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| Module Code: | COMP50004 |
| Title of Assignment: | Databases and Data Structures |
| Assignment Weighting: | 50% |
| Submission Date: | Assignment 2 |
| Learning outcomes | 4. BE ABLE TO DESIGN, IMPLEMENT, AND DOCUMENT (APPROPRIATELY) EFFICIENT ALGORITHMS  Application  5. EXPLAIN THE STRUCTURE, CORRECT USE OF AND IMPLEMENTATION OF APPROPRIATE ADVANCED DATA STRUCTURES AND ALGORITHMS FOR A RANGE OF SCENARIOS.  Knowledge and Understanding  Communication |

**Milestone one**

**Learning outcome 5**

Scenario

A company whose business focuses on delivery goods is having issues with its delivery schedule. One issue is with loading of the goods onto the van for delivery. There seems to be no logical order as to how the drivers are placing the goods in the back of the van. The company has asked you to report on how they can solve the issue with loading the van.

The report needs to cover

* The data structures needed to store the relevant data
* Sample data needed to generate
  + The document required to order the goods in the van
  + An invoice per customer that accompanies the goods
* A list of the functionality that would need to be include in the solution
* A basic pseudo code structure to solve the problem
  + With a description of the functions that solve the problem
* Any issues that the pseudo code will not solve
  + Or the limitations of the pseudo code
  + Or functionality deemed to be outside of the algorithms that would need to be included in version 2
* Any assumptions about the scenario (one door, two doors etc.)

**Milestone two**

**Learning outcome 4**

Scenario

Now that the van loading schedule has been solved, the company is having issues with the van delivery schedule. The company will like a report on the algorithm that could be used to solve the problem. They are aware of route planning software but are not prepared to pay just get for that alternative. They have suggested that they may employ a developer and are looking for you to produce an outline algorithm to aid them in their decision-making process.

The report needs to contain

* The data structures needed to store the relevant data
* Sample data needed to generate
  + The route for delivery of the goods
  + A list of grid co-ordinates, goods etc that would act as a backup if their IT failed
* A list of the functionality that would need to be include in the solution
* A basic pseudo code structure to solve the problem
  + With a description of the functions that solve the problem
* Any issues that the pseudo code will not solve
  + Or the limitations of the pseudo code
  + Or functionality deemed to be outside of the algorithms that would need to be included in version 2
* A practical presentation of the algorithm developed in any programming language
* Any assumptions about the scenario (less than 5 stops per run etc.)
* **Deliverables - Soft Copy**

**Documentation: -** Proper, complete documentation with the following chapters,

* Introduction
* Analysis
* Design – pseudo code or flow charts
* Implementation
* Testing

The Table of Content, list of figures, list of tables and references should be available in the correct format.

**Program file**: - Source Code (i.e. - programming files)

**Presentation:** - summary of the report

* **Submission**

Submission shall be done on or before the submission date as follows.

Submit the softcopy of your work to the Turnitin link provided in LMS.

* **Marking Scheme**

Milestone one (40%)

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| Core area | Percentage |
| The data structures needed to store the relevant data | 20% |
| Sample data needed to generate | 5% |
| A list of the functionality that would need to be include in the solution | 15% |
| A basic pseudo code structure to solve the problem | 50% |
| Any issues that the pseudo code will not solve | 5% |
| Any assumptions about the scenario | 5% |

Milestone 2

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| Core area | Percentage |
| The data structures needed to store the relevant data | 10% |
| Sample data needed to generate | 5% |
| A list of the functionality that would need to be include in the solution | 10% |
| A basic pseudo code structure to solve the problem | 40% |
| Any issues that the pseudo code will not solve | 5% |
| A practical presentation of the algorithm developed in any programming language | 25% |
| Any assumptions about the scenario | 5% |

* **Performance Criteria**

Grades would be awarded as follows:

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| **Distinction**  **(70% -100%)** | An executable system which covers all functionalities stated in the specifications. Data validations in place and efficient code writing style. Student demonstrates full understanding of the code and is able to answer all questions regarding the algorithm and the effective use of data structures used in the program. Substantial contribution to the work for the assignment is evident. |
| **Credit**  **(50% - 69%)** | An executable system which covers almost all functionalities stated in the specifications. Data validations in place and efficient code writing style with minor issues. Student can explain the source code and is able to demonstrate the choice of data structures used in the program. Fair amount of contribution to the work for the assignment. |
| **Pass**  **(40% - 49%)** | An executable system with a few execution issues. Average data validations in place and not very efficient code writing style. Student demonstrates some knowledge of the algorithm used but is unable to convincingly justify the logic of the program code or the choice of data structure. Average contribution to the work for the assignment. |
| **Marginal Fail**  **(30-39%)** | A system which does not work as per the specifications. Absence of or minimal data validation in the source code. Inefficient coding style with inability to comprehend and demonstrate knowledge of the program logic or use of data structures. |
| **Fail**  **(0% - 29%)** | No Working System. Inefficient coding practices. Submitted work does not demonstrate adequate understanding of C++ Language. |