

Unit 3 Data Analytics – 2024
Outcome 1 Data analytics – Template for developing an assessment task – Plan

Outcome 1			Assessment task development – Planning for the case study
<p>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.</p>			<p>Create a scenario that is a real-world example that provides students with solution requirements and designs that will enable them to extract authentic data from large repositories, manipulate and cleanse the data and develop software solutions using spreadsheet, database and data visualisation software tools to present findings. The outcome may be completed as four tasks: data collection, spreadsheet solution, database solution and data visualisation solution. Key content within the tasks should be based on the targeted key knowledge and key skills. The total number of the marks for the outcome should be out of 100.</p>
Key knowledge	Key skills	VCAA Performance descriptors (Very high)	
<ul style="list-style-type: none"> methods for documenting a problem, need or opportunity methods for determining solution requirements, constraints and scope design tools for representing databases, spreadsheets and data visualisations, including data dictionaries, tables, charts, input forms, queries and reports design principles that influence the functionality and appearance of databases, spreadsheets and data visualisations 	<ul style="list-style-type: none"> interpret solution requirements and designs to develop data visualisations 	<ul style="list-style-type: none"> All solution requirements and designs are interpreted accurately in developing the database, spreadsheet and data visualisation solutions. 	<p>Content to be included in the assessment task should introduce students to a scenario. The scenario should indicate the data repositories that students are to use. The scenario should clearly state the solution requirements and designs for the spreadsheet, database and data visualisation solutions and provide students with sufficient opportunities to demonstrate their knowledge and to meet the requirements of the outcome. A range of appropriate design tools should be used. Students are not to complete designs themselves. Design tools should be appropriate for the software tool used.</p>
<ul style="list-style-type: none"> reasons why organisations acquire data techniques for efficient and effective data collection, including methods to collect census, Geographic Information System (GIS) data, sensor, social media and weather factors influencing the integrity of data, including accuracy, authenticity, correctness, reasonableness, relevance and timeliness sources of, and methods and techniques for, acquiring authentic data stored in large repositories 	<ul style="list-style-type: none"> identify, select and extract relevant data from large repositories 	<ul style="list-style-type: none"> All relevant data is identified, selected and extracted from appropriate data repositories and referenced to acknowledge intellectual property. 	<p>Students are to identify, select and extract the relevant data from the repositories listed in the scenario and use the APA referencing system to acknowledge the intellectual property used within the data visualisations.</p>
<ul style="list-style-type: none"> methods for referencing primary and secondary sources, including American Psychological Association (APA) referencing system 	<ul style="list-style-type: none"> use a standard referencing system to acknowledge intellectual property 		
<ul style="list-style-type: none"> characteristics of data types naming conventions to support efficient use of databases, spreadsheets and data visualisations 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 functions and techniques to retrieve required information through querying data sets, including searching, sorting and filtering to identify relationships and patterns software functions, techniques and procedures to efficiently and effectively validate, manipulate and cleanse data including files, and applying formats and conventions 	<ul style="list-style-type: none"> organise, manipulate and cleanse data using database and spreadsheet software 	<ul style="list-style-type: none"> Comprehensive use of features of the database software tool used to store, manipulate and validate data. Comprehensive use of features of the spreadsheet software tool have been used to manipulate and validate data. 	<p>The scenario with the solution requirements and designs should enable students to determine the appropriate selection and use of features for the database software tool and the spreadsheet software tool to enable them to organise, manipulate and cleanse data (Refer to the Software tools and functions document on the study page). Students are to use a database software tool and a spreadsheet software tool. Relevant data validation techniques are to be used within the spreadsheet software tool and the database software tool.</p>
<ul style="list-style-type: none"> types and purposes of data visualisations formats and conventions applied to data visualisations to improve their effectiveness for intended users, including clarity of message 	<ul style="list-style-type: none"> select, justify and apply functions, formats and conventions to create effective data visualisations 	<ul style="list-style-type: none"> Comprehensive use of functions, formats and conventions to create effective data visualisations. Comprehensive justification and explanation of how the selected functions, formats and conventions are used to create effective data visualisations. 	<p>The scenario with the solution requirements and designs should enable students to determine the appropriate use of functions, formats and conventions for the data visualisation tool to enable them to create their data visualisations (Refer to the Software tools and functions document on the study page). Students are to use a data visualisation tool. They are to justify and explain their selection of functions, formats and conventions used to develop their data visualisations. This written justification and explanation could be included as a separate written report.</p>
<ul style="list-style-type: none"> methods and techniques for testing databases, spreadsheets and data visualisations 	<ul style="list-style-type: none"> develop and apply suitable validation and testing techniques to software tools used 	<ul style="list-style-type: none"> Comprehensive range of test data is expressed in testing tables, with both expected and actual output stated. 	<p>A testing table is to be developed that involves the testing of all validation and processing such as calculations, etc. The testing table should include columns for expected and actual output and show evidence of tests that work and don't work.</p>