

No part of the candidate's evidence in this exemplar material may be presented in an external assessment for the purpose of gaining an NZQA qualification or award.



Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 2 Digital Technologies and Hangarau Matihiko 2023

**91898 Demonstrate understanding of a computer
science concept**

EXEMPLAR

Achievement

TOTAL 03

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:

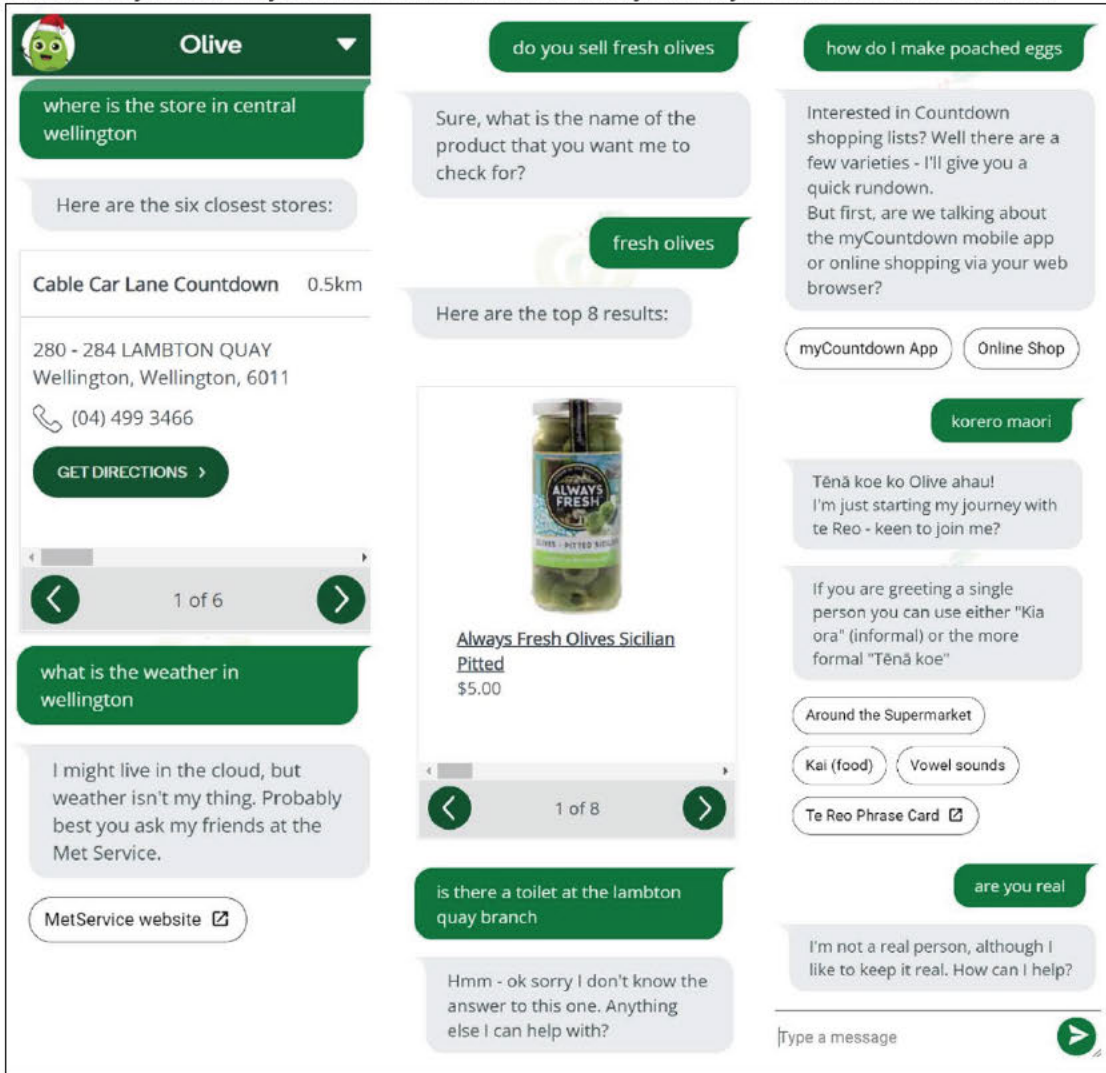
- Apple
- Microsoft
- Amazon
- Google (including Waymo)
- Meta (including Facebook)
- Tencent (WeChat)
- ByteDance (TikTok)

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 *Countdown* 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.



ONE of the following to answer:

(c) Choose

- 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



ONE of the following to answer:

(d) Choose

- How can the impact of human factors be considered when developing artificial intelligence for self-driving cars?
OR
- What are the potential positives of future-proofing an artificial intelligence?

Choice (copy and paste below)

Response



ONE of the following to answer:

(e) Choose

- 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

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: Apple

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

Large corporations like apple can face huge security risks evolving (CIA) Confidentially, Integrity and Accessibility, these three factors are really important to companies like Apple. For Example Confidentially is really important to have a safe internet traffic because if there is a flaw in the a software like Apples iCloud it could lead to Users private information, photos and even sensitive information being leaked/stolen because hackers will find a way in when sending/ transferring things other the internet. Integrity is Also another big factor for apple because if their code, software, devices etc get compromised it can lead to serious security issues with users sensitive information getting stolen or leaked or the data being breached and stolen by hackers. Confidentially is really important to apple as well because if there website goes down or one there services goes down it could really effect some users on being able to access there data and information and it could lead to concerns with the safety of there private information.

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

- 1) Having a well trained and responsive Security team:
This is a really important step for a big company like Apple because having great security team can prevent issues before they even happen or even if they have happened they can respond quick and give out the according update/patch. Having a great Security team will also be able to push out better version of software /websites and operating systems with improved security features protecting the user.
- 2) Testing
Consistent testing the security vital for a big company like Apple because if there is a issue that hasn't been seen by the team but has been effecting the users that can lead to bigger problems. But With a Consistent and vigorous testing with different senarios it can eliminate the problem.

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: facebook@freemail.com
To: jakematerich12345@nzmail.com

Dear jakematerich12345
FACEBOOK ANNUAL FEE
Your Facebook fees are overdue and your account will be DELETED very very soon
We at FacBook have previously contacted you. This is your FINAL not ice. FIX IT NOW
If you do not use Facebook anymore you must pay a fee to close your account. If you Do NOT all information including bithdays, password etc etc will not be protected and can be seen by anyone who wants to knoe
Make sure you protect yourselves by clicking on this [link](#) NOW. This will take you to a special secret Facebook server that has many many layers of protection to keep you safe
The annual fee is \$99USDollars. If you want to seculey close your Twitter account then it will cost \$149USD Dollars

We are disappointed you have not already paid this fee and you must PAY it NOW to keep your facebook account open and to protect all your really really confidential data

Pay now by clunking on the link to demostate what an intelligent person you are

Jo Santa
kooxda ammaanka buugaagta

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

The First warning sign is that if the website or software(in this case Facebook) is free then you shouldn't be needing to pay them any sort of fees. Another big warning sign is how unprofessional the email is, especially large companies like Facebook don't have any spelling or grammar mistakes. Also the email is very threatening which is another warning sign that makes the email seem very ungenueine, Company don't do this and they also don't try to sell you on a better security option. For large Companies the users security is very important because if it isn't then the end user will be very unhappy and it could negatively effect the company because the user be fed up and might use there competiors options.

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

The Actions that should be taken in response to receiving this email is simple. First don't respond to the email and sencondly report it to the email provider and also what ever website or software(in this case facebook) they are trying to be. And lastly block the email address so you don't get any more emails from them.

Choose ONE of the following to answer:

•
(c)

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)

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

Response

The main reasons organizations require their clients to use two-factor authentication is because they want the user to be protected and the companies website, software etc to have a good reputation because if the feedback around the certien website or software then less people will use it, therefore effecting the company. With Just a email and password it is very unsafe because if someone already knows your email/login then if they found out your password as well then they can very easily access your account which may include important information or maybe even sensitive. But with Two Factor authentication if you try log in you the user will enter in a code which they may receive by email or text, this adds a layer of great safety to the users account because now the hacker or person trying to get into the account will need the code which is very hard to access if your not the rightful owner of the account.

(d)

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?

Choose ONE of the following to answer:

•

Choice (copy and paste below)

- How can an organisation protect against the impact of human factors with computer security?

Response

Organisation can protect against the impact of human factors with computer security by educating the user on how to keep safe while using the internet. Also organisations can reduce the impact of human factors by making their security team double check everything and make them do vigorous testing involving their software, websites, and operating system, For example Apples icloud could have serious problems if the security don't keep up to date updates/patches and testing, this is because if there is a flaw and hacker find a way to compromise the Confidentially or integrity then a lot of users photos and sensitive information can be in great danger of hackers. So having well educated people is very important to reduce the human error factors surrounding computer security.

(e)

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)

- 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.

Choose ONE of the following to answer:

•

Response

The Advice I would personally give them on how to protect themselves on the internet is to first have a antivirus installed and to also have their device always up to date with the latest browsers, software, operating systems etc, this is because the current version that they are running might not have the most up to date security making them prone to risks on the internet like malware, virus and much more. My final advice would be if it seems too good to be true it most likely is, for example blatant scams or any sort of pop ups or phishing emails. These might be obvious to the daily computer user but to the first time user it can be really dangers since they don't know what they can be getting in to.



OR: QUESTION THREE: Encryption

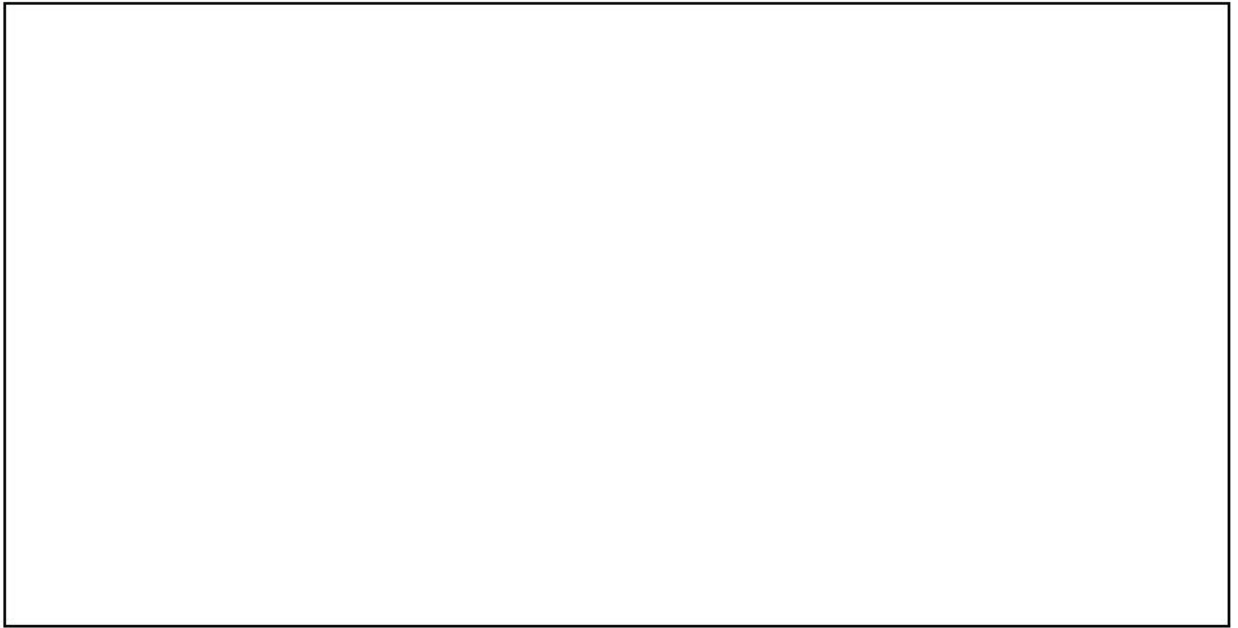
(a) (i) Choose one of the following companies:

- 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.

Calculator.net

Random Password Generator

This tool can generate secure, strong, random passwords. To ensure security, the password is generated completely on the webpage without being sent across the Internet.

Password

7_Hgl

Password Strength: **Very Weak**

Password Entropy: 32.7 bits

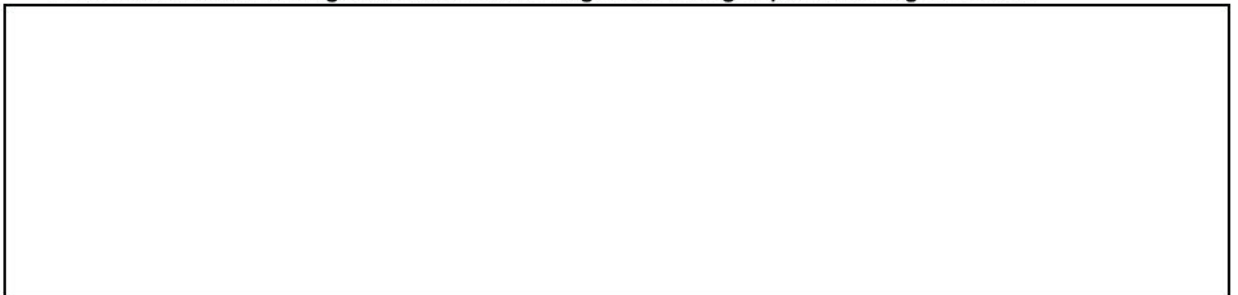
[Copy Password](#) [Regenerate](#)

Password Length: 5

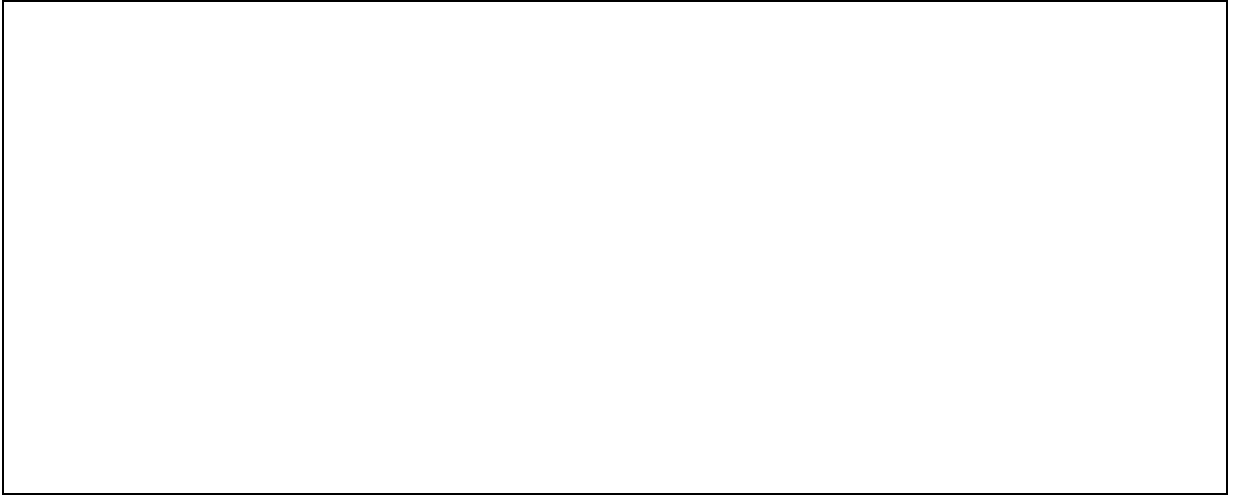
- Include Lower Case (a-z)
- Include Upper Case (A-Z)
- Include Numbers (0-9)
- Include Symbols (!\"#\$%&'()*+,-./:;<=>?@[\\]^_`{|}~)
- Exclude Ambiguous Characters (l1l| o0O `'_";:.,)
- Exclude Brackets (<>(){})
- No Repeated Characters

[Generate Password](#) [Save Settings](#)

(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 different passwords for all accounts? Explain why or why not.





Choose ONE of the following to answer:

-
- (c) 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

Choose ONE of the following to answer:

-

(d)

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

Choose ONE of the following to answer:

•

(e)

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)



Choose ONE of the following to answer:

- Response

Achievement

Subject: Digital Technologies and Hangarau Matihiko

Standard: 91898

Overall grade: 03

Grade	Marker commentary
A3	<p>The candidate made a good start with their first answers and responded clearly to the given prompts. Responses were adequate, however it is important to note that material should not be repeated in different answers.</p> <p>In order to move into the Merit band, the candidate needed to add more examples and provide more depth in their answers. For example, the candidate listed ways of improving computer security, but did not provide details of how this is achieved.</p>