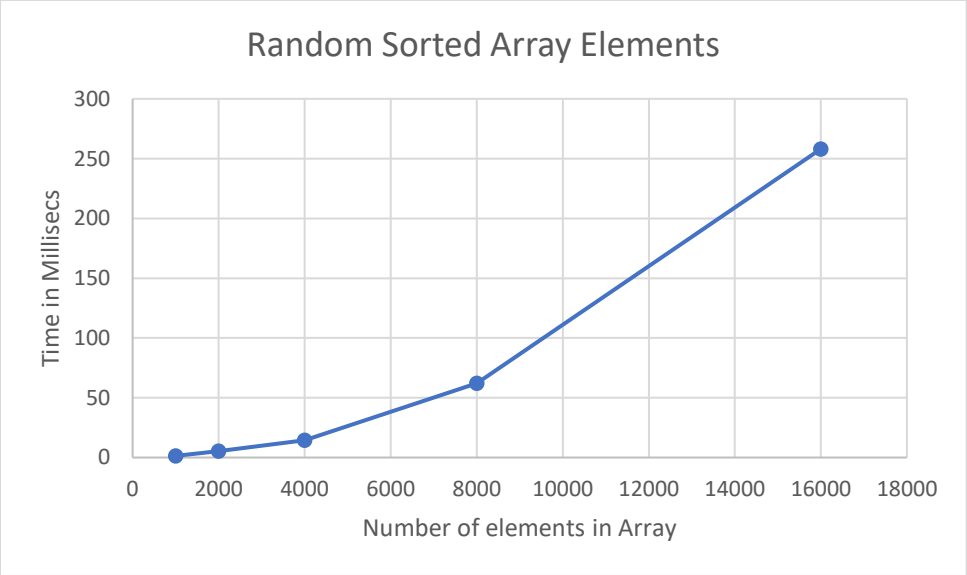
MSSES INFO6205 13718 PROGRAM STRUCTURES & ALGORITHMS SEC 01- FALL2021
ASSIGNMENT 2: HIRAL RAJESH NAGDA (001560027)

Random Array elements

```
Run:  Assignment2
C:\Users\hiral\Downloads\openjdk-14+36_windows-x64_bin\jdk-14\bin\java.exe ...
Benchmarking InsertionSort for random array elements:
2021-09-25 20:34:17 INFO  Benchmark_Timer - Begin run: Insertion sort for 1000 Integers with 100 runs
1.39ms
2021-09-25 20:34:17 INFO  Benchmark_Timer - Begin run: Insertion sort for 2000 Integers with 100 runs
5.38ms
2021-09-25 20:34:18 INFO  Benchmark_Timer - Begin run: Insertion sort for 4000 Integers with 100 runs
14.53ms
2021-09-25 20:34:19 INFO  Benchmark_Timer - Begin run: Insertion sort for 8000 Integers with 100 runs
62.11ms
2021-09-25 20:34:26 INFO  Benchmark_Timer - Begin run: Insertion sort for 16000 Integers with 100 runs
258.13ms

Process finished with exit code 0
```



For random elements in array elements, after running insertion sort on the array, it shows $O(N^2)$ time complexity, this result is as expected for random elements

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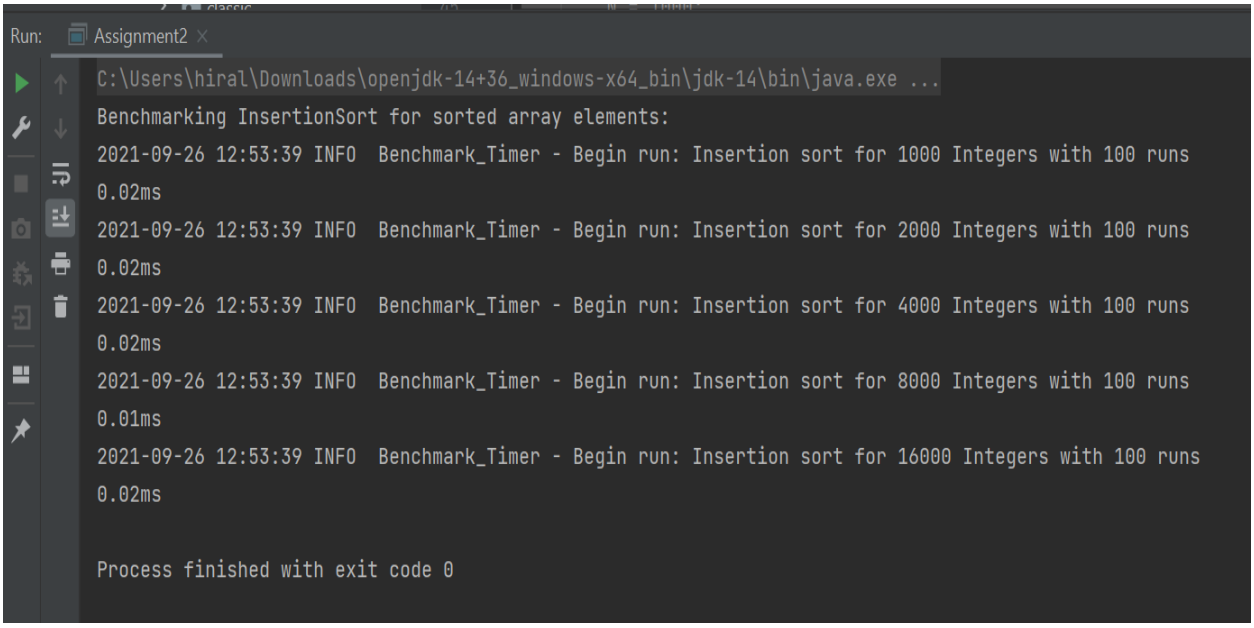
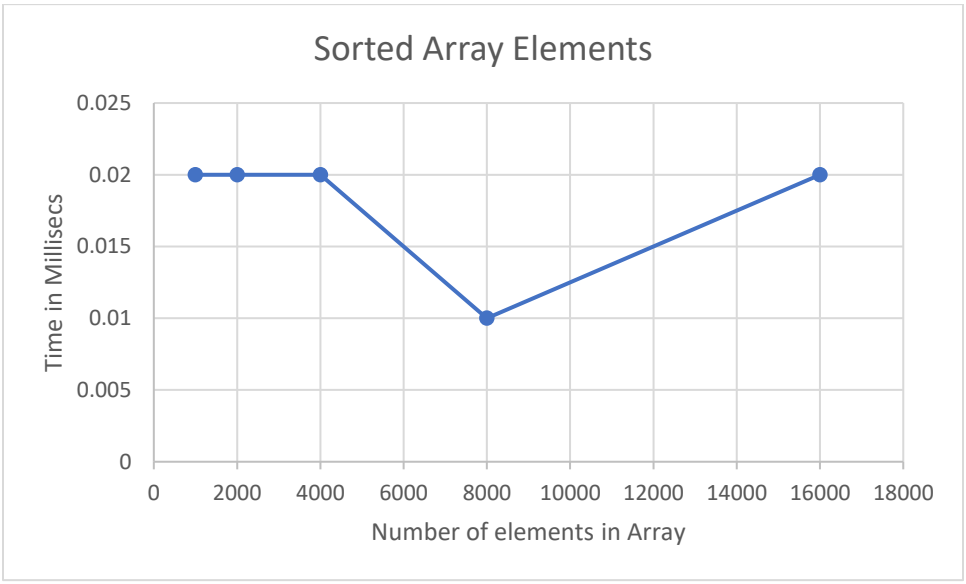
Sorted array elements





For sorted elements in array elements, after running insertion sort on the array, it shows approximately O(N) time complexity, this is as expected for sorted elements

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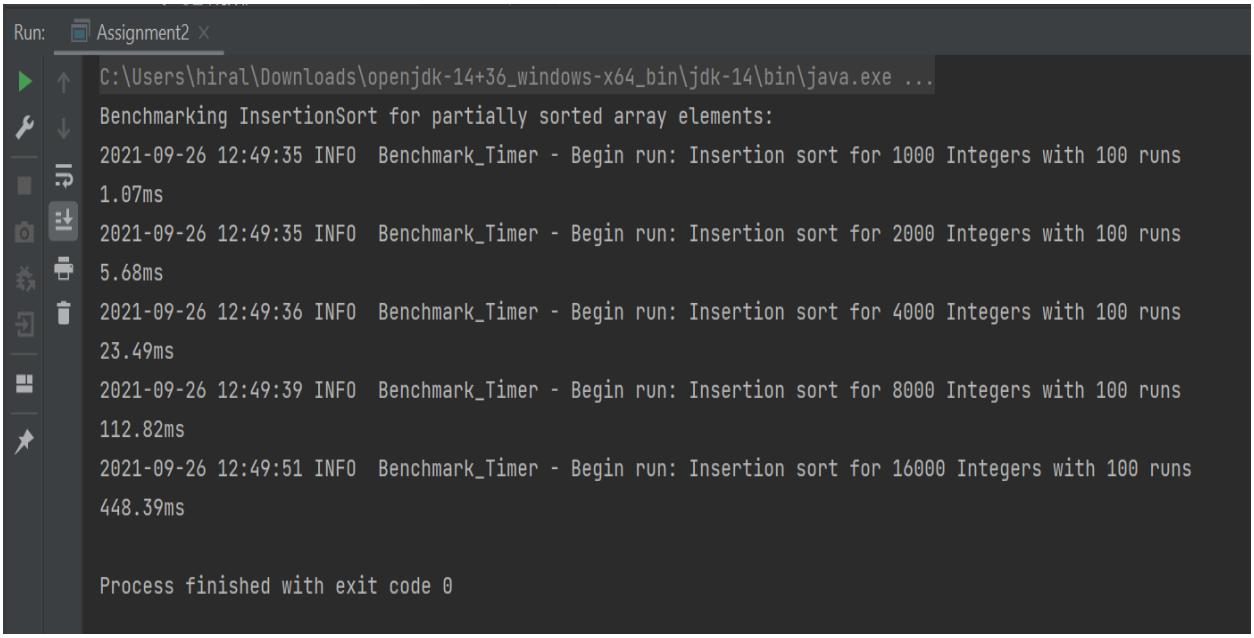
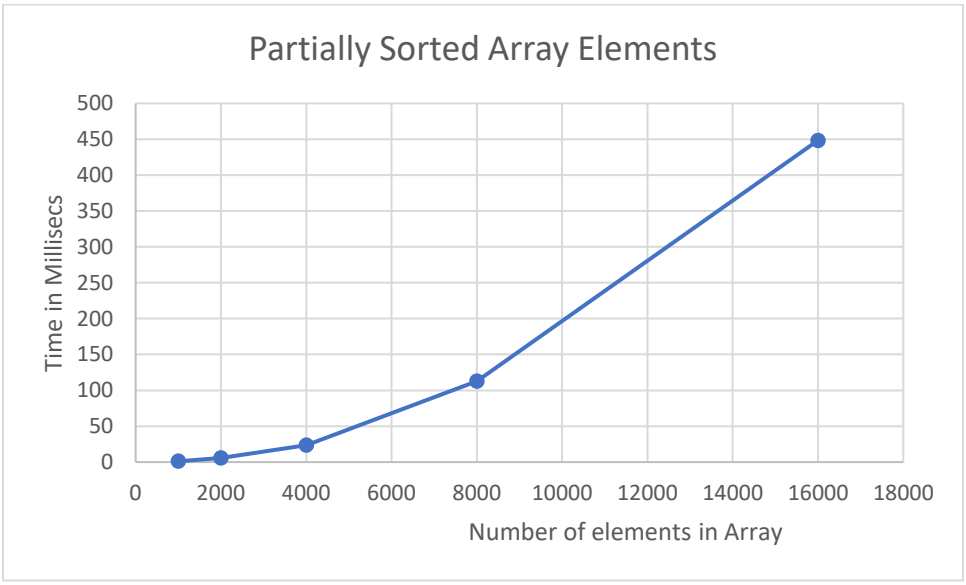
Partially sorted array elements





For partially sorted elements in array elements, after running insertion sort on the array, it shows $O(N^2)$ time complexity. This result is as expected for partially sorted elements

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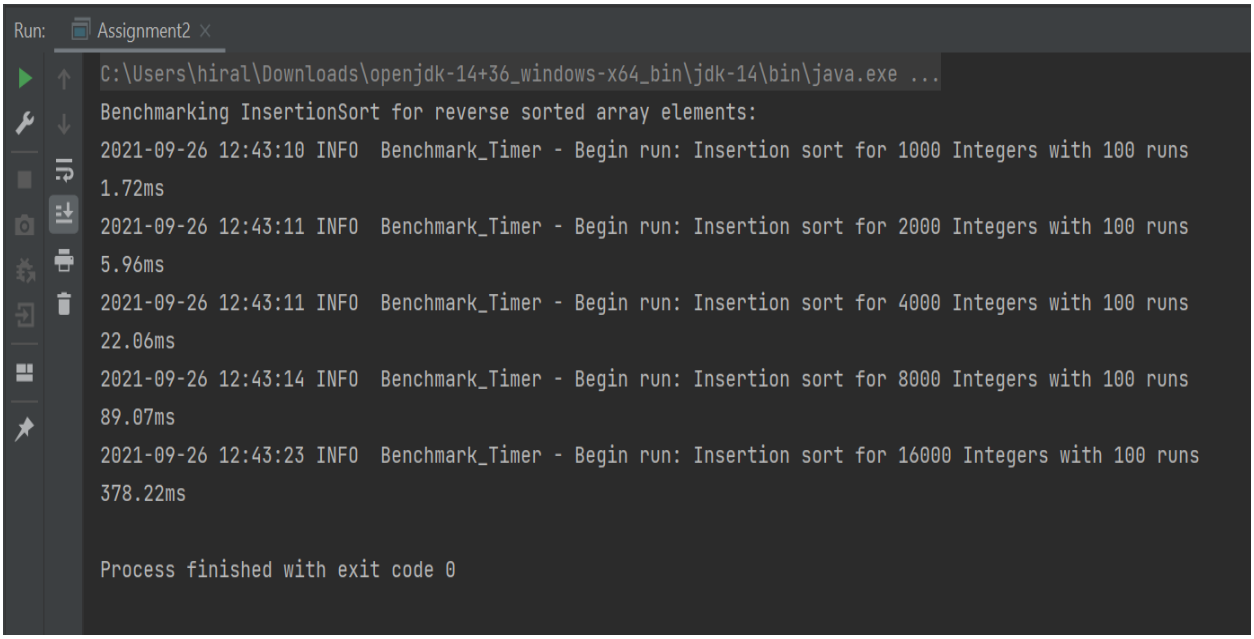
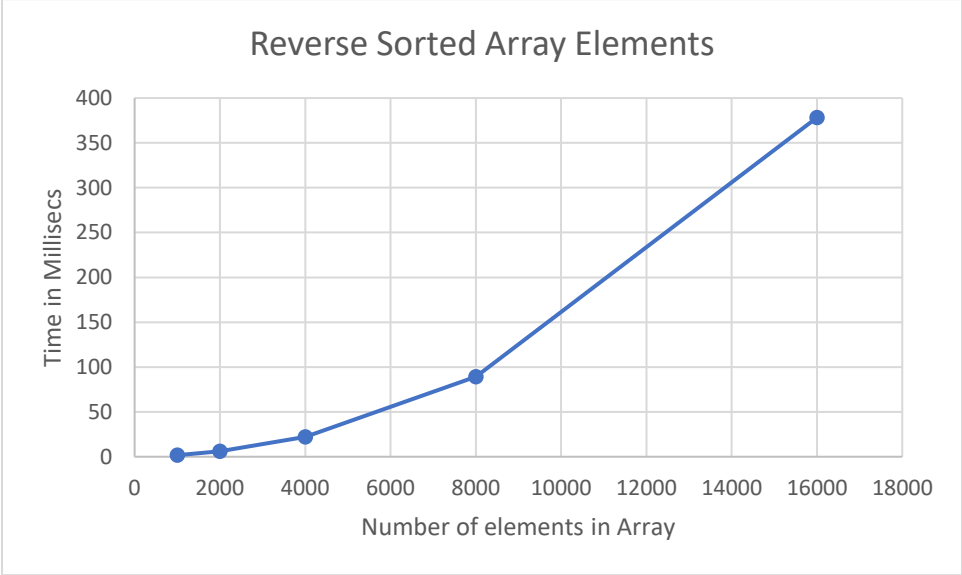
Reverse sorted array elements





For reverse sorted elements in array elements, after running insertion sort on the array, it shows $O(N^2)$ time complexity. This result is as expected for partially sorted elements

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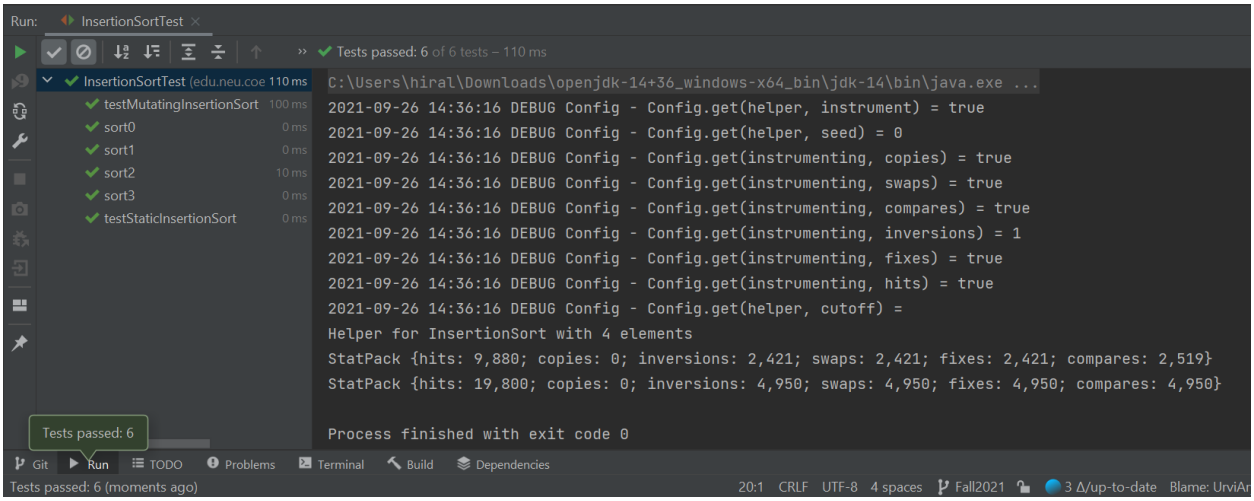
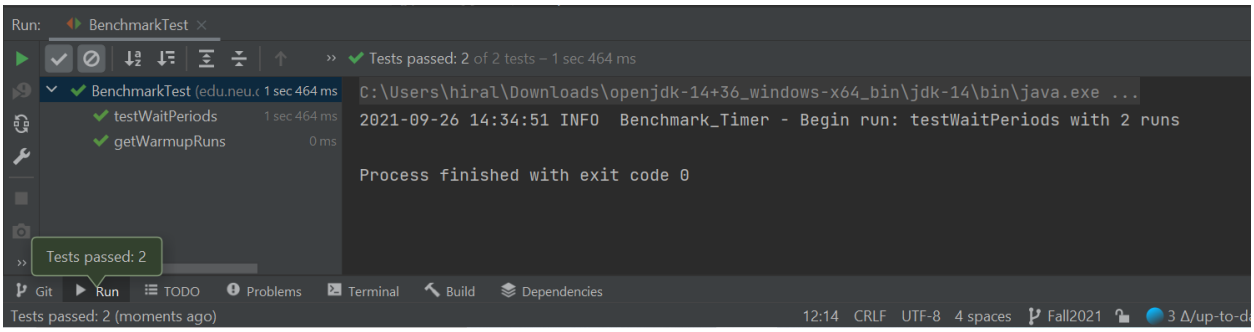
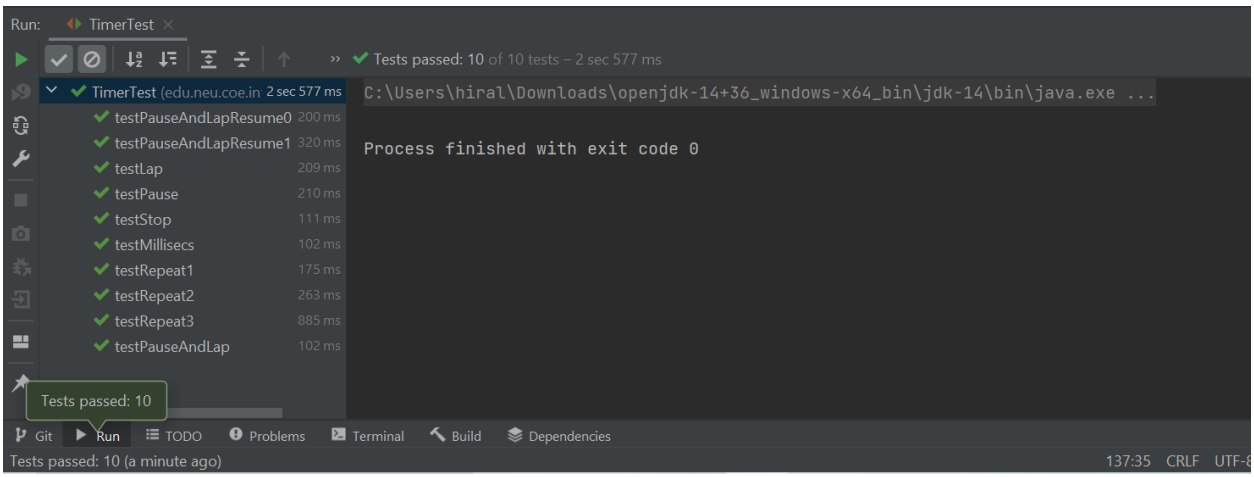
Test Cases run on InsertionSortTest.java



Test Cases run on BenchmarkTest.java



Test Cases on TimerTest.java