

**Unit 3 Data Analytics – 2024**
**Outcome 1 Data analytics – Developing a marking scheme – Sample**

<b>Outcome 1</b>			<b>Developing a marking scheme – Marks allocated – 100</b>
On completion of this unit the student should be able to respond to teacher-provided solution requirements and designs to extract data from large repositories, manipulate and cleanse data and apply a range of functions to develop software solutions to present findings.			Refer to the key skills or the VCAA performance descriptors when developing a marking scheme for the assessment task. Determine the weighting of the marks out of 100 for each key skill or performance descriptor. When determining weightings consider the time that students will take to complete each task as well as the level of difficulty of each task. Marks should be allocated to ensure students can demonstrate a range of levels of performance in the task.
<b>Key knowledge</b>	<b>Key skills</b>	<b>VCAA Performance descriptors (Very high)</b>	
<ul style="list-style-type: none"> <li>• methods for documenting a problem, need or opportunity</li> <li>• methods for determining solution requirements, constraints and scope</li> <li>• design tools for representing databases, spreadsheets and data visualisations, including data dictionaries, tables, charts, input forms, queries and reports</li> <li>• design principles that influence the functionality and appearance of databases, spreadsheets and data visualisations</li> </ul>	<ul style="list-style-type: none"> <li>• interpret solution requirements and designs to develop data visualisations</li> </ul>	<ul style="list-style-type: none"> <li>• All solution requirements and designs are interpreted accurately in developing the database, spreadsheet and data visualisation solutions.</li> </ul>	<p>Students are to interpret the solution requirements and designs to develop the database, spreadsheet and data visualisation solutions.</p> <p>Possible number of marks – 10 marks</p>
<ul style="list-style-type: none"> <li>• reasons why organisations acquire data</li> <li>• techniques for efficient and effective data collection, including methods to collect census, Geographic Information System (GIS) data, sensor, social media and weather</li> <li>• factors influencing the integrity of data, including accuracy, authenticity, correctness, reasonableness, relevance and timeliness</li> <li>• sources of, and methods and techniques for, acquiring authentic data stored in large repositories</li> </ul>	<ul style="list-style-type: none"> <li>• identify, select and extract relevant data from large repositories</li> </ul>	<ul style="list-style-type: none"> <li>• All relevant data is identified, selected and extracted from appropriate data repositories and referenced to acknowledge intellectual property.</li> </ul>	<p>Students are to identify, select and extract relevant data from appropriate data repositories and reference them using the APA referencing system.</p> <p>Possible number of marks – 10 marks</p>
<ul style="list-style-type: none"> <li>• methods for referencing primary and secondary sources, including American Psychological Association (APA) referencing system</li> </ul>	<ul style="list-style-type: none"> <li>• use a standard referencing system to acknowledge intellectual property</li> </ul>		
<ul style="list-style-type: none"> <li>• characteristics of data types</li> <li>• naming conventions to support efficient use of databases, spreadsheets and data visualisations</li> <li>• a methodology for creating a database structure: identifying entities, defining tables and fields to represent entities; defining relationships by identifying primary key fields and foreign key fields; defining data types and field sizes, normalisation to third normal form</li> <li>• functions and techniques to retrieve required information through querying data sets, including searching, sorting and filtering to identify relationships and patterns</li> <li>• software functions, techniques and procedures to efficiently and effectively validate, manipulate and cleanse data including files, and applying formats and conventions</li> </ul>	<ul style="list-style-type: none"> <li>• organise, manipulate and cleanse data using database and spreadsheet software</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive use of features of the database software tool used to store, manipulate and validate data.</li> <li>• Comprehensive use of features of the spreadsheet software tool have been used to manipulate and validate data.</li> </ul>	<p>Students are to use appropriate features of the database software tool to store, manipulate and validate data. A higher weighting of marks should be included to meet this key skill or performance descriptor.</p> <p>Possible number of marks – 20 marks</p> <p>Students are to use appropriate features of the spreadsheet software tool to store, manipulate and validate data. A higher weighting of marks should be included to meet this key skill or performance descriptor.</p> <p>Possible number of marks – 20 marks</p>
<ul style="list-style-type: none"> <li>• types and purposes of data visualisations</li> <li>• formats and conventions applied to data visualisations to improve their effectiveness for intended users, including clarity of message</li> </ul>	<ul style="list-style-type: none"> <li>• select, justify and apply functions, formats and conventions to create effective data visualisations</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive use of functions, formats and conventions to create effective data visualisations.</li> <li>• Comprehensive justification and explanation of how the selected functions, formats and conventions are used to create effective data visualisations.</li> </ul>	<p>Students are to use appropriate functions, formats and conventions to create data visualisations. A higher weighting of marks should be included to meet this key skill or performance descriptor.</p> <p>Possible number of marks – 20 marks</p> <p>Students are to justify and explain their use of functions, formats and conventions to develop their data visualisations.</p> <p>Possible number of marks – 10 marks</p>
<ul style="list-style-type: none"> <li>• methods and techniques for testing databases, spreadsheets and data visualisations</li> </ul>	<ul style="list-style-type: none"> <li>• develop and apply suitable validation and testing techniques to software tools used</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive range of test data is expressed in testing tables, with both expected and actual output stated.</li> </ul>	<p>Students are to test their database, spreadsheet and data visualisations solutions using appropriate testing techniques.</p> <p>Possible number of marks – 10 marks</p>