

Scenario 1**Questions 1, 2 and 3**

Joe has a home network with a number of computing devices and a large screen television connected to a router using wireless technology.

Joe uses his large screen television when playing online computer games. He has a remote control for the television.

1 The television remote control uses infrared to communicate with the television.

(a) Describe how data is carried by infrared from the remote control to the television.

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(b) Describe the benefits of the remote control communicating with the television by infrared.

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(c) There are other input devices which are more suitable for playing computer games.

Describe **two** such devices which could be connected to the television.

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(c) Identify **one** other use for spread spectrum transmission.

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Scenario 2**Questions 4, 5, 6 and 7**

Doctors in a local hospital use an expert system to help with the diagnoses of patients' illnesses.

The expert system is kept up to date and modified as necessary by a knowledge engineer using a knowledge base editor.

The doctors can also consult with other doctors in hospitals in other towns using telephones or via the internet.

Computer systems are available in the hospitals for use in monitoring patients so that the doctors can do other tasks.

- 4 Explain why modifying a knowledge base could cause the expert system to produce inaccurate results.

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5 Describe how an expert system is used to help in the diagnosis of an illness.

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Scenario 3**Questions 8 and 9**

An online retailer stores data about its customers, its goods for sale and its financial details.

The retailer has a number of servers each dedicated to a particular role in its online business. For example, there is a web server to store the website and a database server to store the data required to operate the business.

Customers can access the online store from the internet using a web browser. To purchase goods, customers must create an account and provide their contact and payment details.

8 Explain how digital certificates are used to re-assure the user that the website is authentic.

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9 The store tries to enforce a strict password policy with its customers to attempt to keep the passwords strong.

(a) Describe the characteristics of a strong password.

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(b) Explain why a very strict password policy may cause problems.

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Scenario 4

Questions 10 and 11

A software company has developed specialised software to model the economy of a country.

The company has developed prototypes of the software during the development process.

10 Describe the stages in the process of prototyping the software model.

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11 Discuss the benefits and drawbacks of using prototypes when developing the new software model.

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