CITS3001 Algorithms, Agents and Artificial Intelligence

Labsheet 0: Sorting Algorithms

1. Implement the Insertion Sort algorithm from the lectures in the language of your choice.

2. Build a program to test your sorting algorithm. It should generate random lists (arrays, sequences) of integers of various sizes, and then test that:
    a. The list is in ascending order
    b. The set of elements is the same as the original list
    c. Record the time taken.

3. Implement a O(n lg n) algorithm (Merge-Sort, Quicksort, Heap Sort) and compare it to your Insertion Sort algorithm.

4. Research *Radix Sort* and write and test your own implementation.

5. Try to generate lists of integers where Radix Sort will out-perform your O(n lg n) algorithm.