

8 One ethical consideration for a student connecting their personal computer to the school network is the risk of spreading malware on the network.

(a) Viruses and pharming are examples of malware.

Explain what is meant by a virus and pharming.

Virus
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Pharming
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[2]

(b) Give **three** other ethical considerations for a student using their personal computer to connect to the school network.

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2
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3
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[3]

(c) Describe **two** social impacts of students using Artificial Intelligence (AI) to complete their homework.

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2 (a) Complete the table by describing each term.

Term	Description
Copyright	
Open Source (Initiative)	
Shareware	
Software Licence	

[4]

(b) Describe the purpose of a code of conduct.

[2]

10 A programmer is developing a computer program.

(a) Explain how the programmer can first use an interpreter **and** then a compiler to develop the computer program.

Interpreter

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Compiler

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[4]

(b) The programmer releases the program as Free Software.

Describe what is meant by Free Software.

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[2]

(c) A user downloads the computer program from the internet.

State what should be included as part of the download to make sure the program is authentic.

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[1]

7 A digital video camera records students in a classroom. The data is transferred from the digital video camera over the internet to a server. Artificial Intelligence (AI) is used to analyse the video on the server to identify when students are interacting with the lesson and the teacher.

(a) Describe **one** ethical impact of this use of AI in the classroom.

[2]

(b) A video is made of many bitmap images called frames. 30 frames are recorded every second.

Each frame is 4000 pixels wide by 3000 pixels high. The video records using 16-bit colour depth.

Calculate an estimate for the file size for **one** second of the video in gigabytes.

Show your working.

File size gigabytes

[2]

(c) Identify **and** describe **one** method of data verification that can be used when transferring data from the digital video camera to the server.

Method

Description

[3]

(d) Describe **two** reasons why the server that stores the videos uses magnetic hard disks instead of solid state (flash) memory.

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[4]

- (e) The table contains three algorithms that perform data validation. The third algorithm uses the functions MID and LENGTH.

The functions MID and LENGTH are defined as follows:

- MID(ThisString : STRING, x : INTEGER, y : INTEGER) RETURNS STRING
returns a string of length y starting at position x from ThisString
- LENGTH(ThisString : STRING) RETURNS INTEGER
returns the integer value representing the length of ThisString

Complete the table to identify the method of data validation for each algorithm. Each method of data validation must be different.

Algorithm	Method of data validation
<pre> INPUT x IF x < 1 or x > 26 THEN OUTPUT "Invalid" ENDIF </pre>	
<pre> INPUT x IF x <> 'R' AND x <> 'G' AND x <> 'B' THEN OUTPUT "Invalid" ENDIF </pre>	
<pre> INPUT x FLAG ← FALSE FOR INDEX ← 1 TO LENGTH(x) IF MID(x, INDEX, 1) = "@" THEN FLAG ← TRUE ENDIF NEXT INDEX IF NOT FLAG THEN OUTPUT "Invalid" ENDIF </pre>	

[3]