2024 VCE Applied Computing: Data Analytics external assessment report

General comments

The 2024 VCE Applied Computing: Data Analytics examination was the fifth and last year of the VCE Applied Computing Study Design 2020–2024. The examination consisted of three sections: Section A – Multiple-choice questions; Section B – Short-answer questions; and Section C – Case study questions.

In Section A, the multiple-choice questions were mostly answered very well. High-scoring responses related to databases, conventions and infographics. Lower-scoring responses related to the Problem-solving Methodology research questions, design tools and effectiveness.

In Section B, the responses demonstrated that students understood data security strategies (Questions 1 and 5b.). Areas for improvement include validation (Question 2a.), backups (Question 3) and audience characteristics (Question 4).

In Section C, students identified the correct errors in a Gantt chart (Question 1) and demonstrated an understanding of data collection (Questions 2a. and 3b.), data security (Question 13) and data integrity (Question 9a.).

Areas for improvement include:

* When indicating the errors in a Gannt chart, students need to make sure they circle the whole error, not just part of it (Section C, Question 1a.).
* A large number of students did not know or understand design principles relating to functionality and appearance (Section C, Question 6). Many students stated a design principle, but it was not related to the correct section.
* Most students did not explain what shredding is (Section B, Question 1b.). In this question, the majority of responses merely stated that it shreds documents, not that the shredder destroys or cuts the document up into unrecognisable pieces.

Other areas that should be addressed include:

* When answering a question that asks students to justify a response, the response must include a comparison of the stated option with all alternative options and state why the stated option is preferred (Section B, Question 4).
* When quoting legislation (Section C, Question 14a.), such as one of the Acts, students must include the correct year to receive marks for that component of the question (e.g., the *Privacy Act 1988*).
* Students need to be familiar with the Applied Computing Study Design and the ‘Software tools and functions’ document (available on the Data Analytics study page) from the beginning of each year.
* Students need to ensure that they understand and can write appropriate criterion statements (Section B, Question 5a. and Section C, Question 5).

Specific information

Note: Student responses reproduced in this report have not been corrected for grammar, spelling or factual information.

This report provides sample answers, or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

The statistics in this report may be subject to rounding resulting in a total more or less than 100 per cent.

Section A – Multiple-choice questions

The following table indicates the percentage of students who chose each option. The correct answer is indicated by shading.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Question | Correct answer | % A | % B | % C | % D | Comments |
| 1 | D | 4 | 4 | 2 | **90** |  |
| 2 | C | 37 | 18 | **29** | 16 | A is not the correct response. The only response that can be correct is C. Charts and tables are not design tools, and a data dictionary is not used in a spreadsheet but is a tool to show functionality. A storyboard shows the appearance of a worksheet. |
| 3 | A | **31** | 10 | 53 | 6 | A is the correct response. The skills underpinning the analysis stage of the Problem-solving methodology state that you need to identify and clarify the data and information that needs to be collected, and querying of data stored in large repositories is doing just that.  |
| 4 |  |  |  |  |  | As a result of psychometric analysis and review, all four options were accepted as correct. |
| 5 | C | 4 | 3 | **90** | 2 |  |
| 6 | D | 4 | 3 | **90** | 2 |  |
| 7 | B | 4 | **89** | 3 | 4 |  |
| 8 | D | 2 | 1 | 0 | **96** |  |
| 9 | D | 1 | 1 | 6 | **92** |  |
| 10 | B | 14 | **30** | 13 | 42 | There would not be any graphics in the plan (C) and the plan would not mention the team members’ roles and tasks. B is the correct answer as accuracy is a measure of effectiveness. |
| 11 | C | 2 | 9 | **88** | 1 |  |
| 12 | C | 5 | 14 | **68** | 13 |  |
| 13 | A | **87** | 2 | 2 | 9 |  |
| 14 |  |  |  |  |  | As a result of psychometric analysis and review, all four options were accepted as correct. |
| 15 | A | **83** | 3 | 12 | 1 |  |
| 16 |  |  |  |  |  | As a result of psychometric analysis and review, all four options were accepted as correct. |
| 17 | D | 18 | 3 | 10 | **70** |  |
| 18 | B | 7 | **80** | 12 | 1 |  |
| 19 | A | **76** | 7 | 6 | 11 |  |
| 20 | D | 12 | 1 | 27 | **60** | D is the only answer that starts with What, Why or How. |

Section B – Short-answer questions

Question 1a.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 19 | 38 | 43 | 1.3 |

Students were required to describe what biometrics is and the reason for implementing it.

One mark was awarded for description and one mark was awarded for reason:

* **Description** – used to measure an individual’s physical characteristics and features such as face recognition, fingerprint or palm print.
* **Reason** – biometrics needs to be implemented for different departments to prevent the unauthorised access of staff or visitors.

The following is an example of a high-scoring response:

**Biometrics**

They are a physical security control that requires users wanting to access a restricted area for files and such to use biological ID to enter, such as fingerprints or eye scans.

**Reason**

It would greatly increase the security for departments and their confidential documents, as unlike a USB key or username and password, the person itself is the password, hence making it near impossible to steal.

Question 1b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 18 | 34 | 48 | 1.3 |

Students were required to describe the process of shredding confidential documents and the reason for doing so.

One mark was awarded for description and one mark was awarded for reason:

* **Description** – used to dispose of data when it is no longer required. A document is cut up into tiny pieces so that it can no longer be recognised.
* **Reason** – the organisation needs to implement the shredding of confidential documents when they are no longer required to protect itself from possible data breaches and, in turn, privacy breaches.

Some responses provided the reason for shredding but did not include a correct description. Many included the word shredding in their responses but no description and were therefore awarded no marks for that component.

The following is an example of a high-scoring response:

**Shredding confidential documents**

Destroys the document into many small pieces until it is no longer recognisable as a whole document.

**Reason**

Prevents unwanted individuals from viewing the confidential information on the documents, which could occur if they were disposed of whole.

Question 2a.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 32 | 46 | 22 | 0.9 |

Students were required to explain why the text box used to input the rewards should include a range check when the data is entered.

The following are sample responses:

* Range check – ensuring that the customer’s Frequent Flyer points entered is above 3000. If not, people could add any value.
* Removes the risk of incorrect amount being entered, reasonable amount is entered.
* Range check ensures that the data entered is validated and within a valid range. In this case the data entered for the number of Frequent Flyer points must be greater than 3000.

Question 2b.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | Average |
| % | 43 | 19 | 20 | 18 | 1.1 |

Students were required to develop a query design that would ensure that only valid customers can access this upgrade to business class tickets.

To gain full marks, students needed to state:

* Gold Class = Yes

And

* Frequent Flyer points >3000.

A common error was that the response did not include the ‘and’ and therefore was not awarded full marks.

Question 3a.

|  |  |  |  |
| --- | --- | --- | --- |
| Mark | 0 | 1 | Average |
| % | 80 | 20 | 0.2 |

Students were required to identify one way in which Michelle could confirm that the backup was successfully completed.

Students who gained a mark for this question stated that they would check and compare the backed-up files against the original, checking that the sizes were the same.

The following is an example of a high-scoring response:

*Michelle could check the network attached storage and compare the backup’s total file size to ensure that no data in the photos was lost.*

Question 3b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 40 | 49 | 11 | 0.7 |

Students were required to explain two concerns with the backup strategy.

The most common responses that gained marks were:

* public website may provide accidental or deliberate access to data to others
* large photos are being transferred by email and will face a file size restriction
* email may not get to Liz
* security of network attached storage on website

Question 4

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | 4 | Average |
| % | 51 | 34 | 8 | 4 | 4 | 0.8 |

Students were required to identify which audience characteristic is the most important in the information provided and to justify their response.

To gain full marks, students needed to identify the correct characteristic (commonality of language) and then justify why each of the other three characteristics (age appropriateness, cultural inclusiveness and gender) were less important.

The majority of the responses that did not gain full marks only identified the correct characteristic and did not mention the reasons why the other three were not suitable.

The following is an example of a high-scoring response:

The commonality of language is the most important for the Federal Reserve Bank to meet, as it will allow for the clear communication of ideas to the home loan providers, as both parties will have an extensive knowledge of financial language. Age appropriateness is not as important as all parties will be over 18, at the very least due to job requirements. Cultural inclusiveness will not matter as much as commonality of language as the information is on financial not culture. Gender will not be a very big factor as the clear presentation of the message is more important than using gender-neutral language.

Question 5a.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 80 | 11 | 9 | 0.3 |

Students were required to identify one criterion that Oscar’s employer could use to achieve this purpose and explain why it should be checked.

The most common responses that gained marks were:

* Does the portal login system give failed login attempt feedback that does not give hints as to what was incorrect?
* Does the portal login system lock after three failed login attempts?
* Can a person who does not know the password get in using a random password?
* Have there been any previous breaches?

To gain marks, the criterion needed to be measurable, and no marks were awarded if the criterion addressed anything to do with time/speed, cost/price or amount of effort required.

The following is an example of a high-scoring response:

**Criterion**

How many data breaches have occurred at the company?

**Explanation**

By looking at past data breaches, Oscar’s employer could evaluate how well the current data and information security strategies have currently worked and know that the strategies must be improved, if a breach or more has occurred at the company before.

Question 5b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 39 | 21 | 40 | 1.0 |

Students were required to recommend a strategy to ensure that bots and other computer-automated attacks cannot break into the password-protected portal.

The most common responses that gained marks were:

* use of CAPTCHA
* use of 2FA (two-factor authentication) or Multi-Factor Authentication (MFA)
* limit the number of attempts to log in from a single IP address for certain periods (that is, if >3 attempts from that address, don’t allow any more attempts)
* ‘I am not a robot’ tick box
* have a strong password that consists of characters, numbers and text

Section C – Case study questions

Question 1a.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | Average |
| % | 9 | 18 | 34 | 39 | 2.1 |

To gain marks, students were required to identify any three of the five errors shown in the Gantt chart below. 

The five errors were:

* **Error 1** – Task A and Task B cannot occur at the same time.
* **Error 2** – Task C starts on 3 February and finishes on 5 February, but this cannot occur as Georgie is attending a conference on 5 February so will not be able to work on this day. Task C will now need to start on 3 February and will now finish on 8 February. All other dependent tasks will also need to be moved forward by one day.
* **Error 3** – Task E is not linked to Task F. Task E and Task F need to be linked with an arrow/line to show that Task F is dependent on Task E.
* **Error 4** –The dependency arrows from Task G are not correct; the arrow needs to go to the back of Task H.
* **Error 5** – The milestone, Task L, is shown as completed on 26 February, but it should show as completed on 24 February.

To gain marks, students needed to circle the whole section of the error. For Error 2, a number of students only circled either Task E or Task F, yet both tasks needed to be circled to gain marks.

Question 1b.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | Average |
| % | 21 | 23 | 36 | 21 | 1.6 |

Students were required to resolve each error identified in Question 1a.

Question 2a.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | 4 | Average |
| % | 13 | 15 | 36 | 11 | 25 | 2.2 |

Students were required to state and describe two suitable methods for Georgie to collect the required data.

Students who gained marks for this question stated surveys, interviews or sales logs.

Students who only mentioned observations did not gain any marks.

Examples of high-scoring responses were:

**Surveys** – Surveys are one of the most effective methods of market research, as they can collect data from a large and diverse sample of the businesses that they supply. Surveys can be conducted online, by email or by phone and can include questions about the preferences, opinions and behaviours regarding skiing stock. Surveys can provide quantitative data that can be analysed using statistical methods.

**Interviews** – Conducting interviews is another method of data collection that involves engaging with the businesses in a moderated discussion about skiing and their buying habits. Interviews can provide qualitative data that can reveal the businesses attitudes, motivations and emotions regarding skiing. Interviews can also explore the businesses expectations and reactions to new products and the shop’s services.

**Sales logs** – Collect/download/receive a spreadsheet of data from the shops – this would provide historical purchasing sales, so she can then decipher the most popular items that have been sold over the past year.

Question 2b.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | 4 | Average |
| % | 32 | 12 | 26 | 10 | 19 | 1.7 |

To gain marks for this question, students were required to describe two advantages of **one** of the methods suggested in Question 2a.

Responses that gained marks were similar to:

* Surveys can be an effective method of data collection, depending on the research objectives and context. Surveys are more effective for collecting demographic information, preferences, attitudes and opinions on specific subjects. Surveys can also measure consumers’ awareness and perceptions of skiing. Surveys can offer numerical insights and trends that can help researchers draw conclusions and make informed decisions.
* Interviews are more effective for exploring complex issues, understanding participant perceptions and uncovering nuances that might not be captured by quantitative surveys alone. Interviews can also explore consumers’ expectations and reactions to a new line of products and a company’s reputation. Interviews can provide a deeper understanding of participants’ perspectives, motivations and emotions.
* Looking at sales data will tell you exactly what the ski shops have been selling and provides an indication of what the future might hold.

Question 3a.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 48 | 33 | 19 | 0.7 |

Students were required to describe one concern about providing too much data.

Responses that gained marks were similar to:

* overwhelming – won’t feel he can find what he needs amongst the data
* harder to draw conclusions
* is not in the scope of the research
* waste of time as not relevant or correct

The following is an example of a high-scoring response:

Too much data may mean data is outside the scope of the solution, reducing the relevance and therefore the integrity of the data as Tom is only concerned about Australian data, not international. This may confuse Tom.

Question 3b.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | Average |
| % | 19 | 17 | 52 | 12 | 1.6 |

Students were required to comment on whether Georgie should use the data from Canada and the United States and to explain the reasons for their answer without reference to the scope of the solution.

To gain marks, students needed to state no, describe why choosing this data was inappropriate and explain what would happen if Georgie did use the data.

Responses that gained marks were similar to:

* No. The seasonal data for Canada and the United States is out of order with Australia as it is in the Northern Hemisphere, which means it won’t align to financial data, which could distort the Australian figures.

Over 50 per cent of the responses did not address what would happen if Georgie used the data and therefore did not receive full marks.

The following is an example of a high-scoring response:

No, she should not. Relevance is a key concern, as Tom operates in Australia, having no link to the United States and Canada. Additional purchasing habits and snowfall patterns can be very different, potentially misleading the data from reflecting accurate results about the Victorian snow season.

Question 4

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | 4 | 5 | 6 | Average |
| % | 46 | 19 | 19 | 8 | 6 | 2 | 0 | 1.2 |

To gain marks for this question, students were required to complete the table by identifying **one** example of each of the indicated categories and to provide a description as to why this is a relevant example.

The most common answers that gained marks are listed in the table below.

|  |  |  |
| --- | --- | --- |
| Category | Example | Description |
| Functional requirement | To collect and display graph data from the Bureau of Meteorology (BOM).Real-time data.Produce a graph that shows sales of ski clothing and equipment. | The BOM provides current and predicted data that can be used to guide the choice of input data to display a visualisation of previous similar snow seasons.Integrates real-time weather data from reliable sources, which can be used to predict future snowfalls.This graph can be used to display correlations between weather patterns and sales. |
| Constraint | Charlie will be away for a conference on 5 February.Finished by 24 February. | Anything that impacts the time available – Charlie won’t be there on that day.Charlie has stipulated that they will finish on 24 February. |
| Scope | Only use historical snowfall data from Australia. | The solution is for predicting the snow season in Australia and the data from other countries has little to no correlation to Australian snow conditions.  |

Question 5

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | 4 | Average |
| % | 83 | 8 | 8 | 1 | 0 | 0.3 |

Students were required to provide two examples of an evaluation criterion and explain why one is efficient and one is effective.

High-scoring responses were similar to:

**Efficiency**

**Effort** – Is it easy to use? Do the controls make it quick to find the correct result?

**Effectiveness**

**Useability** – The visualisation should allow users to interact with the data. This could include features like zooming, panning, filtering and selecting specific data points or ranges.

**Accessibility** – The visualisation should be accessible to all users, including those with disabilities. This could involve using colour schemes that are friendly to colourblind users, providing text alternatives for visual elements and ensuring compatibility with screen readers.

**Relevance** – The visualisation should be relevant to the user’s needs. It should present the data in a way that helps the user to answer their questions or achieve their goals.

**Attractiveness** – While not as critical as the other criteria, a well-designed, attractive visualisation can enhance user engagement and comprehension. The visualisation should have a clean, professional appearance and should use colour, shape and size in a way that is pleasing to the eye.

No marks were awarded for the inclusion of accuracy, clarity, communication of message, completeness, readability or timeliness.

To gain marks, students also needed to make sure that their response was related to the design of the Dynamic Data Visualisation.

The following is an example of a high-scoring response:

**Evaluation Criteria 1**

Is the design easy to use/navigate? Because it takes effort and time into consideration.

**Evaluation Criteria 2**

Is the design attractive? Attractiveness is one of the evaluation criteria concerned with how the design looks and performs.

Question 6

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | 4 | Average |
| % | 32 | 21 | 33 | 5 | 8 | 1.4 |

Students were required to identify and explain two design principles that, when used, influence the functionality and appearance of the user controls.

Responses that gained marks were similar to:

**Functionality**

**Ease of use** (the only design principle that was accepted for functionality) – The design should have a clear hierarchy of information. This means that the most important information should be presented first, followed by supporting information. This helps the viewer to understand the information in logical order.

**Appearance**

**Text and table formatting** – The design should be simple and easy to understand. Limited font types should be used to make the design more visually appealing and easier to read.

**Contrast** – The design should use contrast to highlight important information. Contrast can be achieved using colour, font size and font weight. This helps to draw the viewer’s attention to the most important information.

**Balance** – The design should be balanced. This means that the elements of the design should be evenly distributed throughout the infographic or data visualisation. This helps to create a visually appealing design.

**Image use** – Any images used should support the message; for example, an image of a snowman indicates cold.

**Space** – The design should allocate appropriate space around the user entry controls and sales for years items. The word ‘spacing’ is not acceptable.

**Alignment** – The elements of the user entry controls and sales for years items should be aligned.

The user controls needed to relate to Figure 2 of the case study; if students discussed a different chart/diagram, they did not receive any marks.

A common error was that students identified appearance design principles in the functionality section.

The following is an example of a high-scoring response:

**Functionality**

Ease of use: The design is easy to use as it contains arrows and buttons to increase or decrease values, allowing the user to easily input their data using the arrows or by typing it in.

**Appearance**

Image use: The design features icons of a snowman, the sun and a calendar to help users understand what is required of each text box input and to be more appealing.

Question 7

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | Average |
| % | 18 | 21 | 35 | 27 | 1.7 |

Students were required to list three conventions that should be applied to the snow depth graph to ensure that Tom can accurately interpret it.

Responses that gained marks were:

* label x axis
* make x axis a regular interval
* consistency of years in x axis
* measurement units in axis
* label y axis
* add a scale to the y axis
* add a legend
* tool tip is shown, show a unit of measurement
* clear interval of increase or decrease

Students who only mentioned the main title as a convention were not allocated a mark, as this did not assist Tom to accurately interpret the graph.

Question 8

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 51 | 34 | 15 | 0.7 |

To gain marks, students needed to identify two different software functions required in the software tool for Charlie to produce the dynamic data visualisations.

Responses that gained marks were:

* shapes – be able to render arcs, areas, curves, lines, links, pies, stacks, symbols and any geometric primitive
* graphs and charts
* show relationships and patterns
* text and text formatting
* use colour/shading
* sorting and filtering (must relate to the dynamic data visualisation)
* calculations (average sales, high sales, maximum and minimum sales) (only one calculation function gained marks)

Marks were not awarded if the students only listed the software function.

Examples of what gained marks were:

* the ability to draw and label graphs (to show graphical data)
* the ability to use a variety of colour and/or contrast (to make important information stand out)
* the ability to use a variety of font sizes and styles contrast (to make important information stand out)

Question 9a.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 13 | 42 | 45 | 1.3 |

To gain full marks, students were required to identify one item from a table and explain why it lacked integrity. Most responses that were not awarded full marks identified the item but not the reason.

Responses that gained marks were similar to:

* The data is ambiguous and lacks clarity – any/all dates provided i.e. date DD/MM/YY vs MM/DD/YY vs DD/MM/YYYY vs DD MMM YYYY (accuracy).
* The data is not within valid range – negative 110.7 for snow depth, but snow depth cannot be negative (reasonableness).
* The data is not a correct/true representation – ‘Spencers ©reek’ vs ‘Spencers Creek’ (correctness).
* The data is not complete – ‘100 m’ vs ‘82.3 cm’, depth is measured in cm not m (reasonableness, correctness or accuracy).
* The data contains duplicates – Spencer Creek has two entries for 15 June 2023 (accuracy or correctness).

Students did not need to state the integrity term, but it was helpful in explaining why the item was lacking integrity.

The following is an example of a high-scoring response:

The Spencers Creek record of 100 m is inconsistent with the other values as it is measured in metres, meanwhile everything else is in cm, reducing the accuracy and integrity.

Question 9b.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | 4 | Average |
| % | 26 | 20 | 30 | 12 | 12 | 1.7 |

To gain marks, students needed to describe how Georgie could cleanse and validate this data in an efficient manner to ensure its integrity.

Common responses that gained marks were:

**Cleanse**

* remove unit from the cell and put in heading
* set standard date format
* use spell check
* filter for duplicates

**Validate**

* use validation rules for accuracy – snow depth cannot be negative
* range check 0–200 cm
* greater than today’s date
* data type check only if not mentioned in cleanse

A response that only included existence check did not gain any marks.

Question 10

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 82 | 10 | 8 | 0.3 |

To gain marks, students needed to describe a testing technique that Georgie could use to test that the dynamic data visualisations are visualising the correct data.

The most common responses that gained marks were similar to:

* Make a change to a user data entry control (any of the three) and ensure that the chart has changed, or Highest Sales and Average Sales in Figure 4 has changed.

The following is an example of a high-scoring response:

Georgie can test her dynamic data visualisation by clicking on interactive elements on the snow depth chart and ensuring that the correct data is being shown. She can compare this to the actual data to see if it displays correctly.

Question 11

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | Average |
| % | 27 | 24 | 33 | 16 | 1.4 |

Students were required to recommend a procedure for managing files that are still needed but not required for the running of the dynamic data visualisations.

To gain marks, students needed to identify that they need to archive the data, move the data offsite or offline and ensure that they can access the data in the future.

Many students did not include that the data needed to be accessed in the future and therefore did not gain full marks.

The following is an example of a high-scoring response:

Georgie can archive her data which involves moving the data to another location to save space. She can do this by moving her files onto an external hard drive, to free up space on the computer while also having access to archived data when needed.

Question 12

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 48 | 35 | 17 | 0.7 |

To gain marks, students needed to explain why this data is important to Tom’s organisation.

The most common response that gained marks was:

Tom’s ski shop needs the data and information to be able to run a successful business. They must be able to track finances in and out, order stock, track stock and communicate with stakeholders.

Other responses that gained marks included:

* tracking money either in or out
* future planning
* data being raw, isolated facts vs information being processed and useful

Question 13

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | 3 | 4 | Average |
| % | 15 | 8 | 35 | 12 | 30 | 2.3 |

Students were required to recommend two security controls that could be implemented and to explain how they would prevent dynamic data visualisations from being compromised.

The most common responses that gained marks were:

* **User access control** – Implement strong user access controls. This includes unique usernames and strong passwords for each user. It is also important to limit user access to only the data they need for their role.
* **Two-factor authentication (2FA)** – Enable 2FA for all users. This adds an extra layer of security by requiring users to provide two forms of identification before they can access the data.
* **Encryption** – Encrypt the data. This ensures that even if the data is accessed without authorisation, it cannot be read without the decryption key.

Other responses that gained marks were:

* usernames and password/passphrase (both terms must be used together)
* locked doors
* guards and guard dog or CCTV to deter people from entering
* auto-locking of screen
* biometrics

Marks were awarded for stating the control and for explaining why it was appropriate. Almost half of the responses only stated the security control and were therefore only awarded one mark.

Question 14a.

|  |  |  |  |
| --- | --- | --- | --- |
| Mark | 0 | 1 | Average |
| % | 63 | 37 | 0.4 |

Students were required to identify any relevant legislation with which Tom must comply while he has access to this data.

The correct response was the *Privacy and Data Protection Act 2014*. To gain the mark, students needed to provide the name of the act in the correct order and the year.

Many students incorrectly named the Act the ‘Data and Privacy Protection Act 2014’, which was most likely because the Act was deliberately misspelt in Question 14 of the multiple-choice questions.

Question 14b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 55 | 31 | 14 | 0.6 |

To gain marks, students needed to explain why the legislation is relevant.

Marks were awarded for indicating that Tom worked for the Victorian State Government and that the data was sensitive.

Students who gained marks had responses similar to:

* Tom is employed by the state government (or is a contracted service provider) and he is handling personal information on behalf of a Victorian public sector organisation.

Question 14c.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mark | 0 | 1 | 2 | Average |
| % | 27 | 49 | 24 | 1.0 |

To gain marks students needed to outline **one** issue that Tom may have with his treatment of this data.

The most common issue that gained marks was:

* Tom’s data is not secure on the flash drive.

Most responses identified this issue but did not explain the problems it might cause so they were only awarded one mark.

The most common responses that gained the second mark were:

* Tom needs to comply with the *Privacy and Data Protection Act 2014* and make sure the sensitive data is reasonably secure at all times.
* Tom should have policies and security measures in place to ensure that the personal information can only be accessed by him.