

1.4 NATURE OF DATA AND INFORMATION – PAGE 22: QUESTIONS 1 TO 4

1. Explain the difference between data and information.

Data is a vital ingredient of an information system. Information is an important factor in an organisation's current and future success.

2. Why is data a vital ingredient of an information system?

Data is a vital ingredient of an information system because if the data collected is meaningless, the information presented will be meaningless.

3. What are four characteristics of appropriate data?

Data will be appropriate if it is: relevant—useful to the purpose of the information system, accurate—collected from a dependable source and entered without errors, timely—current, and kept up-to-date, secure—protected from deliberate or accidental damage or loss.

4. Describe the five data types.

- Text e.g. Sarah, M, Yes
- Number e.g. 41, 3.456, \$10, 89%
- Image e.g. Diagrams, photographs, charts
- Audio e.g. Music, voice recording
- Video e.g. Film clips

1.5 DIGITAL REPRESENTATION OF DATA – PAGE 28: QUESTIONS 1 TO 8

1. Describe some of the traditional methods used to represent and store data.

Some of the traditional methods used to represent and store data include: Filing systems: Data is filed into a filing cabinet or storage area. Individual pieces of paper are manually sorted so that information is readily obtainable. Catalogue systems: Data is stored in lists, often in alphabetical order. Records of books and other resources in a library are indicated on cards stored in a catalogue system. Journals and ledgers: Amounts are recorded in columns in a special book to keep a record of a firm's financial transactions. Microfiche: Data is photographically transferred to a transparent sheet of film about 10 by 15 centimeters. One sheet stores up to 200 pages of print. Printed media: Data is stored on paper in the form of newspapers, magazines, and books.

2. What are the advantages and disadvantages of digital data?

Advantages	Disadvantages
Ease of editing: Data in the form of images, audio, video, text and numbers, can be easily updated and modified as required. Ease of storage: Large amounts of data can be stored on a disk or CD. It can be retrieved, revised and rearranged as appropriate. Quick search: Large amounts of data can be searched and sorted quickly and accurately. Performing calculations: Precise and complex calculations can be performed on the data very quickly. Recalculations of the data assist with predictions and decision-making. Ease of transmission: Data can be easily exchanged. The Internet provides a convenient way of accessing information throughout the world.	The cost of hardware, software and installation may be prohibitive. Compatibility with existing technology must be investigated. The participants in the information system need to be trained. People are often reluctant to adopt new methods. Social and ethical issues such as privacy, security, copyright and the changing nature of work need to be addressed.

3. Describe four digitizing trends.

Electronic newspapers allow people to access to information on stories of special interest. They provide the latest news, as the stories are being constantly updated. Subscribers are emailed a page of news headlines on the areas they nominate. Each item of text is linked to the full story on a Web site. Internet banking allows customers to view their account balances and transaction histories, transfer money between accounts, and pay bills over the Internet. It provides banking services 24 hours a day but cannot cater for cash withdrawals. Electronic commerce allows commercial transactions to be carried out electronically using a credit or debit card. It provides an efficient service to customers and has been quickly adopted by many Australians. Internet shopping allows organisations to sell their goods and services on a global scale. It is gaining acceptance even though some people are concerned about the security of their credit card details.

4. What is a byte?

A group of eight bits is called a byte. A byte is the basic unit of measurement for digital data.

5. Convert these measurements to the units indicated (approximate value only).

- 2 000 000 b (2 097 152 b)
- 160 000 b (163 840 b)
- 3 Mb (2.8610229 Mb)
- 4 000 000 000 b (4 294 967 296 b)
- 560 000 Kb (573 440 Kb)
- 8 Mb (7.8125 Kb)

6. Why do computers use the binary number system to represent data?

Computers use the binary system because the 0 or 1 represents whether a circuit is on or off.

7. List two commonly used coding methods for digital data.

Two commonly used coding methods are ASCII and EBCDIC.

8. How many different characters can be represented using a 7-bit ASCII?

The seven-bit ASCII allows for 128 different characters.

1.6 SOCIAL AND ETHICAL ISSUES – PAGE 34: QUESTIONS 1 TO 6

1. Who are hackers?

Hackers are often involved in information theft or financial theft.

2. What safeguards can be taken to protect data?

Data security involves a series of safeguards to protect the data from deliberate or accidental damage such as passwords, keycards, biometric devices, data encryption, firewalls, securing waste, regular backup procedures and carefully screening employees.

3. Why is it difficult to check the accuracy of data?

There is a huge amount of information and it is relatively easy to publish on the Internet. As a result, there is no guarantee that all information is accurate or reliable, and it is difficult to check it in a reasonable amount of time.

4. What is data validation?

Data validation involves checking the accuracy of the data before it is processed into information.

5. List four different ways data validation can be built into software.

Data validation can be built into software applications such as: Range checks, List checks, Type checks and Check Digits.

8. What is copyright?

Copyright is the right to use, copy or control the work of authors and artists, including software developers.