**Readme for SP5 Q4**

**Group-45:**

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Q4 files consists of:

QuickSortDualPivotPartition.java

MergeSUsingIntArray.java

Timer.java

Driver\_Q4.java

**Refer SP5\_Q4\_Analysis.xlsx for comparison analysis between dual-pivot quick sort and best implementation of merge sort**

**How to run Q4:**

Import all the above files in eclipse project under package cs6301.g45 and also include Timer.java provided by professor

Run Driver\_Q4.java

**Example-1:**

Enter the size of the array:

1000000

Enter -> 1 for distinct inputs

-> 2 for duplicate inputs

1

Enter -> 1 for Dual-Pivot Quick Sort

-> 2 for Merge Sort

1

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Dual-pivot QuickSort:

First 10 elements in the Input unsorted array : 780772 664122 225561 436665 131066 56914 612602 523542 285193 119253

Time: 394 msec.

Memory: 43 MB / 243 MB.

First 10 elements in the Output sorted array : 3 4 7 7 8 9 9 11 11 12

**Example-2:**

Enter the size of the array:

1000000

Enter -> 1 for distinct inputs

-> 2 for duplicate inputs

2

Enter -> 1 for Dual-Pivot Quick Sort

-> 2 for Merge Sort

1

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Dual-pivot QuickSort:

First 10 elements in the Input unsorted array : 24 43 60 65 57 26 1 54 88 90

Time: 117 msec.

Memory: 6 MB / 243 MB.

First 10 elements in the Output sorted array : 0 0 0 0 0 0 0 0 0 0

**Example-3:**

Enter the size of the array:

1000000

Enter -> 1 for distinct inputs

-> 2 for duplicate inputs

2

Enter -> 1 for Dual-Pivot Quick Sort

-> 2 for Merge Sort

1

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Dual-pivot QuickSort:

First 10 elements in the Input unsorted array : 47 12 6 96 73 77 22 52 46 74

Time: 120 msec.

Memory: 6 MB / 243 MB.

First 10 elements in the Output sorted array : 0 0 0 0 0 0 0 0 0 0

**Example-4:**

Enter the size of the array:

1000000

Enter -> 1 for distinct inputs

-> 2 for duplicate inputs

2

Enter -> 1 for Dual-Pivot Quick Sort

-> 2 for Merge Sort

2

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Merge Sort int array:

First 10 elements in the Input unsorted array : 83 43 10 7 79 61 49 44 46 33

Time: 111 msec.

Memory: 10 MB / 243 MB.

First 10 elements in the Output sorted array : 0 0 0 0 0 0 0 0 0 0

**Detailed analysis of comparison between dual-pivot quick sort and best implementation of merge sort is done in SP5\_Q4\_Analysis.xlsx**