

Computer Science Exam Paper

Total Marks: 15

Question1: Both kibibyte and kilobyte can be used as measures of file size. Compare kibibyte and kilobyte. (2 marks)

Answer1: A kibibyte (KiB) is a unit of digital information storage equal to 1,024 bytes. A kilobyte (KB) is a unit equal to 1,000 bytes. Therefore, a kibibyte is slightly larger than a kilobyte. The kibibyte uses the binary system (base 2), while the kilobyte uses the decimal system (base 10)

Question2: Operating systems often include compression software for reducing file sizes. Give two reasons for reducing file sizes. (2 marks)

Answer2: 1. Reducing file sizes saves storage space on devices and servers.

Question3: Give two drawbacks of using compression software. (2 marks)

Answer3: 1. Compression software can sometimes lead to loss of quality in files, particularly with lossy compression methods.

Question4: A train company uses ticket vending machines at each station. The machines use embedded systems. Explain one benefit of using an embedded system in these machines. (2 marks)

Answer4: One benefit of using an embedded system in ticket vending machines is increased reliability and efficiency. Embedded systems are designed to perform specific tasks with high reliability and speed, which ensures that the ticketing process runs smoothly and efficiently.

Question5: Customers use a touch screen to select their destination. They can pay by cash or bank card. Their tickets and a receipt are printed. The touch screen is controlled by an embedded system. Give two other hardware components in the ticket machine that are controlled by embedded systems. (2 marks)

Answer5: The printer that produces the tickets and receipts is controlled by an embedded system to manage printing tasks.

The cash acceptor or card reader is controlled by an embedded system to handle payment processing and ensure secure transactions.

Question6: The ticket machine uses data encryption when a customer pays using a bank card. State why data encryption is used in this case (1 marks)

Answer6: Data encryption is used to protect sensitive information, such as bank card details, from unauthorized access and potential theft during the transaction process.

Question7: Compare four features of high-level and low-level programming languages (4 marks)

Answer7: High-level languages provide a higher level of abstraction from hardware, making them easier to use and understand. Low-level languages offer less abstraction and are closer to machine code, providing more control over hardware. High-level languages are generally easier to learn and use due to their simplified syntax and higher-level constructs. Low-level languages are more complex and require a deeper understanding of computer architecture. Low-level languages can offer better performance and efficiency because they allow direct manipulation of hardware and system resources. High-level languages may have overhead due to abstraction layers.