# DBMS

Teacher's Notes

## Lesson Plan

| Length | 60 mins | Specification Link | 2.1.5/c_d | |
|---|---|---|---|---|
| Learning objective | | Candidates should be able to:<br>(a) describe how a DBMS allows the separation of data from applications and why this is desirable<br>(b) describe the principal features of a DBMS and how they can be used to create customised data handling applications | | |

| Time (min) | Activity | Further Notes |
|---|---|---|
| 10 | Discuss the need for data to be stored in an organised way if it is to be accessed and searched effectively.<br>Using a projector display the **Interactive Starter Activity**.<br>This is intended to illustrate how data can be structured using 'side headings' (fields). | |
| 15 | Watch the set of videos, pausing to discuss the content. | |
| 5 | Discuss the videos to assess learning. Ask questions such as:<br>• What is a DBMS? | Database management system. Applications to define and create tables, rub queries, create forms and reports. |
| | • What features enable it to assist in the production of data handling applications? | The data is separated from the application so that it can be accessed by different client software. |
| | • What are the advantages of using a DBMS? | |
| | • What is meant by a 'field'? | A unit of data in a record e.g. surname, first name, postcode in an address book. |
| 15 | Pupils to complete **Worksheet 1** either on paper or on a computer.<br>Ask individual students for their responses and discuss with the class so that all students have the correct answers. | Answers provided.<br>Ask students with the correct responses to explain to the class how they arrived at their answers. |
| 10 | The students use the **Interactive Activity 1**<br>This is a gap-fill exercise designed to assess the students' learning. | |
| | **Extension Challenge/Homework**<br>Students to complete and submit **Worksheet 2** for homework. | |

| Time (min) | Activity | Further Notes |
|---|---|---|
| 5 | **Plenary**<br>Assess lesson learning outcomes by revisiting the questions asked after the video. | |
| 10 | **Plenary**<br>Using a projector display the **Interactive Plenary Activity**.<br>Use this to initiate a discussion on the security and human rights issues raised by the storage of personal data in computer databases. | |

## WORKSHEET 1 ANSWERS

**1** **Explain what is meant by a 'database management system'.**

A database management system is a set of software programs that allows users to create, edit and update data in database files, and store and retrieve data from those database files. Data in a database can be added, deleted, changed, sorted or searched all using a DBMS.

Most DBMSs include a form designer program to create a user interface for data entry and a report designer program that enables you to output data in the form of a report. Many DBMSs also include a graphics component that enables you to output information in the form of graphs and charts.

**2** **Before database management systems were developed, users had to create their own programs in order to store and manipulate data.**
**Explain the advantages of using a DBMS.**

Before the use of a DBMS, the data was combined into the program used to create the database. Other users could not then access the data without that particular software and were reliant on the computer specialists who had created it.

The DBMS concept separates the data from the application used to create the database and so it can be accessed by many different client applications.

**3** **The database can be stored centrally and users can access this central data from different locations.**
**What are the advantages and disadvantages of this?**

Before the use of a DBMS, the data Doesn't give any disadvantages was combined into the program used to create the database. Other users could not then access the data without that particular software and were reliant on the computer specialists who had created it.

The DBMS concept separates the data from the application used to create the database and so it can be accessed by many different client applications.

## WORKSHEET 1 ANSWERS

**4** **In terms of database structure, explain what is meant by:**

**a field**

**a record**

**a file**

A **field** is one item of information in a database record e.g. in an address book database, it could be surname, first name, date of birth.

A **record** consists of all the fields about an individual entry in a database e.g. all the details about one student in a school management database.

A **file** is the complete collection of all the records e.g. the complete collection of all the student records.

## WORKSHEET 2 ANSWERS

**1** **(a) A DBMS is used to create data handling applications. (1)**
**What does DBMS stand for?**

Database management system

**(b) Describe the features of a DBMS that can be used to create data handling applications and explain the advantages of using a DBMS. (6)**

Points may include:

**Features (4)**

- Provides a set of tools for accessing/maintaining the database, e.g. to define/create tables, run queries or define reports.
- The application is independent from the database itself.
- Provides data integrity control (e.g. integrity checks, validation checks).
- Controls access to data, including security and multiple user access.

**Why desirable (2)**

- These can be set up beforehand by an expert and used by an end user. Separating application and database means the database can be accessed separately by other means e.g. a desktop application and web application accessing the same data/other suitable example.