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Data Structures

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Assignment 3

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| Input Size | Insertion Sort Run Time  (seconds) | Merge Sort Run Time  (seconds) | Radix Sort Run Time  (seconds) |
| 10,000 | 211.58982706069946 | 4.420773029327393 | 1.3725600242614746 |
| 20,000 | 462.41474509239197 | 9.729233026504517 | 3.9026100635528564 |
| 40,000 | Approx. 1503 | 19.916460037231445 | 7.18544602394104 |
| 80,000 | Approx. 6197 | 41.62135910987854 | 11.722585916519165 |
| 100,000 | Approx. 9754 | 39.856894969940186 | 8.293221950531006 |

The approximate runtimes are because the code execution for those had to be moved to a different computer and its system clock only provided integer numbers of seconds.

From these runtimes one can clearly see that insertion sort is ill suited to large numeric input sets. Radix sort is clearly the best sort method for numeric sorting with merge sort following closely behind.