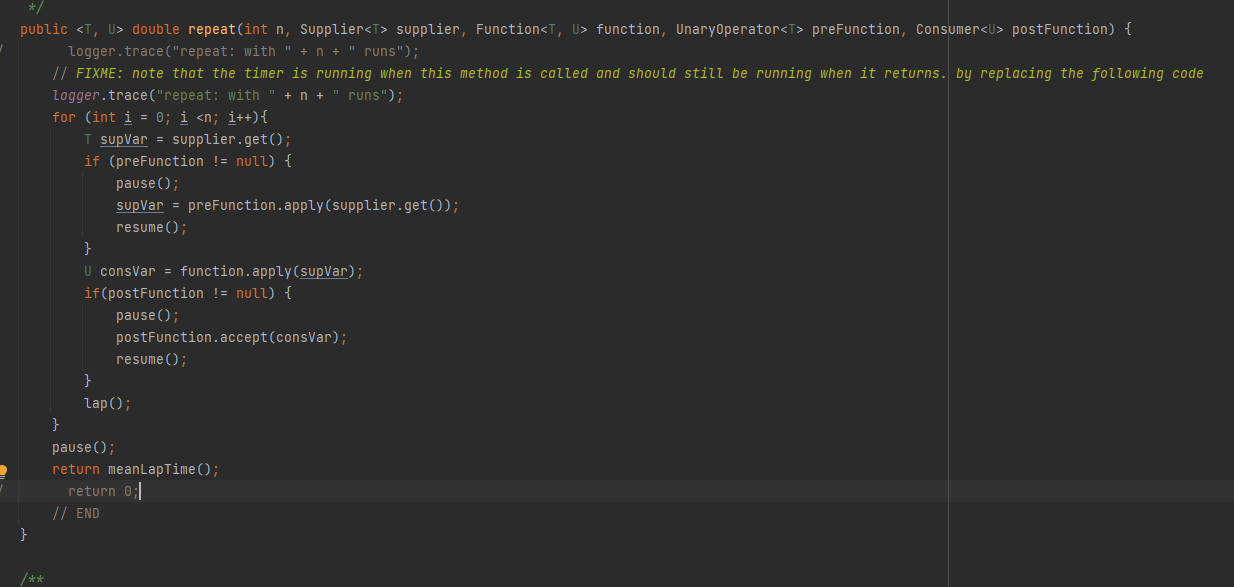
Parth Kataria (NUID - 002964611)

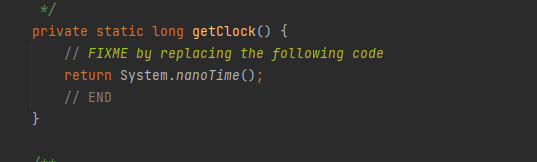
Assignment 3

Part 1

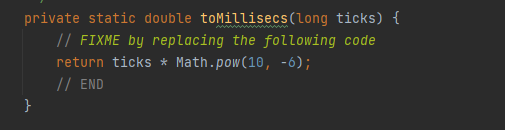
Repeat



getClock

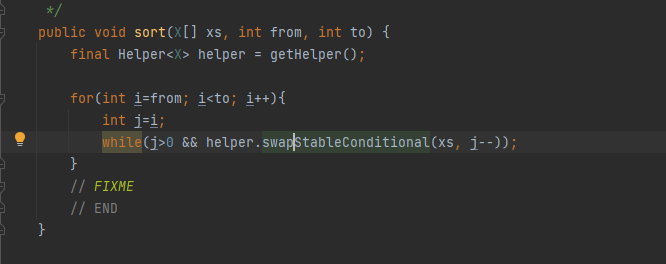


toMillisecs



Part 2

Insertion Sort



Part 3

Main class

Text

Description automatically generated

Text

Description automatically generated

Text

Description automatically generated

Code

Part 1



Part 2



Part 3



Test Cases

Part 1 Timer Test

A screenshot of a computer

Description automatically generated with medium confidence

Benchmark Test

A screenshot of a computer

Description automatically generated with medium confidence

Insertion sort test

Text

Description automatically generated

Observations

1 Partial sorted array

Slope is approximately 2

When we double the size of array, the time taken increases approximately by a factor of 4.

The order of growth is quadratic

Chart, line chart

Description automatically generated

2 Reverse sorted array

Slope is approximately 2

When we double the size of array, the time taken increases approximately by a factor of 4.

The order of growth is quadratic

Chart, line chart

Description automatically generated

3 Ordered array

The time for sorting the array increases slightly when the size of array increases.

The order of growth is linear

Chart, line chart

Description automatically generated

4 Randomly sorted array

Slope is approximately 2

When we double the size of array, the time taken increases approximately by a factor of 4.

The order of growth is quadratic

Chart, line chart

Description automatically generated

Conclusion

The time taken for sorting different arrays in ascending order is

Ordered Array > Partially Ordered Array > Randomly Ordered Array > Reverse Ordered Array

Chart, line chart

Description automatically generated

Excel for observations

