

1. Application software is run on thin client computers. A thin client computer is a very low-powered computer connected to a powerful central server. The operating system and all the applications run within a virtual machine on the server. The thin client computer will only display the output of the virtual machine and capture and send input to the virtual machine.

The thin client computer needs to send data that is input by the user to the server so that the virtual machine can process it. For example, it will send text entered by the user on the thin client computer to the application software running on the virtual machine.

Data is compressed in order to improve the speed of data transmission between the client and the server.

Explain why lossless compression should be used instead of lossy compression.

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2. A team of programmers create a robot that will be used in a factory. The robot will be able to do the work of multiple humans.

The programmers discuss whether to write the instructions for the robot in assembly language or a high-level language.

The robot stores data internally and also communicates with other robots and users via a wireless network which is password protected. All data for these tasks is secured using either encryption or hashing.

Compare the robot's use of encryption and hashing for storing and communicating data.

You should include the following in your answer:

- the different types of encryption that could be used and how this would secure data
- how hashing could be used to secure data and which data would be suitable
- why encryption and hashing are used by the robot for stored data and communications.

[illegible]

3. All videos that are streamed are compressed. Customers have the option to choose from watching the videos with lossy compression or lossless compression.

[illegible]

4. Shreya is a web developer who creates webpages for a variety of different companies.

[1]

[1]

- ii. Explain the need to compress photographs in this situation.

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END OF QUESTION PAPER