

2.2 Direct Data Entry Devices

Syllabus 2026 - 2028

WHAT YOU NEED TO KNOW

- Characteristics, uses, advantages and disadvantages of direct data entry devices: magnetic stripe reader, chip and PIN reader, RFID reader, OMR, OCR, bar code reader and QR scanner

Direct data entry (DDE) devices read data straight from its source into the computer without a person typing it. This is faster and reduces typing errors.

Device	Characteristics and uses	Advantages	Disadvantages
Magnetic stripe reader	Reads data stored in the magnetic stripe on a card. Used on bank cards, hotel key cards, and ID or access cards.	Fast and easy to use; cards are cheap; robust technology	The stripe can be damaged or wiped by magnets; data is not encrypted so it is easy to copy (skimming); stripe wears out
Chip and PIN reader	Reads the chip in a card, and the user enters a PIN. Used for payments in shops and at ATMs.	More secure than a magnetic stripe, since the PIN must be entered; the chip is harder to copy	The PIN can be seen or guessed (shoulder surfing); the card can be stolen; slower than contactless; user must remember the PIN
RFID reader	Reads data from a tag using radio waves. Used for tracking stock and livestock, pet chips, passports, access cards and toll roads.	Reads without line of sight and through packaging; can read many tags at once; fast; works at a distance	Tags cost more than bar codes; radio signals can be blocked or interfered with; data can be read without the owner knowing; security risk
Optical mark recognition (OMR)	Reads marks made in set positions on a form. Used for multiple-choice exam answer sheets, lottery tickets and surveys.	Very fast; accurate; good for large numbers of forms	Forms must be filled in carefully and exactly; can only read marks, not text; forms must be designed and printed first; badly marked forms are rejected
Optical character recognition (OCR)	Reads printed or handwritten characters and converts them into text. Used to digitise documents, read number plates and process passports and cheques.	Faster than typing; text can then be edited and searched; reduces typing errors	Not fully accurate, especially with poor print or handwriting; text must be checked; scanned image quality matters
Bar code reader	Reads a pattern of lines that stores a number. Used at supermarket tills, in libraries, in stock control and on luggage labels.	Fast and accurate; cheap to print; no typing; stock updated automatically	Barcode can be damaged or dirty; only holds a small amount of data; must be lined up with the reader; can be switched between items
QR scanner	Scans a square code that holds more data than a bar code, using a camera. Used for web links, payments, tickets, menus and tracking.	Holds much more data; can be read from any angle; can be scanned by a phone camera; error correction	Can lead to harmful websites; needs a camera and software; can be damaged; users may scan without checking

EXAM TIP

RFID is not the same as a bar code. RFID uses **radio waves** and does not need to be in line of sight, while a bar code reader needs to see the code. OMR reads **marks**, OCR reads **characters**.

Key terms

Term	Meaning
Direct data entry	Reading data straight from its source without keying it in.
Magnetic stripe reader	Reads data from a magnetic stripe on a card.
Chip and PIN	Card chip plus a personal identification number for payment.
RFID	Radio frequency identification; tags are read using radio waves.
OMR	Optical mark recognition; reads marks in set positions.
OCR	Optical character recognition; reads text characters.
Bar code	A pattern of lines that stores a number.
QR code	A square matrix code that stores more data than a bar code.
Skimming	Illegally copying data from a magnetic stripe card.