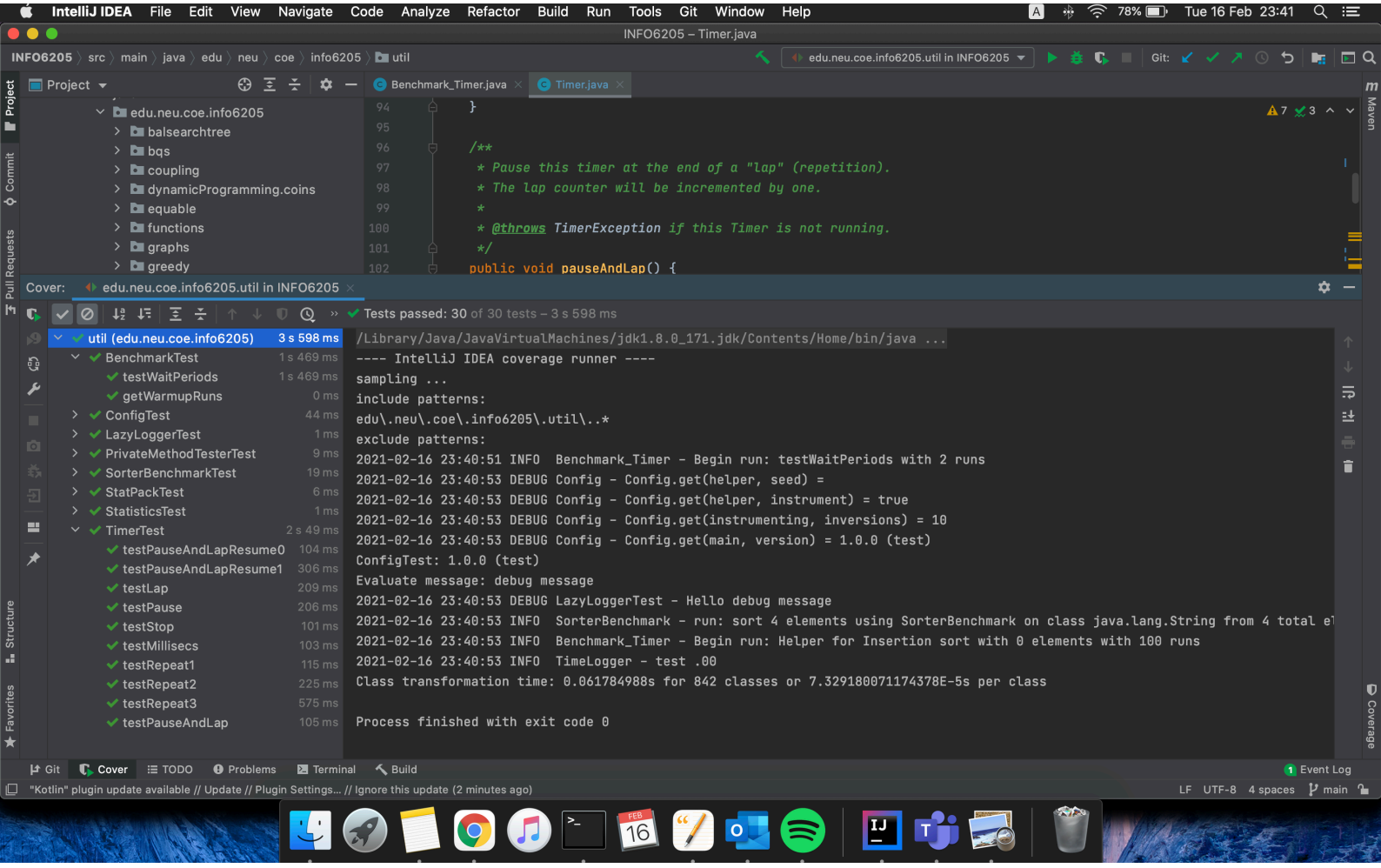
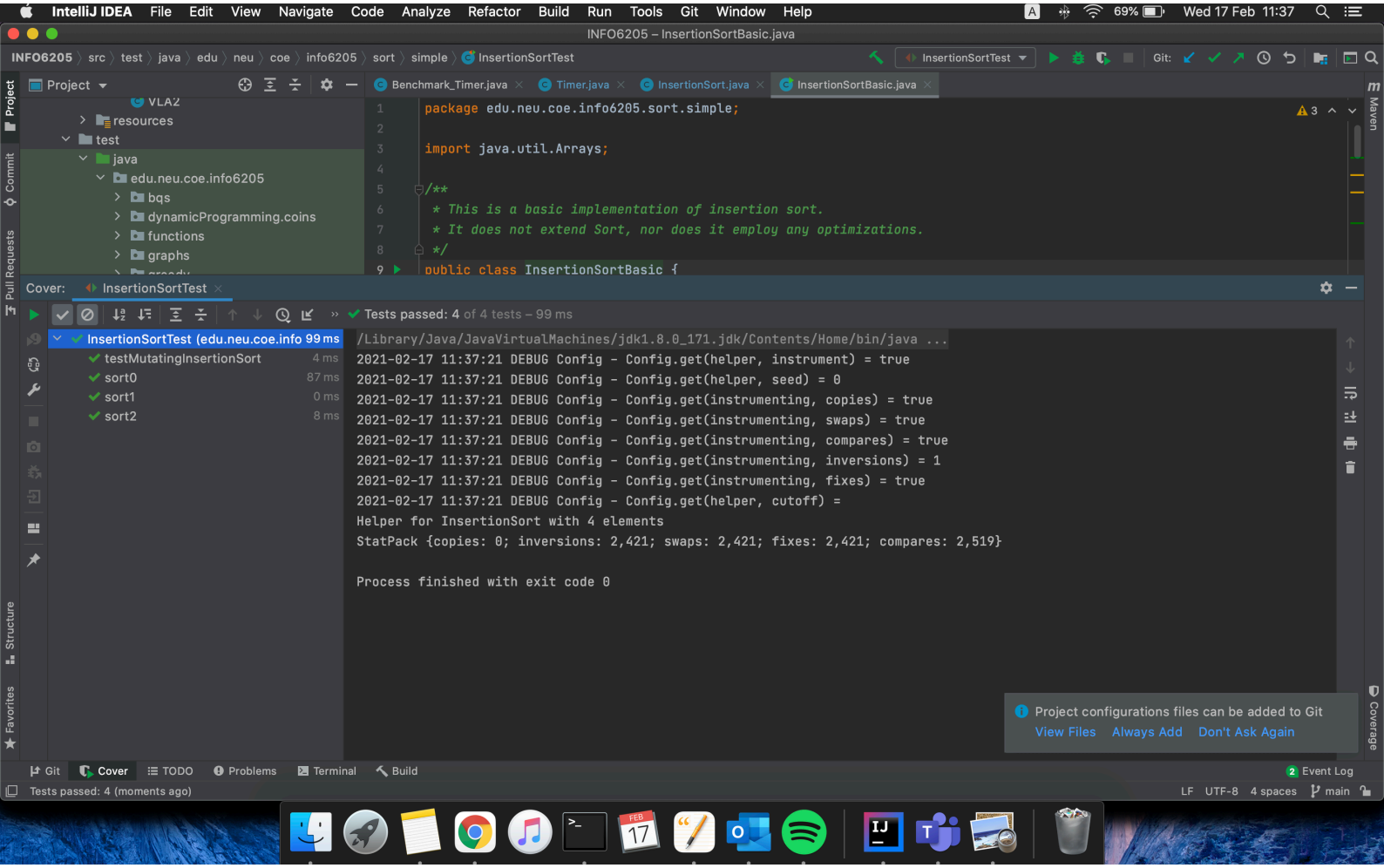
PART 1:



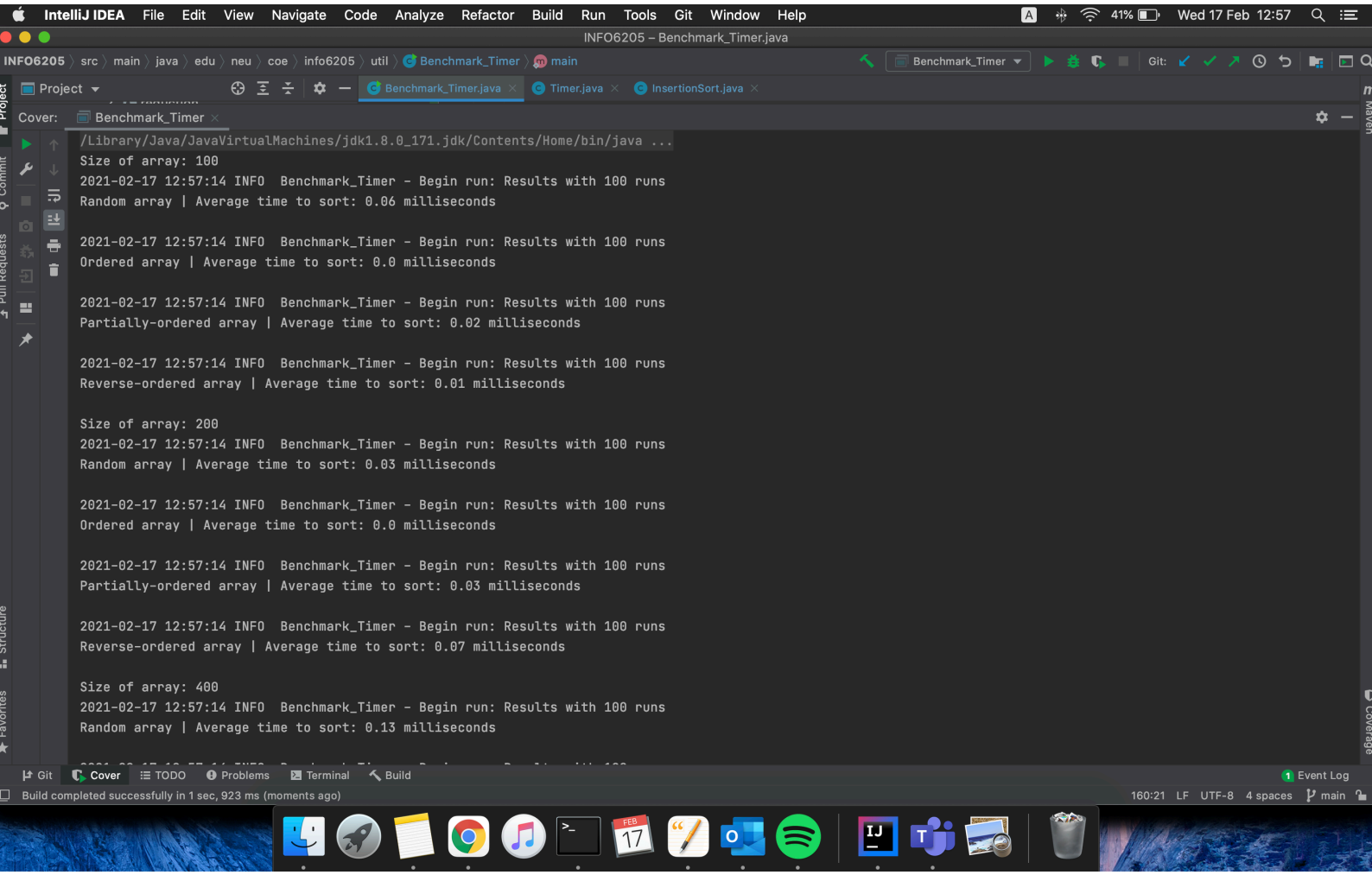
Running unit tests in BenchmarkTest and TimerTest

PART 2:



Running unit tests in InsertionSortTest

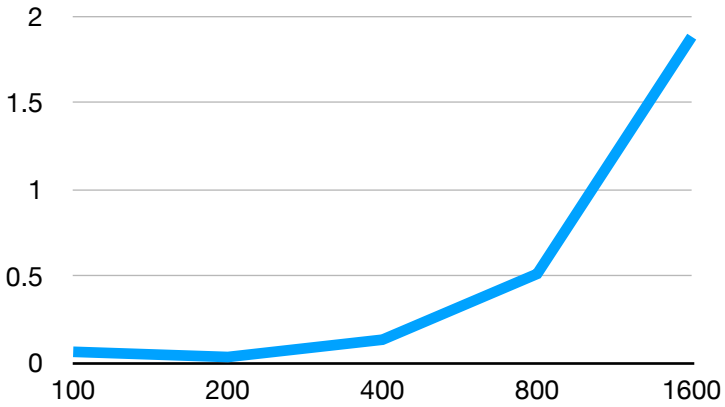
PART 3:



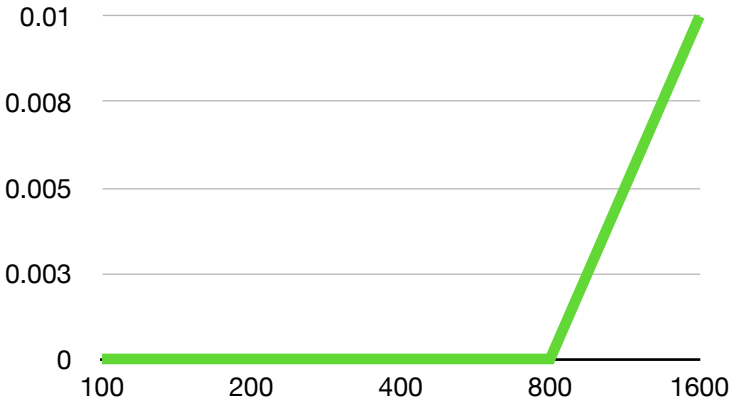
Running Benchmark_Timer after adding main method

CONCLUSION:

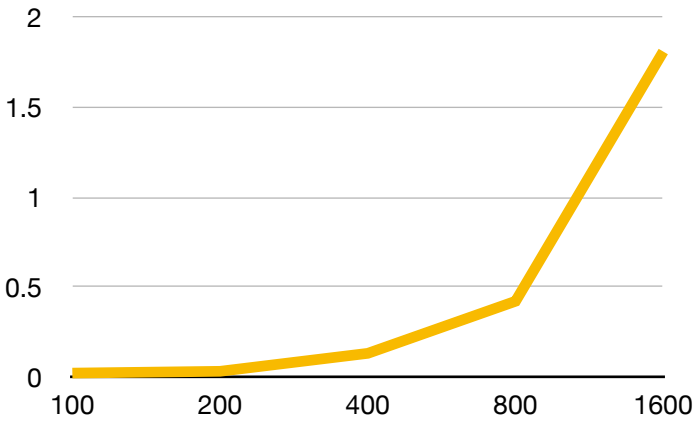
Random Array	
Size of Array	**Time for execution (in milliseconds)**
100	0.06
200	0.03
400	0.13
800	0.51
1600	1.88



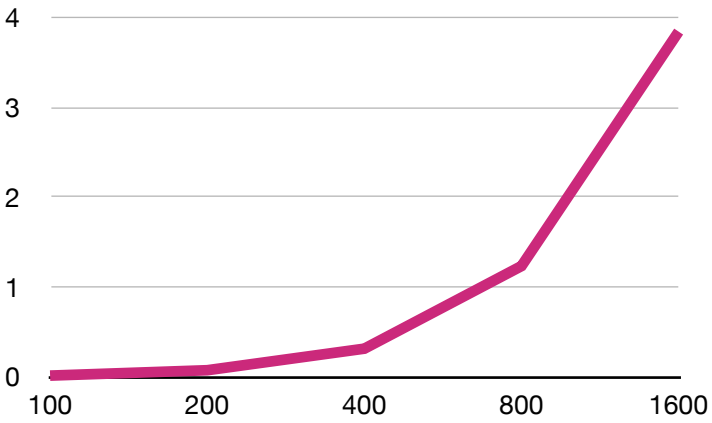
Ordered Array	
Size of Array	**Time for execution (in milliseconds)**
100	0
200	0
400	0
800	0
1600	0.01



Partially Ordered Array	
Size of Array	**Time for execution (in milliseconds)**
100	0.02
200	0.03
400	0.13
800	0.42
1600	1.81



Reverse-Ordered Array	
Size of Array	**Time for execution (in milliseconds)**
100	0.01
200	0.07
400	0.31
800	1.23
1600	3.84



Inference: Based on the output values, as the size of the array doubled, the time to execution had an approximately quadruple value.

Time complexity for a random or reverse array is (worst case) $O(n^2)$

For an already sorted array (best case) $O(n)$

For a partially sorted array - it depends on the number of exchanges and so, on an average - $O(n^2)$