2

91898 SESSION A, 11–15 SEPTEMBER

NZQA | Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

COMMON ASSESSMENT TASK

Level 2 Digital Technologies and Hangarau Matihiko 2023

91898 Demonstrate understanding of a computer science concept

Credits: Three

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of a computer science concept.	Demonstrate in-depth understanding of a computer science concept.	Demonstrate comprehensive understanding of a computer science concept.

Type your School Code and 9-digit National Student Number (NSN) into the space below. (If your NSN has 10 digits, omit the leading zero.) It should look like "123-123456789-91898".

<mark>SchoolCode-YourNSN</mark>-91898

There are three questions in this document. **Choose ONE question to answer.**

You should aim to write **800–1500 words** in total.

Your answers should be presented in 10pt Verdana font, within the expanding text boxes, and may include only information you produce during this assessment session. Internet access is not permitted.

Save your finished work as a PDF file with the file name used in the header at the top of this page ("SchoolCode-YourNSN-91898.pdf").

By saving your work at the end of the examination, you are declaring that this work is your own. NZQA may sample your work to ensure that this is the case.

INSTRUCTIONS

There are three questions in this assessment, on the topics of:
- Artificial intelligence (page 3)
- Computer security (page 9)
- Encryption (page 15).

Choose only ONE question to answer. Note that parts (c), (d), and (e) of the question include options for you to choose from.

Read all parts of your chosen question before you begin. Do not repeat information in different parts of the assessment.

EITHER: **QUESTION ONE: Artificial intelligence**

(a) (i)   Choose one of the following companies:

- Apple
- Microsoft
- Amazon
- Google (including Waymo)
- Meta (including Facebook)
- Tencent (WeChat)
- ByteDance (TikTok)

Company:

(ii)   How does this company use artificial intelligence?

(iii)   What are at least TWO advantages of this company using artificial intelligence?

Refer to the *Air New Zealand* chatbot interactions below in your answer to part (b). Your answer must be based only on what you see in the screenshots; you may not access the internet.

(b) (i) How effective is this chatbot in performing the task it was designed for?

(ii) Describe at least one technique used by the chatbot.

(c)   Choose ONE of the following to answer:

- What factors need to be considered to train the AI in a self-driving car?
  OR
- Give an example of how an artificial intelligence is evaluated.

Choice (copy and paste below)

Response

(d) Choose ONE of the following to answer:

- How can an artificial intelligence be future-proofed against currently unknown factors?
  OR
- What are the potential negatives of developing artificial intelligence which result from human factors?

Choice (copy and paste below)

Response

(d) Choose ONE of the following to answer:

- How can an artificial intelligence be future-proofed against currently unknown factors?

(e) Choose ONE of the following to answer:

- Many smaller businesses do not have an online solution that includes artificial intelligence. Explain the advantages and disadvantages of this.

  OR

- Refer to the company you discussed in part (a). Explain some key issues your chosen company faces in developing artificial intelligence solutions for the products they create.

Choice (copy and paste below)

Response

This page has been deliberately left blank.

OR: **QUESTION TWO: Computer security**

(a) (i) Choose one of the following companies:

- Apple
- Microsoft
- Amazon
- Google (including Waymo)
- Meta (including Facebook)
- Tencent (WeChat)
- ByteDance (TikTok)

Company:

(ii) What issues does this company face to protect the security of its users?

(iii) What are TWO steps this company has taken to deal with these issues and protect its users?

Refer to the email below in your answer to part (b). Your answer must be based only on what you see in the screenshot; you may not access the internet.

From: bahamascredit@freeemail.com
To: jakematerich12345@nzmail.com
Dear jakematerich12345
URGNT ISSUES
Your CREDIT CARD has been used in the BAHAMAS, not the country you libe in. the amount of $8,783 USDollars has been changed to your CREDIT CARD!!!!!!
YOU NEDD TO CONTACT US IMMEDDIATELY, these charges will be irreparably be made be made you to your credit card if we do not reply immediately
Click on this link to log onto our very very secure network and enter your normal banking logon details. DO IT NOW
We will then text YOU a 2 factor conformation number, emails it to us immediately
Then you will be safe
DO NOT CONTACT YOUR BANK. YOU DO NOT HAVE TIME TO DO THIS AND THIS CHARGE HAS NOT BEEN PASSED TO THEM YET
We thanks you so very much for your urgent action on this matter, it shows to us what a smart and intelligent person you are

Jo Santa
Bahamas Credit cheque department

(b) (i) Discuss the warning signs that this email may not be genuine.

(ii) Explain what actions should be taken in response to receiving this email.

(c)   Choose ONE of the following to answer:

- What are the main reasons organisations require their clients to use two-factor authentication?

    OR

- What is reCAPTCHA and how does it help limit criminal activity?

Choice (copy and paste below)

Response

(d)   Choose ONE of the following to answer:

- How can an organisation protect against the impact of human factors with computer security?
  OR
- What can be done to future-proof computer security against unknown threats?

Choice (copy and paste below)

Response

(e)   Choose ONE of the following to answer:

- What advice would you give to a young person to protect themselves and their computer when going online for the first time? Explain the reasons for your advice.
  OR
- Refer to the company you discussed in part (a). Your chosen company has considerable data on their clients and their habits. Explain the risks to the clients in the ways the company may choose to make use of this data.

Choice (copy and paste below)

Response

This page has been deliberately left blank.

OR: **QUESTION THREE: Encryption**

(a)   (i)   Choose one of the following companies:

- Apple
- Microsoft
- Amazon
- Google (including Waymo)
- Meta (including Facebook)
- Tencent (WeChat)
- ByteDance (TikTok)

Company:

(ii)   How does this company use encryption?

(iii)   What are at least TWO advantages of this company using encryption?

Refer to the random password generator below in your answer to part (b). Your answer must be based only on what you see in the screenshot; you may not access the internet.

(b) (i) What are the advantages and disadvantages of using a password generator?

(ii) Is it a good idea to use these settings to generate a single strong password to use on all accounts? Explain why or why not.

(c) Choose ONE of the following to answer:

- Explain what HTTPS is and why it is recommended instead of HTTP.
  OR
- Explain the difference between how encryption works on passwords compared to how it works on private / public keys.

Choice (copy and paste below)

Response

(d)   Choose ONE of the following to answer:

- After an organisation has a data breach, how can it future-proof to reduce the impact?
  OR
- What are the human factors an organisation must consider when it closes down and has a large amount of customer data?

Choice (copy and paste below)

Response

(e)   Choose ONE of the following to answer:

- Criminal activity on the internet is increasing, with many individuals and organisations losing large amounts of money. Explain what can be done to combat this problem.
  OR
- Explain a major development in computer encryption and why it is important.

Choice (copy and paste below)

Response