**Algorithms and Data Structures**

**CS106.3**

**Refer Coursework**

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**Type:** Individual

**Submission:** Report (Including Appendices)

**Refer Coursework (DSA)**

**Important:**

This coursework for CS106.3 is worth 100% of the module marks and contains two deliverables: A software program and a report.

**Assignment:**

1. Sorting is about ordering objects. Develop software using any language you are comfortable with, for the following sorting algorithms.
2. Write algorithms, pseudo-codes, and source code for **bubble** sort and **merge** sort. Use illustrations to explain these algorithms like the following for heap sort algorithm and include the source code as an appendix.

Diagram

Description automatically generated

(Source: https://www.ideserve.co.in/learn/heap-sort)

(30 Marks)

1. Test your programs with [*220, 146, 22, 19, 6, 42, 14, 5, 48, 47, 17, 39, 51, 7, 2, 99, 65, 7*] array (include the test results as **screenshots** in the report as an appendix).

(20 Marks)

1. Searching is about finding objects. Develop software using any language you are comfortable with, for the following searching algorithms.
2. Write **algorithms**, and **pseudo-codes** for **linear** search and **binary** search algorithms. Use illustrations to explain these algorithms.

(30 Marks)

1. Compare (look for similarities) and contrast (look for differences) the above two searching algorithms.

(20 Marks)

**Plagiarism:**

**Zero** marks will be awarded for copied answers (from internet or each other). To avoid complications, make sure to add **extensive comments** in your programs.