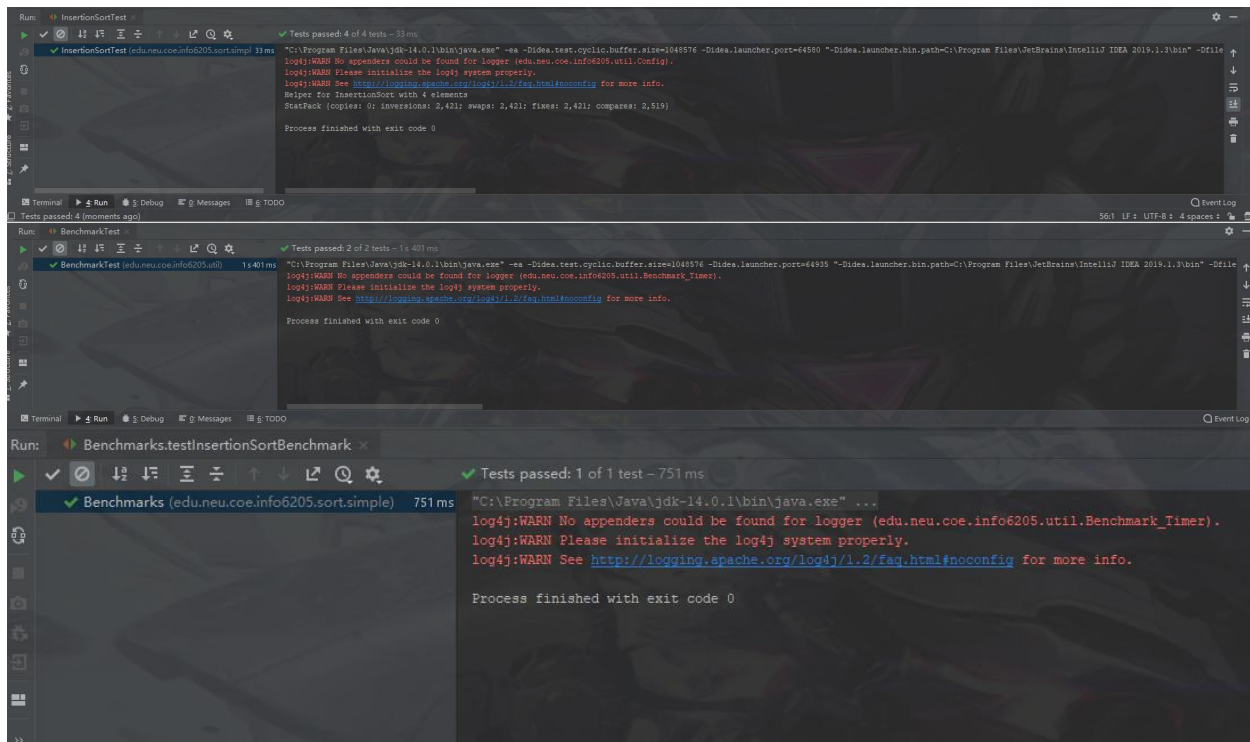Dayu Jia (NUID: 001569081)

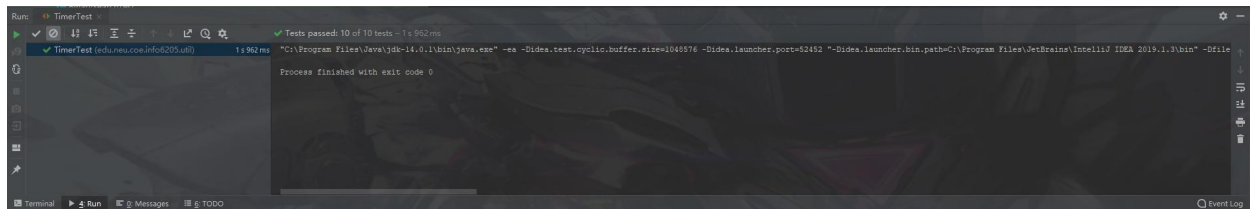# INFO 6205

# Program Structures & Algorithms
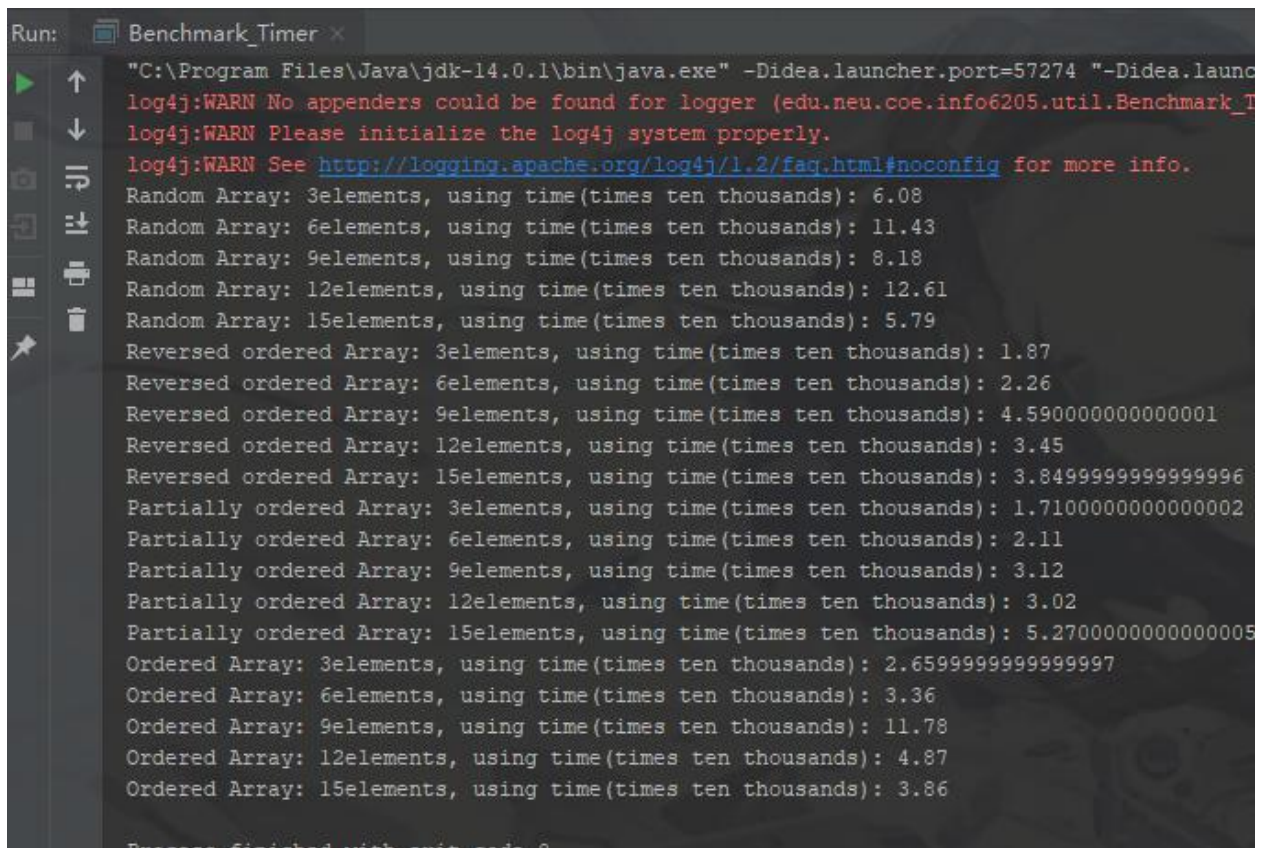
# Fall 2020

# Assignment No2

- **Task**
- **Output** (few outputs to prove relationship)
- **Relationship conclusion**
- **Evidence to support relationship** (screen shot and/or graph and/or spreadsheet)
- **Screenshot of Unit test passing**

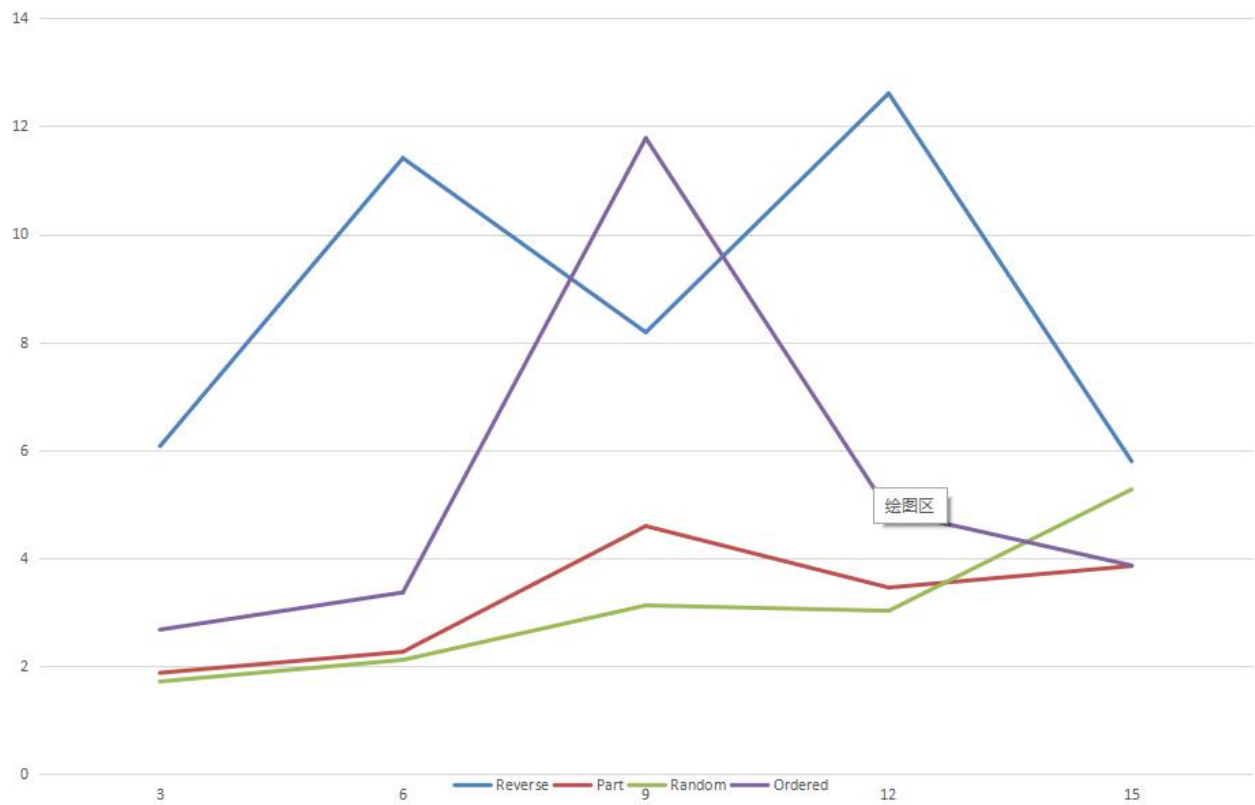There are all the screenshot of Unit test passing:

Dayu Jia (NUID: 001569081)



- **Output**



```
Run:    Benchmark_Timer ×
    "C:\Program Files\Java\jdk-14.0.1\bin\java.exe" -Didea.launcher.port=57274 "-Didea.launc
    log4j:WARN No appenders could be found for logger (edu.neu.coe.info6205.util.Benchmark_T
    log4j:WARN Please initialize the log4j system properly.
    log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig for more info.
    Random Array: 3elements, using time(times ten thousands): 6.08
    Random Array: 6elements, using time(times ten thousands): 11.43
    Random Array: 9elements, using time(times ten thousands): 8.18
    Random Array: 12elements, using time(times ten thousands): 12.61
    Random Array: 15elements, using time(times ten thousands): 5.79
    Reversed ordered Array: 3elements, using time(times ten thousands): 1.87
    Reversed ordered Array: 6elements, using time(times ten thousands): 2.26
    Reversed ordered Array: 9elements, using time(times ten thousands): 4.590000000000001
    Reversed ordered Array: 12elements, using time(times ten thousands): 3.45
    Reversed ordered Array: 15elements, using time(times ten thousands): 3.8499999999999996
    Partially ordered Array: 3elements, using time(times ten thousands): 1.7100000000000002
    Partially ordered Array: 6elements, using time(times ten thousands): 2.11
    Partially ordered Array: 9elements, using time(times ten thousands): 3.12
    Partially ordered Array: 12elements, using time(times ten thousands): 3.02
    Partially ordered Array: 15elements, using time(times ten thousands): 5.2700000000000005
    Ordered Array: 3elements, using time(times ten thousands): 2.6599999999999997
    Ordered Array: 6elements, using time(times ten thousands): 3.36
    Ordered Array: 9elements, using time(times ten thousands): 11.78
    Ordered Array: 12elements, using time(times ten thousands): 4.87
    Ordered Array: 15elements, using time(times ten thousands): 3.86
```

Put these data into Excel:

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I think we can say that the Reverse-ordered array is sorted slowest, and the Ordered array is the fastest.