7.12 Banking applications

The use of computer technology has revolutionised how we do our banking transactions, for example:

- internet banking (discussed in Chapter 6)
- the use of automated teller machines (ATMs)
- chip and PIN technology.

Figure 7.13 An online flight booking system

Automated teller machines (ATMs)

Automated teller machines (ATMs) are places where customers can get cash (or carry out certain other banking activities such as order a statement) using their credit or debit card. Table 7.3 summarises the process.

Sequence at ATM	What goes on behind the scenes
Customer puts card into ATM.	• Contact is made with bank's computer.
PIN is entered using the keypad.	• PIN is checked to see if it is correct. • Card is checked to see if it is valid.
A number of options are given: • change PIN • top up mobile • see balance • get money.	
The customer selects the cash option. A number of cash amounts are shown.	
The customer accepts one of the options or types in a different amount.	• The customer's account is accessed to see if they have sufficient funds. • It is checked to see if they are withdrawing more than their daily limit.
The customer is asked if they want a receipt.	
The card is returned.	• Transaction is OK.
Money is dispensed.	• Customer's account is updated.

Table 7.3 Process for withdrawing cash from an ATM

Although ATMS are very convenient for customers, they do have a few disadvantages:

- They are often in places where theft can take place unnoticed.
- 'Fake' ATMs can be set up to gather information about the card and retain the card.
- Some banks charge customers for the use of ATMs.
- Someone else could see the PIN being entered and could use this to commit fraud at a later date (also known as 'shoulder surfing').

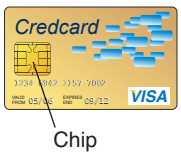

Figure 7.14 A chip and PIN card

Chip and PIN

Many credit cards are equipped with a chip as well as a magnetic stripe (see Figure 7.14) – this contains key information such as the PIN.

This system is designed to enhance security since it is better than relying only on a signature. When paying for items using a chip and PIN card, a form of **electronic funds transfer (EFT)** takes place. In this example, a customer pays for a meal in a restaurant using a chip and PIN card:

- The waiter inserts the card into the chip and PIN reader.
- The restaurant's bank contacts the customer's bank.
- The card is checked to see if it is valid (expiry date, whether stolen card, etc.).
- If the card is stolen or expired then the transaction is terminated.
- The customer enters the PIN using a keypad.
- The PIN is read from the chip on the card and is compared to the one just keyed in.
- If they are the same, then the transaction can proceed.
- If they are different, the transaction is terminated.
- A check is then made on whether they have enough funds.
- If there are not enough funds available, then the transaction is terminated. Otherwise, the transaction is authorised.
- An authorisation code is sent to the restaurant.
- The price of the meal is deducted from the customer's account.
- The same amount of money is credited to the restaurant's bank account.
- A receipt is produced as proof of purchase.

Exercise 7b

Indicate which of the following tasks is batch processing or online (both types).

Description	Batch	Online
Producing a monthly payroll		
Processing bank cheques at the end of the month		
Using an ATM to obtain cash		
Booking seats for a train journey		
Monitoring a patient in an intensive care unit		
Manual stock taking system done at the end of each day		
Welding of a car body using a robot		
A satellite navigation system		
Producing and updating a dictionary or encyclopedia		
Printing out mobile phone bills at the end of the month		
Getting prices of items at an EPOS terminal in a supermarket		