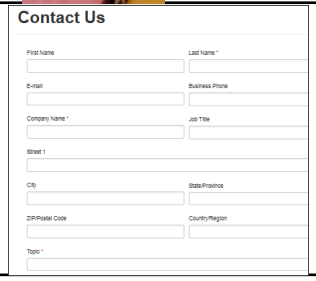
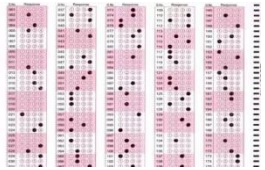
Methods of Data Capture

Method	Image	Description	Examples	Advantages	Disadvantages
Magnetic Stripe Card		Magnetic strips can be encoded by tiny iron based particles being magnetised	Credit and debit cards	small and portable inexpensive to produce	requires physical contact If weak can be demagnetised limited storage capacity not always secure
Near Field Communication		A set of protocols for transferring data between two chips in devices. Devices must be 4cm or closer.	healthcare information, school IDs, prepaid cards, authorising access	Convenient Wireless	low speed connection requires close proximity can be expensive
Radio Frequency Identification		A passive technology for tracking an item. Uses tags and readers, the readers send radio waves and receive signals from a tag in return.	library books tracking machines and staff in hospitals	small and discrete useful for tracking signals work without a line of sight. efficient	thick materials can impact the identification. Implementation is less reliable than barcodes.
capture forms		Computer based forms have fields often linked to a database.	signing up for a service, Polls, marketing research	input validation can be done. Fully customisable Data is easy to process.	Data could be mishandled, not always trustworthy. Can require internet access.

optical character recognition or ANPR		Takes images of shapes on a piece of paper and warps those shapes until OCR recognises that shape as a character on a database. Therefore it can take scanned documents and convert them to editable text files.	Reading old paper documents, reading number plates	Can be automated and optimised, still faster than humans. Number plates can be checked in real time.	Since pattern matching is a complicated process, OCR can make mistakes. A good photo needs to be taken or the original text needs to be readable.
Magnetic Ink Character Recognition		Scans only for ink containing iron oxide	checks	expensive to make and scan for.	More reliable and accurate than optical mark recognition methods
Barcode reader		The thickness and position of lines uniquely identifies a barcode. Barcode readers can be used to look up that barcode on a database.	Products in shops, barcode patent ID in hospitals	Very quick and efficient, takes up minimal space on a product. reliable	Cannot store huge amounts of information. Read only. Often needs training to use.
Paper form		A physical form to take data	Polls, marketing research	Useful in person as a slip or to collect information.	User input is slow. Data must be processed by hand.
scanner		Used for image digitisation, makes a bitmap from a flat piece of scanned media.	Used in OCR, film scanner and in printers. 35mm film scanners	Accurate. large images can be processed	Slow to process since file sizes are big. some quality is lost

Optical mark recognition		Used for mass processing multiple choice question on paper	some exams and lottery systems	The OMR knows the format of the sheet so only the important areas are checked. Very efficient for mass marking	If an area isn't fully covered or incorrectly marked it may be missed.
Card readers, Chip and pin		Either magnetic or smart cards, read the data on the embedded chip in the card	Shops or hotel doors	Gives an accurate input allowing a transaction to take place	Must be secure or risk breaches of security and data
Motion sensors		Emits waves of ultrasound or other harmless invisible waves and alerts users when they are disrupted.	Automatic lighting, home security, energy efficiency	conserves energy if linked to a lights system useful security measure	Can be triggered unintentionally.