The questions on this worksheet have been taken from the OCR A-Level Computer Science Sample Paper

"3-a-day" A-Level Exam Practice (014)

Question 1

(c) Every time the program encounters a file it takes a hash of the file and checks it against a list. If the hash exists in the list, the file is marked to be deleted. If the hash does not exist it is added to the list.

    (i) Explain **two** characteristics you would look for in a hashing algorithm for this purpose.

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2...

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....**[4]**

    (ii) After running the program a user finds that they still have apparent duplicates of some of their images. Explain why these apparent duplicates might still be present.

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....**[2]**

Question 2

7 The computers in a car showroom are connected in a network with all data being held in a central server. The computers are used by the salesmen, but can also be used by customers to watch videos of the cars that are on offer.

    (a) What is meant by a protocol?

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.... **[2]**

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Question3

(b) Explain **two** advantages of using packet switching instead of circuit switching to send a message between two computers on a network.

1 ....

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2 ....

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[4]

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Answer 1

	(c)	(i)	• Low chance of collision (i.e. different inputs giving same output) (1 – AO1.2) to reduce risk of different files being marked as the same (1 – AO2.1). • Quick to calculate (1 – AO1.2) as lots of files need to be hashed/needs to be quicker than a bitwise comparison to make it worthwhile (1 – AO2.1). • Provides a smaller output than input (1 – AO1.2) so quicker to compare hashes than original data (1 – AO2.1).	**4** **AO1.2** **(2)** **AO2.1** **(2)**	1 mark for each correct identification (AO1.2) up to a maximum of two identifications 1 mark for each valid explanation (AO2.1) up to a maximum of two explanations. No credit for function being one way as this serves no benefit in this scenario.
		(ii)	• Hashing works on the data/bits (1) and so two images may appear the same but not be identical at a bit level (1). This could be because they are different file types (1) / different sizes (1). Even the change of a single bit may result in a completely different hash (1).	**2** **AO2.1** **(2)**	Up to 2 marks for a valid explanation. Accept any other sensible examples of changes to images that might not be immediately apparent to someone viewing the image.

Answer 2

7	a		A set of rules… -…to govern data transmission (between devices)	2	Must be rules – plural 1st bullet point

Answer 3

	b		• Transmission is safer from interception… • …because it is impossible to intercept all the packets as they use different routes • Very efficient use of network… • …as each channel only used for short time/ does not tie up a part of the network • If there is an error then only a small, identifiable, part of the data is affected… • …this can be retransmitted easily	4	1 per bullet, max 2 pairs of bullets. Can award marks for opposite points made about Circuit Switching but do not give explanation mark Efficient use, not speed Do not credit anything about speed of transmission of the file