

# VCE Applied Computing: Software Development

## Sample Questions

### Written Examination – End of Year

These sample questions are intended to demonstrate how new aspects of Units 3 and 4 VCE Applied Computing: Software Development may be examined. They do **not** constitute a full examination paper.

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### Section A – Multiple-choice questions

#### Question 1

The purpose of a mood board is to

- A. show how a screen should be laid out.
- B. identify the non-functional requirements of a project.
- C. describe the link between inputs and outputs of an app.
- D. decide what colour scheme should be used.

#### Question 2

An ideation technique where relationships between different ideas are shown is called

- A. a sketch.
- B. a mind map.
- C. a brainstorm.
- D. an annotation.

#### Question 3

One of the principles of threat modelling is

- A. identifying tasks.
- B. complying with the *Copyright Act 1968*.
- C. confirming threats have been mitigated.
- D. applying regular updates and patches to software.

## Section B – Short-answer questions

### Question 1 (3 marks)

Kim is designing a module of code that determines the difference in area of two shapes: an equilateral triangle and a square. The area of each shape is calculated and the difference between them is determined.

Input	Process	Output
Enter side length of triangle. Enter side length of <u>  1  </u> .	Calculate the area of <u>  2  </u> . Calculate the area of square. Calculate the difference in area between the two shapes.	Display area of square. Display area of triangle. Display the <u>  3  </u> in area.

Complete the input-process-output (IPO) chart by writing the missing words, labelled 1, 2 and 3, in the spaces provided below.

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

SAMPLE

**Question 2** (7 marks)

Oscar has written some pseudocode in the design phase of the problem-solving methodology, as shown below.

```
1 Begin
2   For i From 0 To 2
3     For j From 0 To 1
4       numbers[i,j] ← i + 10j
5     End For
6   End For
7   Print numbers[1,2]
8 End
```

- a. What are the dimensions of this array? 1 mark

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- b. What value would be stored in the array when 'i=2' and 'j=1'? 1 mark

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After writing his pseudocode using a programming language, Oscar wants to verify that the values being stored are calculated correctly. However, when he runs the program he gets an 'index out of range' error.

- c. Explain what an 'index out of range' error is and why the error appeared when Oscar tested his program. 3 marks

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- d. Name **one** suitable testing technique and describe how Oscar could use it to find the cause of the 'index out of range' error identified in **part c**. 2 marks

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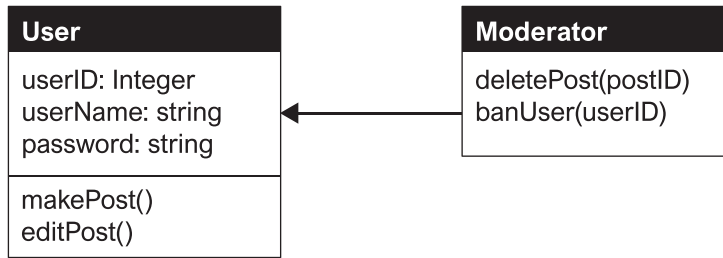
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**Question 3** (3 marks)

An online forum has two kinds of users: regular users and moderators. Both regular users and moderators can make and edit posts, but moderators can also delete posts and ban users. This is shown in the class diagram below.



- a. State which principle of object-oriented programming (OOP) is represented by the arrow in the class diagram above. 1 mark

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- b. Describe how the deletePost method provides abstraction. 2 marks

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SAMPLE

**Question 4** (3 marks)

Karen is working as a developer for BuzzTock, a social media site with over 15 million users. She has been asked to assess the feasibility of writing functionality to analyse the polarity (positivity or negativity) of text and emojis entered into posts by the users. An example of polarity is shown in the table below.

Input	Output
I had a fantastic day at work today 😊	0.97
I had a horrible day at work today ☹️	-0.93

After some research, Karen learns that there is already a free application programming interface (API) named TxtPol that provides the required functionality. It appears that the accuracy of the output is suitable for integration with BuzzTock.

- a. State how using the TxtPol API is a privacy risk. 1 mark

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- b.** Identify and describe **one** technique Karen could use to mitigate this privacy risk. 2 marks

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**Question 5** (5 marks)

Peta is managing the development of a new software solution for a client. The solution needs to use an API from a third-party software provider. Midway through the development process, the third-party provider updates its API to require an additional input.

- a.** Define scope creep. 1 mark

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- b.** Explain whether the third-party provider's update to its API is an example of scope creep or a technical issue. 2 marks

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- c.** Peta considers redeploying someone from another project to focus on making the necessary changes to accommodate the updated API. 2 marks
- Explain why this could have a negative impact on the effectiveness of the project.

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SAMPLE

**Question 6** (8 marks)

Amy is designing a software solution for her online store, which sells goods to new pet owners. This software solution handles user information, including personal data for registering accounts and payment details, such as credit card information. One of Amy's developer friends, Jamma, has advised her to use threat modelling principles to develop strategies to protect against possible cyber security threats.

- a. Explain why Amy should take Jamma's advice to use threat modelling principles to improve software development practices. 3 marks

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- b. Explain how a man-in-the-middle attack could affect the security of Amy's online store. 2 marks

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SAMPLE

- c. Justify whether the possible man-in-the-middle attack threat to Amy's online store should be considered a low, medium or high priority for mitigation. 3 marks

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**Question 7** (2 marks)

Ming works for an organisation whose business model includes selling summaries of its customers' demographic data. Ming has been asked to write code to calculate the standard deviation of the age of users who are interested in a particular music artist. Ming is not sure how to do this and has asked an artificial intelligence-based (AI) assistant to generate the code.

Outline **two** concerns associated with the reliability of the code created by the AI assistant.

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**Question 8** (4 marks)

The Essential Eight is a set of strategies that can be used by businesses to protect themselves from cyber attacks.

- a. Identify and describe **one** mitigation strategy from the Essential Eight that will minimise an organisation's risk from ransomware.

2 marks

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SAMPLE

- b. Identify and describe **one** mitigation strategy from the Essential Eight that will minimise an organisation's risk of an insider threat caused by a disgruntled employee intentionally introducing a vulnerability onto one of the organisation's servers.

2 marks

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## Answers to multiple-choice questions

### Section A

Question	Answer
1	D
2	B
3	C

**SAMPLE**