Mark scheme

Question			Answer/Indicative content	Marks	Guidance
1			**Mark Band 3–High Level (6-8 marks)** The candidate demonstrates a thorough knowledge and understanding of a wide range of considerations in relation to the question; the material is generally accurate and detailed. The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation. The candidate is able to weigh up both sides of the discussion and includes reference to the impact on all areas showing thorough recognition of influencing factors. *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.* The answer covers all required elements (legal/ethical, benefits, drawbacks) given in the question about open source **and** proprietary and includes a recommendation with justification. The top of the band makes a clear and structured recommendation to the programmer. **Mark Band 2-Mid Level (3-5 marks)** The candidate demonstrates reasonable knowledge and understanding of a range of considerations in relation to the question; the material is generally accurate but at times underdeveloped. The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. Evidence/examples are for the most part implicitly relevant to the explanation. **The candidate makes a reasonable attempt to discuss the impact on most areas, showing reasonable recognition of influencing factors.**	8 AO2 1a (4) AO2 1b (4)	The following is indicative of possible factors/evidence that candidates may refer to but is not prescriptive or exhaustive: **Indicative Content:** Licence features Open source – (usually free), can access/change source code, redistribute Proprietary – purchase at a cost, cannot access/change code Legal and ethical issues: • Both provide copyright • Open source – allows more people to take code and possibly change to resell, or adapt in their own programs to resell or claim as their own (reverse for proprietary) • Open source – allows more people access to the game because there is likely no cost (reverse for proprietary) Benefits and drawbacks: • Open source – wider customer base, more exposure, users can alter to make it better/fix bugs, limited documentation, little financial gain • Proprietary – allows programmer to earn money, gives more control over what happens with the program, usually well tested, more restrictions for copyright, cannot be adapted to meet user needs, Decision: Either would be appropriate, justification needs to be clearly for the scenario

There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence.
The answer includes one or more from legal/ethical, benefits, drawbacks for open source and proprietary. Alternatively, the answer could have a justified recommendation without clearly referencing the bullet points in the question.

Mark Band 1-Low Level
(1-2 marks)
The candidate demonstrates a basic knowledge of considerations with limited understanding shown; the material is basic and contains some inaccuracies. Thecandidate makes a limited attempt to apply acquired knowledge and understanding to the context provided.
The candidate provides nothing more than an unsupported assertion.
The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. The answer is limited to the facts about open source **and/or** proprietary.
0 mark
No attempt to answer the question or response is not worthy of credit

Examiner's Comments

This question required candidates to provide an extended response. An extended response can be given in the form or paragraphs, key points as well as a table of points. Candidates need to make sure they are covering the three bullet points in the question for both the open source licence and proprietary. The question also asked for a recommendation to the programmer.

Candidates were often able to identify the features of each licence, for example if the source code was provided. Candidates often included benefits and drawbacks, for example being able to edit the program to tailor it to their needs, the potential of misuse of the program code. Candidates often covered legal and ethical issues within their benefits and drawbacks without explicitly identifying them.

Fewer candidates included a recommendation for the programmer. Candidates described each in turn without identifying which one should be used. Some candidates suggested that both were suitable and it was the programmer's decision, but the question asked for a recommendation.

The stronger responses discussed each licence in turn and then in the final paragraph started with a clear recommendation and justified the reasons for this by providing a summary of the points they had discussed in detail previously.

Exemplar 1

					This response has a clear recommendation at the end of the response. They have stated that the programmer should use proprietary and provided a summary of the reasons (discussed previously) as to why they think this is the most appropriate recommendation.
		Total		**8**	
2		i	1 mark each: e.g. • Authors can earn money • …by selling for a fee / using licences to stop unauthorised use • No-one can see the code • …users cannot edit/change the software / by example inserting malware • …so it cannot be copied/resold/shared • More **control** over intellectual property / by example e.g. restrict users, restrict what can be done with the software without permission	4	Benefit is to artist and programmer – not user. Mark the answer as a whole. Do not award reference to ownership/copyright because both allow copyright of the code/program. **Examiner's Comments** This question required candidates to consider the benefits to the developer of releasing the software as proprietary. A common error was describing the benefits to the users, for example they know the software has not been tampered with and that there is lots of support. The most common responses included the ability to earn money from selling the software and retaining control due to no-one else being able to access the source code.
		ii	1 mark for point, 1 for expansion: e.g. • Users can **view/edit** the (source) code / Users can **edit** the program/software • …to **tailor/improve/adapt** it to do what they need/want • …so errors can be fixed (by anyone) • …users can learn how the software works • Freely accessible • …do not have to pay • …can redistribute …	2	Benefit to users not artist and programmer **Examiner's Comments** This question required candidates to consider the benefits to the users of the software being released as open source. Many candidates were able to accurately identify that the source code comes with the software, and this allows the user to edit it to meet their needs.

			• …with changes		
			Total	**6**	

3			**Mark Band 3–High Level (6–8 marks)** The candidate demonstrates a thorough knowledge and understanding of a wide range of considerations in relation to the question; the material is generally accurate and detailed. The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation. The candidate is able to weigh up both sides of the discussion and includes reference to the impact on all areas showing thorough recognition of influencing factors. *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.* **Mark Band 2-Mid Level (3–5 marks)** The candidate demonstrates reasonable knowledge and understanding of a range of considerations in relation to the question; the material is generally accurate but at times underdeveloped. The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. Evidence/examples are for the most part implicitly relevant to the explanation. The candidate makes a reasonable attempt to discuss the impact and most are showing reasonable recognition of influencing factors. *There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence.* **Mark Band 1-Low Level (1–2 marks)** The candidate demonstrates a basic knowledge of considerations with limited understanding shown; the	8 AO2 1a (4) AO2 1b (4)	The following is indicative of possible factors/evidence that candidates may refer to but is not prescriptive or exhaustive: **Indicative Content:** Some points may cover more than one 'issue'. Legal issues: • DPA needs to be followed or company could be fined e.g. Customers informed the system is used Data held for specified time/reasons Data kept secure • Centre is private property so customers can choose not to enter • Can be used to identify people committing crimes e.g. theft, used as evidence, make sure the correct people are caught. Ethical issues: • Users feel safer because they know any actions are being monitored and help/action will be taken if needed • If users have not done anything then there is no reason to be tracked/recorded so should not impact them • Users feels unsafe because they are being watched • Users may be unaware they are being recorded - need to be informed, give consent • Users do not know where the videos/data about them and their movements is stored/how it is used - DPA reference Privacy issues: • Users may feel it is an invasion of privacy • Users are in a public place and can be legally recorded by anyone anyway

material is basic and contains some inaccuracies. The candidate makes a limited attempt to apply acquired knowledge and understanding to the context provided.
The candidate provides nothing more than an unsupported assertion.
The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.

0 mark
No attempt to answer the question or response is not worthy of credit

- Users may feel like they are being watched all the time
- Users have not given their permission to be tracked
- Users may not know the system exists

<u>Examiner's Comments</u>

The quality of written communication required a balanced discussion of the positive and negative impacts of including facial recognition with CCTV cameras in a shopping centre.

Some responses gave strongly negative arguments with little, if any, consideration for the positive impacts. Some candidates also chose to focus on the introduction of CCTV cameras, where the question states there are already CCTV cameras and the discussion is about the upgrade to facial recognition.

The more successful responses considered the ethical, privacy and legal issues one at a time and identified the positive and negative impacts (where applicable) for each of these three sections. These responses were usually well structured and had a balanced discussion before leading to justified conclusions.

Some successful responses included bullet points and table structures to help the candidates structure their response. These were often thorough and included detailed discussions.

Some of the less successful responses focused on people not wanting to be watched by CCTV cameras, or that people would misuse the CCTV cameras. The CCTV cameras were already in existence and therefore this was irrelevant to the context of the question.

More successful responses considered the storage of the tracked videos and how this could lead to data

4					privacy issues. These responses also discussed how shops could use the stored data to analyse where people go in shops to identify areas where they could put more adverts.
		Total	**8**		

| 4 | | **Mark Band 3–High Level (6-8 marks)** The candidate demonstrates a thorough knowledge and understanding of a wide range of considerations in relation to the question; the material is generally accurate and detailed. The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence / examples will be explicitly relevant to the explanation. The candidate is able to weigh up both sides of the discussion and includes reference to the impact on all areas showing thorough recognition of influencing factors. *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.* **Mark Band 2-Mid Level (3-5 marks)** The candidate demonstrates reasonable knowledge and understanding of a range of considerations in relation to the question; the material is generally accurate but at times underdeveloped. The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. Evidence/examples are for the most part implicitly relevant to the explanation. The candidate makes a reasonable attempt to discuss the impact on most areas, showing reasonable recognition of influencing factors. *There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence.* **Mark Band 1-Low Level (1-2 marks)** The candidate demonstrates a basic knowledge of considerations with | 8 (AO2 1a (4)) (AO2 1b) (4)) | The following is indicative of possible factors/evidence that candidates may refer to but is not prescriptive or exhaustive: **Indicative Content:** Legal issues: - Copyright designs and patents act - can check for plagiarism automatically and highlight posts e.g. videos or images - Data protection act - needs to make sure rules are followed so that the AI algorithm does not breach e.g. security - Check that materials are all legal - User has agreed the terms when signing up so should expect it Ethical issues: - Users may not want everything they post monitoring - May incorrectly block users/posts - Can limit plagiarism - Can make sure inappropriate/illegal posts are not published - Website will need to tell users what it is doing and they must agree with it - Record of monitoring reports may be stored and used for other means - Users may feel safer using the website because they know inappropriate material will not be published Privacy issues: - Users may feel like they are being watched all the time |

limited understanding shown; the material is basic and contains some inaccuracies. The candidate makes a limited attempt to apply acquired knowledge and understanding to the context provided.
The candidate provides nothing more than an unsupported assertion.
The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.
0 marks
No attempt to answer the question or response is not worthy of credit

- Terms and conditions may sign away their rights to privacy when using the website
- People may prefer a computer analysing their posts than people reading them

Examiner's Comments

This question was a quality of written communication question. This means that candidates need to consider how they structure their response to make sure it has a clear narrative, and to consider their grammar and spellings throughout. This does not mean that an essay is required, some of the stronger responses used headers and bullet points that clearly identified which issues were positive, negative, related to legal, ethical or privacy. By doing this candidates were also making sure that they knew they had covered all requirements. These bullet points were not single words, they included appropriate descriptions and explanations where required (sometimes as sub-bullet points).

Some responses evolved into generic answers about AI in the world, for example developing into robots that are living organisms, instead of focusing on the use of AI for monitoring posts on a social networking website. Many responses were heavily negative, identifying a lack of privacy and trust, without identifying many positive features, such as faster identification of inappropriate content.

The stronger responses gave a balanced argument of positive and negatives, often identifying a use, e.g. Looking for inappropriate content, and then giving the positive expansions and then the negatives. This ensured that they had identified at least one point for legal, ethical and privacy, and had a balanced response.

Exemplar 4

Using artificial intelligence to monitor posts is much more effective than a person monitoring, due to the fact that an AI can monitor multiple posts at once. A negative to using AI is that users can bypass the AI monitoring because in most cases, they look for key words or phrases to be able to punish users. This means that users can misspell words or phrases to bypass the AI.

There are major privacy issues which could accompany the AI, as users do not know what sort of information that a piece of artificial intelligence can access. This could lead to users feeling unsafe, therefore they could leave the website or complain.

Secondly, Ethical issues could also be a problem because users could feel as if a website is not properly monitored by the AI if it was faulty or

not properly set up. This could lead to issues with the website where certain posts can go through without being noticed by the AI.

Finally, there are legal issues with letting AI monitor the posts from users because the AI could be setup for malicious purposes, which violates the Computer Misuse act 1990. This is a negative as the website could be taken down.

This response has some valid points but they are not all accurate. For example, suggesting the AI can access other data from the users would suggest it is doing something other than it is designed to do.

The candidate has identified that if it is not set up it might not work correctly, but this is the same as using people to monitor the posts.

They also suggest it could be set up maliciously - which is beyond the scope of the question. The question states that the AI is only used to monitor posts.

The response is primarily negative and the positive points are limited in their content and expansions.

| | | | Total | | 8 | |

1 mark for each row

| | | 5 | | 5 | |

Event	The Data Protection Act (2018)	Computer Misuse Act (1990)	Copyright Designs and Patents Act (1988)

Examiner's Comments

This question was answered well by many candidates who correctly identified the legislation that applied to each event.

			Scenario				Marks	
			A company transmits personal data to another company without the individual's permission	✓				
			A school publishes their student's addresses on the school website.	✓				
			The interface for a piece of software is replicated by a rival company			✓		
			A user leaves a computer logged on and another person leaves them a message on their desktop		✓			
			A student guesses their teacher's password and accessing computer account		✓			
		Total					**5**	
6		Copyright designs and patents act					1	
		Total					**1**	
7	i	1 mark per bullet to max 2 • Free of charge • They can adapt it / add features					2	
	ii	1 mark per bullet to max 2 • She can charge customers / She can earn a profit • She can restrict what users can do // users can't edit it					2	
		Total					**4**	

| 8 | | | **Mark Band 3–High Level (6-8 marks)** The candidate demonstrates a thorough knowledge and understanding of a wide range of considerations in relation to the question; the material is generally accurate and detailed. The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation. The candidate is able to weigh up both sides of the discussion and includes reference to the impact on all areas showing thorough recognition of influencing factors. *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.* **Mark Band 2-Mid Level (3-5 marks)** The candidate demonstrates reasonable knowledge and understanding of a range of considerations in relation to the question; the material is generally accurate but at times underdeveloped. The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. Evidence/examples are for the most part implicitly relevant to the explanation. The candidate makes a reasonable attempt to discuss the impact on most areas, showing reasonable recognition of influencing factors. *There is a line of reasoning presented with some structure.* *The information presented is in the most part relevant and supported by some evidence.* **Mark Band 1-Low Level (1-2 marks)** The candidate demonstrates a basic knowledge of considerations with limited understanding shown; the material is basic and contains some inaccuracies. The candidate makes a limited attempt to apply acquired knowledge and understanding to the context provided. | 8 AO2 1a (4) AO2 1b (4) | The following is indicative of possible factors/evidence that candidates may refer to but is not prescriptive or exhaustive: **Indicative Content:** Diagnosis • Search records faster • Identify range of possibilities based on symptoms • Identify patterns • More accurate/automated/AI equipment • May miss some symptoms, or suggest incorrect results Treating • AI/Automated surgery e.g. can control from another country • …access to specialists who are not local • Technology may be subject to hacking • Error in software could have fatal consequences • May have little human interaction Storage • Centralised storage • All medical people can access all information about patients from all people involved in care • Concerns over privacy and security of communication of data e.g. if central storage is accessed personal information may be leaked |

			The candidate provides nothing more than an unsupported assertion. *The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.* **0 marks** No attempt to answer the question or response is not worthy of credit		
•			**Total**	**8**	

Action	Data Protection Act 2018	Computer Misuse Act 1990	Copyright Designs and Patents Act 1988
Using a picture for the law company's new logo without the original creator's permission.			✓
A secretary accessing a lawyer's personal email account without permission.		✓	
Making a copy of the latest Hollywood blockbuster movie and sharing it with a client.			✓
Storing customer data insecurely.	✓		

9 — **6 (AO1 1b)**

1 mark for each tick in the correct box.

0 marks for a row with more than one tick.

			A lawyer installing a key logger on the secretary's computer.		✓			
			Selling client's personal legal data to a marketing company without their permission.	✓				

			Total	**6**	

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					 • Can adversely affect people in this country and abroad:
					   ○ health issues
					   ○ financially
					   ○ socially
					   ○ culturally
					 Cultural issues
					 • Desire/need to own newest device
					 • …to fit in with peers
					 • May have new features that users require for work/leisure
					 Environmental issues
					 • The type of devices that are disposed of
					 • Modern phones poorly designed for durability
					 • Phones' hardware not upgradeable/replaceable
					 • Reference to e-waste (people dispose of their devices in

| | | | Evidence/examples are for the most part implicitly relevant to the explanation. The candidate makes a reasonable attempt to discuss the impact on most areas, showing reasonable recognition of influencing factors.

There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence.

Mark Band 1 – Low Level (1–2 marks)
The candidate demonstrates a basic knowledge of considerations with limited understanding shown; the material is basic and contains some inaccuracies.
The candidate makes a limited attempt to apply acquired knowledge and understanding to the context provided.
The candidate provides nothing more than an unsupported assertion.

The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.

0 marks
No attempt to answer the question or response is not worthy of credit. | | landfill even if they are in good working order)
• Some equipment is also sent abroad to be disposed of
• Leads to excessive landfill (in this country and/or abroad, e.g. Africa and Asia)
• Toxic waste released into land, ground water, air (in this country and/or abroad, e.g. Africa and Asia)
• Waste of resources
• Precious metals in phones

Ethical issues

• Contributes to ill health
• Contributes to the digital divide
• Contributes to social divide
• Problem of confidential data stored on the devices
• Puts social pressure on parents to pay for their children to upgrade
• Puts social pressure on the public to upgrade
• Can lead to bullying of those who cannot afford the latest technology
• Phone manufacturers intentionally designing fragile phones so they need to be replaced more often
• High cost of new devices. |
| • | | | **Total** | **8** | |