**Group No:**

**Names:**

**Tutorial 4** - Group Activity (since you already attended and done stuff)

Rank the Input Data profiles (1st, 2nd,3rd) on how soon search would complete. You can rank the same if the speed is the same. (Hint: You can actually use the timings you got in past tutorials to decide)

**Searching**

Assume the search item is in the input data. Please note

|  |  |  |
| --- | --- | --- |
| Profile of Input Data | Sequential Search | Binary Search |
| o Randomly generated | 2 | 1 |
| o Nearly Sorted | 1 | 1 |
| o Reversed Order | 2 | 1 |
| o Few Unique Keys | 2 | 1 |

**Sorting** (Here just put your GUESS (Hypothesis) – because you will do it in todays tutorial)

You can use the slide deck to get help 😊

|  |  |  |  |
| --- | --- | --- | --- |
| Profile of Input Data | Bubble Sort | Selection Sort | Merge Sort |
| o Randomly generated | 2 | 3 | 1 |
| o Nearly Sorted | 2 | 2 | 1 |
| o Reversed Order | 2 | 3 | 1 |
| o Few Unique Keys | 2 | 3 | 1 |

**Empirical Experiment** – Using Doubling Hypothesis note the timings and then paste the graph

**Bubble Sort** – Download [BubbleSort.java](https://drive.google.com/file/d/1WM2uEI6RJIRm0Sm5-tRtFumQuuYkPTr4/view?usp=sharing)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Input File | Trial 1 | Trial 2 | Trial 3 | Average Time |
| [1k](https://drive.google.com/file/d/13-QmhskfU51bDiCaxajYWeEaou75cSOZ/view?usp=sharing) |  |  |  |  |
| [2k](https://drive.google.com/file/d/11B_Fy62iojFP3oXzhzo9pRO8dMYpHYO3/view?usp=sharing) |  |  |  |  |
| [4k](https://drive.google.com/file/d/1L5QrFHZ8FbaDj0ki00TMtVsrPj6lG8nE/view?usp=sharing) |  |  |  |  |
| [8k](https://drive.google.com/file/d/1QVsc84sE9XwhiflEdsE-Tp7eOBvQMaFE/view?usp=sharing) |  |  |  |  |

**Selection Sort** – Download [SelectionSort.java](https://drive.google.com/file/d/1IVChyh8uI0wXWiee4VI9-wcIkJ_M3G32/view?usp=sharing)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Input File | Trial 1 | Trial 2 | Trial 3 | Average Time |
| 1k |  |  |  |  |
| 2k |  |  |  |  |
| 4k |  |  |  |  |
| 8k |  |  |  |  |

**Merge Sort** – Download [MergeSort.java](https://drive.google.com/file/d/1-Y6akGt1TCAZteSgke2qpr5opwI_egDL/view?usp=sharing)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Input File | Trial 1 | Trial 2 | Trial 3 | Average Time |
| 1k |  |  |  |  |
| 2k |  |  |  |  |
| 4k |  |  |  |  |
| 8k |  |  |  |  |