4 Databases

Briefing

This unit looks at the purpose and features of databases, as well as the stages in data processing. It also focuses on the different ways data can be stored and on the use of databases in companies.

Database basics

This section focuses on **databases**, which are organised collections of data in digital form. Databases can be used, for example, to monitor the sales performance of a product over a period of time in different markets.

Students learn about the essential features of databases, for example **fields**, the place where data is entered, **rows**, a horizontal line of cells and **columns**, a vertical line of cells. The section also looks at database products and what they can do to support the activities of people in business.

There is also a focus on asking people to help you do something – in this case, access some information from a database. This gives students the opportunity to focus on basic computer use-related verbs like **enter**, **click** and **press**.

Data processing

Here the focus is on describing the stages in data processing: **data collection** (gathering raw data to process), **data coding** (arranging and systematising data), **data validation** (double-checking and cleaning data) **data entry** (entering data into a system), **data tabulation** (arranging data into table format for analysis) and **data sorting** (creating categories in order to organise data into groups).

Students also learn how to explain the stages in data processing and to check understanding of the stages (for example, *That's coding. Got that?*).

Data storage and backup

The focus of this section is on the different types of storage and backup available to both large and small organisations and to individuals. Terms covered include **online storage** (placing data at a remote location via the internet), **remote servers** (servers you are connected to via the internet), **cloud computing** (storing data and software applications on the internet rather than on an individual computer), **external hard drives** (magnetic disk drives connected physically to a computer), **hard disks** (the standard magnetic disk drives inside computers) and **usb flash drives** (small memory storage devices containing flash memory, also known as keys and memory sticks).

There is also a presentation of how to ask for and give advice (for example, *What should I do? You should buy a flash drive. What would you recommend? I wouldn't recommend a server.*).

Database system benefits

Here the focus is on the ways in which different parts of a company use a database. For example, a sales department will want to know about the number of items sold, while stock management will want to know about the quantity of products in storage.

Business matters

In this section, students are asked to provide an IT solution for a bookshop which has some stock management and information exchange problems.

Further reading

Use the following keywords to search the internet for websites which give more in-depth information about the topics covered in this unit: cloud computing, data storage, data backup, best online storage.

Teacher's notes

Before you start the unit

Review the content of Unit 3. Write the following on the board and ask students to complete the sentences:
Why do people visit websites?
People visit CNN to … (*read/get international news*)
People go to Amazon to … (*buy things*)
People go to YouTube to … (*watch videos*)
People go to Wikipedia to … (*get/check information*)

Then ask students to call out all the adjectives they can think of to describe the four websites and write them on the board (for example, *beautiful*, *fun*, *funny*, *exciting*, *clear*, *easy-to-use/navigate*). Follow this up by asking students to give you the opposites of the adjectives where appropriate.

Database basics

Speaking

1 Students can discuss the question in groups or as a whole class. Their ideas will depend on your teaching situation but the kinds of database products you can expect them to mention are:

Professional: telephone directories, dictionaries, encyclopaedias, weather databases, earthquake monitoring, Bloomberg financial information

Personal: Internet Movie Database, hotel booking websites, eBay accounts, telephone bills, family pictures

Note that software for creating databases is featured on page 31, so do not go into the details of this aspect here.

Listening

2 ▶ 23 Tell students that they are going to listen to Tim explaining to his colleague Chris how to get some information he needs from a database. Before playing the recording, teach or review the following keywords and phrases: *enter*, *exit*, *press enter*, *type in your username/password*, *scroll down* and *click on*. If possible, demonstrate these words and phrases using a computer. Ask students to close their books and play the recording so that they can get a general understanding of the situation. Play the recording a second time, pausing to allow students to write in their answers.

1 could **2** problem **3** information **4** get
5 password **6** remember **7** field
8 column **9** on

Extra activity
Ask students to cover the dialogue and roleplay the conversation using the information in the screenshots. Write keywords and phrases for students to use on the board: *Could you help me, please? I need some information …, Enter your password. Click on …, Type in … .*

Language

Tell students that the language here is used for polite requests and for positive and negative responses to requests. Point out that the positive responses (*sure* and *no problem*) are short and informal and that the negative responses (*I'm afraid …*, *I'm sorry …*) are apologetic. Also point out that when you say *no* to a request, it is good to give a reason if you can (for example, *I'm busy right now.*). You might want to extend the focus on requests to look at what the person making the request would say in response (for example, *thanks*, *thanks very much*, *thanks a lot* to a positive response and *oh OK* or *all right* to a negative response).

3 ▶ 24 Play the recording once and ask students to just listen to the questions. Play the recording again and ask students to repeat the questions. Point out the importance of intonation in making the requests sound polite.

Speaking

4 Ask Student As to make the first three requests and then swap roles so Student Bs ask questions 4, 5 and 6. Ask students to give a reason only if they answer with *no*.

5 Before the students do the activity, check that they understand the meaning of the verbs *store*, *access* and *get* and the nouns *fields*, *columns* and *rows*.

Suggested answer
A database is used to store information. You access a database with a password and get information. This is a database about people in a company. You can see information about their jobs, departments and telephone extension in the columns and rows.

6 You can do this activity as a class or in small groups. This is an open discussion that wraps up the section. Students are likely to offer some of the following uses for databases:

- to organise information (for example, family albums, sales invoices)
- to share information in the most effective way (for example, dictionaries, ticket booking, client data)
- to protect information (for example, authorising access, deleting unwanted data)
- to work with information (for example, using Photoshop to modify family photos)
- to use information/data for analysis (for example, for marketing plans)
- to use data in the future (for example, to give family photos to children, to predict the weather)
- to retrieve information in the future (for example, to give information about traffic fines for licence renewal or insurance)
- to modify data to analyse something (for example, in medical labs, for material testing)

Data processing

Vocabulary

1 Check students' understanding of the following words: *gather*, *raw*, *categories*, *relevant*, *arrange* and *faults*. Tell students that the meaning of the headings is given in the six steps on the chart.

Ask students to do the activity in pairs or small groups. Do not check the answers yet as students do this in Exercise 3.

a data collection **b** data coding **c** data validation **d** data entry **e** data tabulation **f** data sorting

2 Ask students to do the activity in pairs or small groups. Do not check the answers yet as students do this in Exercise 3.

2 f **3** b **4** d **5** c **6** e

Listening

3 ▶ 25 Play the recording twice. Make sure students check their answers to both Exercise 1 and Exercise 2. The recording also provides a model for how to explain the steps in data processing to another colleague, which is what students will do in Exercise 7.

4 ▶ 26 Play the recording, pausing to allow students to mark the stressed syllable each time. You could point out that in words ending in *-ion*, the syllable stress usually comes on the penultimate syllable (for example, *inform**a**tion*).

2 collection **3** tabulation **4** validation
5 sorting **6** coding **7** gather **8** create
9 arrange **10** enter **11** double-check
12 format

5 Make sure students stress the correct syllables when they repeat the words.

Vocabulary

6 This activity tests the prepositions presented in the course so far. You will probably want to check your students' use of prepositions on an ongoing basis throughout the course.

1 between **2** for **3** about **4** at **5** of
6 from **7** into **8** in

Language

Read through the example sentences and point out that the questions are short informal questions we use when we want to check that the person you are explaining something to has understood you. This is a communication skill students will need regularly in their working lives when dealing with colleagues who may be less expert than them. Say the questions with a rising intonation and ask students to repeat them. You could expand your presentation by eliciting possible responses (for example, *Yes, I understand you./Got that.* or *No, could you repeat that?/No, would you explain that again?*

Speaking

7 Play Track 25 from Exercise 3 again to show students what they need to do and to emphasise that they should use the checking questions from the Language box. Students could read the audio script on page 73 while they listen to help them. Ask students to turn to page 30 and use the chart in Exercise 1 for this activity. You could ask Student As to explain the first three steps and then Student Bs the last three steps.

8 Ask students to do this activity in pairs or small groups. As students answer the questions, go round the class monitoring their discussions. Make a note of any difficulties and interesting information for review with the whole class.

Microsoft Access 2010 provides templates for those who want to create their own databases. EndNote and Reference Manager are for creating bibliographies.

Data storage and backup

Vocabulary

1 Ask students to do the activity on their own and then to compare answers in pairs.

A usb flash drive **B** hard disk **C** external hard drive **D** server **E** the internet **F** mp3 player

Reading

2 To introduce and contextualise the reading text, ask students to tell you the pros and cons of the different types of storage device in Exercise 1 (for example, *The usb flash drive is lighter and cheaper but has less memory.*). Then ask students to go through the words in the box with a partner to see which words they already know. You can then deal with any remaining vocabulary queries as a class.

When reviewing the answers, you might want to point out the use of *an* in front of vowel sounds (for example, ***an*** *IT expert*).

2 contents **3** emerging **4** cloud **5** loss **6** theft **7** encrypt **8** security **9** magnetic **10** flash **11** volumes **12** protect

Speaking

3 Ask students to discuss the two questions in small groups. Their answers will depend on their work or study situation.

Listening

4 ► 27 Play the recording and ask students to repeat the phrases.

5 ► 28 Make sure students understand the meaning of the sentences. Play the recording straight through so they get a general idea of the conversation, then play it a second time to allow students to make their choices.

1 F **2** T **3** T **4** F **5** T

Extra activity

With a stronger class, play the recording again and ask students to correct the items that are false (for example, *Tim can spend $200, not $300.*).

Language

After reading through the example sentences, point out the two ways of asking for advice (*What should I …?* and *What would you recommend?*). Ask students to answer the following questions, using *would recommend*, *wouldn't recommend*, *should* or *shouldn't*, to show they have understood: *What should I do with a slow computer? Where should I buy a computer? What computer would you recommend? What mobile phone would you recommend?*

Point out the contracted forms *I'd* and *I wouldn't*.

Speaking

6 Tell students that they are going to practise asking for and giving advice in a professional context. Ask them to refer to the devices covered in Exercises 1 and 2 as they do the activity.

Extra activity

Ask students to swap roles. With in-work students, ask them to give advice for a larger company. With pre-work students, ask them to give advice for an individual working at home on their own.

Database system benefits

Speaking

1 Before students discuss the question, you may need to give them a company so they have a context to talk about. For example, Amazon needs to **create** data on the products it sells online (for example, price, availability, features), it needs to **manipulate** the data so products are categorised (for example, putting all the videos or toys for children together), it needs to **store** information on the products, sales made and customers, and it needs to **retrieve** information on customer visits, purchases and preferences.

Vocabulary

2 Before students do the exercise, write the departments on the board and ask them to explain their function, either as a whole class or in small groups.

2 f **3** a **4** e **5** b **6** h **7** d **8** g

3 Ask students to read about the four types of company data that PartyPlanner Ltd has and to answer the two questions.

Departments: human resources, customer relations, production/stock management, technical support

Speaking

4 Ask each group to choose one person to act as secretary as they make their list of advantages and disadvantages. When they present their ideas, ask them to talk about the two biggest advantages and disadvantages.

Some advantages of computerised databases are: ease-of-use, speed of access, integration of information in one place so that everyone in the organisation can use it, easy access to information, faster processing of information and easy sharing and distribution of information.

Some disadvantages of computerised databases are: security, expertise needed to maintain and use them, cost of maintenance and servicing, cost of training and bugs or errors leading to problems for the organisation.

Business matters

Reading

1 Write *Jumbo Book Store* on the board and ask students to suggest what problems a book store might have that a database could solve. Ask them to read the email and answer the five questions.

1 information about the sales of books
2 with handwritten sales reports
3 purchase orders for new books, sales figures and customer information
4 five to six hours
5 information about availability is poor

Speaking

2 Draw students' attention to the problem/solution outline. Ask them to complete the 'Problem' section based on the information in the text. With a weaker class, you might like to do this together. Then put students in groups of three and ask them to discuss solutions and their end results. One student in each group can write down the best solutions and their end results.

Suggested answers
Problem:
Who? Amiki
What? difficulty preparing reports and giving customer information
Why? The company doesn't have a database.
Solutions:
1 create a database
2 include the information on sales to prepare purchase orders, reports and marketing information
3 create usernames and passwords for authorised employees to maintain and update the data in the system
4 train the staff on how to use the system
End results:
save time and money, offer better customer service, produce more accurate reports for planning and management

3 Tell students that their presentation should last only a minute or two. Ask them to divide up the parts of the presentation so that all the group members get a chance to speak. Give them the chance to rehearse their presentation before they present to another group. Groups should compare their solutions and make comments.

Preparing for the next unit

Unit 5 is about **e-commerce**, so ask students to come prepared with a list of things they usually buy online and things they do not usually buy online. You could also ask them to find out the best price online for a product of your choice (for example, an airline ticket, a package holiday or a car).