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|  | Data Structures and Algorithms |
| ISCG6426 |
| **Semester 1, 2022** |
| **Due Date:** 05/06/2022, 23:59pm |
| **School of Computing and Information** | **Total Marks:** 40 |
| **Technology** | **Course Weighting:** 40% |

**Learning outcomes covered in this assignment**

1. Apply object-oriented design and implementation techniques.
2. Interpret the trade-offs and issues involved in the design, implementation, and application of various data structures with respect to a given problem.
3. Explain the purpose and answer questions about data structures and design patterns that illustrate strengths and weaknesses with respect to resource consumption.
4. Assess the impact of data structures on algorithms.
5. Analyse the scalability of data structures and algorithms in terms of both space and time complexity.

**Cover Sheet**

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| --- | --- |
| First Name |  |
| Last Name |  |
| Student ID |  |
| Chosen Data Structure(s) or Algorithm(s) |  |

By submitting files and/or work to the approved Moodle submission link for this assessment, I declare that all work has been performed by myself unless explicitly declared. Any code not created by me has been cited adequately. I accept that failure to comply with the Unitec Guidelines of Appropriate Student Conduct will result in enforcement of the relevant consequences.

Signed:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_

## Documentation

### Data Structure / Algorithm

*Introduce and describe your chosen DS/A. This may include a brief history, and its purpose.*

### Strengths & Weaknesses

*Discuss the aspects or characteristics of the DS/A that are good, bad, or somewhere in between. This is a good section to cover time and space complexity (use the bigocheatsheet for help with this). You can reflect on how the intent of the DS/A aligns with the performance characteristics as to whether it is an effective tool.*

### Real-World Example

*List and briefly describe at least one use of your DS/A in a real-world use case.*

### Implementation

*Discuss how you implemented the DS/A in code, and how you changed it to be demonstrated for a presentation. This is your chance to show off your time and effort, and cover details that you may not have time to cover in a presentation format. This section and your demo will have significant overlap – use it to your advantage.*

*Screenshots, code snippets, and other supplementary sources are recommended for this section, but not required.*