INPUT DEVICES

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Input Devices

- Device: is an instrument that performs a simple task.
- Input: something put into a system.

- An **input device** is any peripheral used to provide data and control signals to a computer.

- An input device is any tool device for entering information into a computer.

List of Input Devices

- Keyboard
- Mouse
- Trackball
- Joystick
- Light Pen
- Digitizer

List of Input Devices

- Scanner
- Optical Character Recognition (OCR)
- Optical Mark Reader
- Optical Bar Reader
- MICR (Magnetic Ink Character Recognition)

Keyboard

FU NCTION KEY

NUMERIC PAD

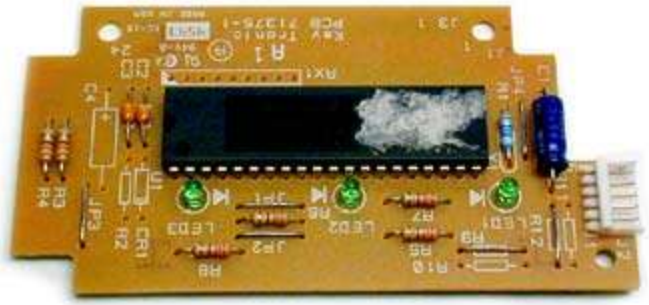
MODIFIER KEY

AIPHANUMERIC KEY

CURSOR MOVEMENT KEY

How Keyboard Works

- Keyboard is a input device used for entering data into computer by pressing one key at one time.
- It has its own processor and circuitry that carries information to and from that processor.
- The key matrix is a grid of circuits underneath the keys.



Microprocessor & Controller Circuitry of Keyboard

- When you press a key, it presses a **switch**, completing the circuit and allowing a tiny amount of current to flow through.

- It tells the processor the position of each key in the matrix and what each keystroke or combination of keystrokes represents.

How Keyboard Works

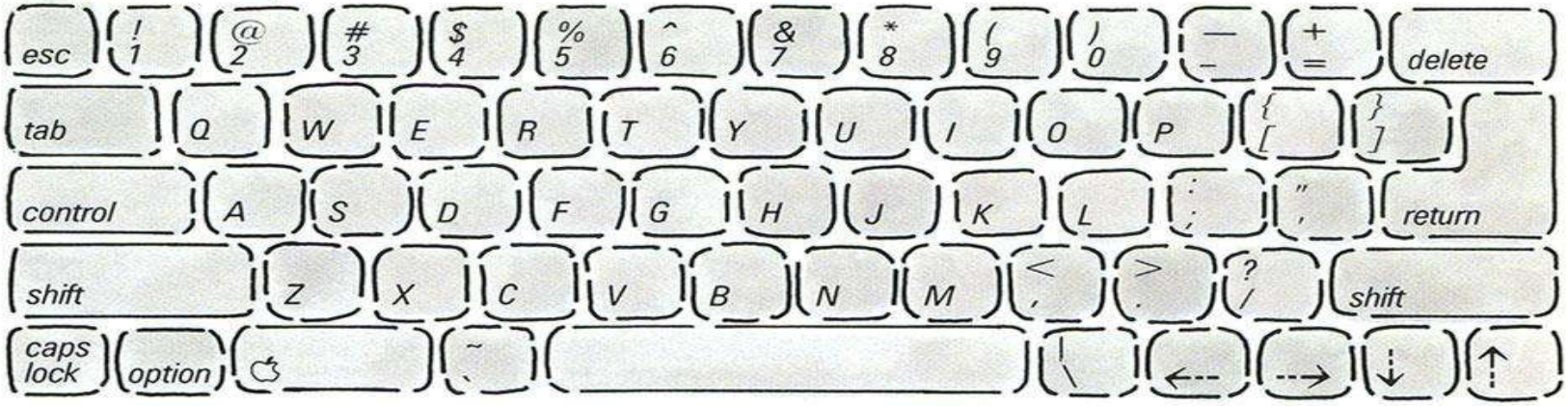
- Most keyboards have between 80 and 110 keys, including: Typing keys ,a numeric keypad, function keys and control keys.
- Using a keyboard, a person can type a document, use keystroke shortcuts, access menus, play games and perform a variety of other tasks.
- Keyboards can have different keys depending on the manufacturer, the operating system they're designed for, and whether they are attached to a desktop computer or part of a laptop.
- But for the most part, these keys, also called **keycaps**,

Types of Keyboard (Based on Layout)

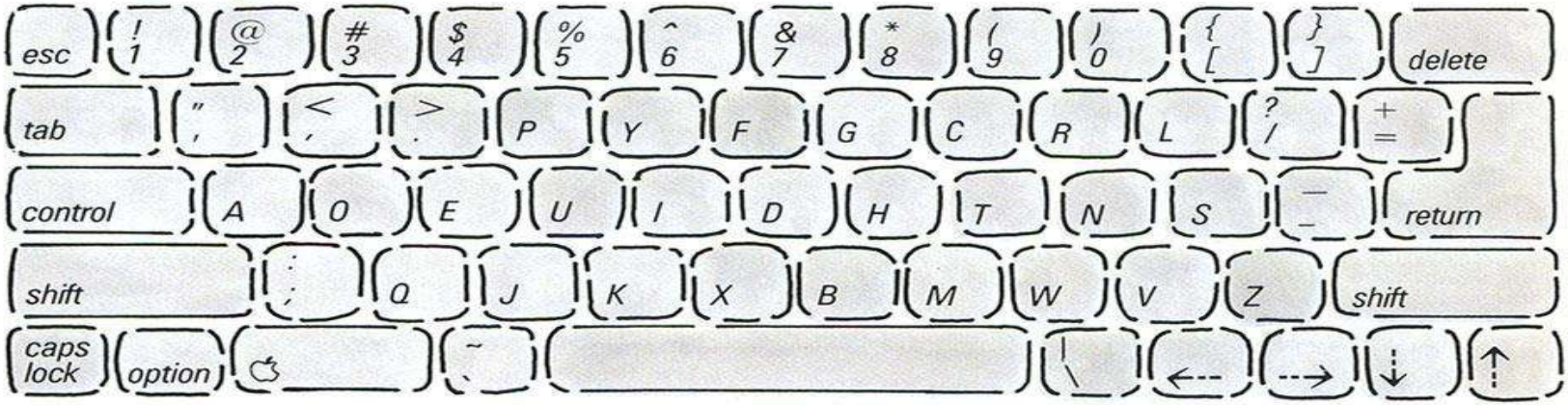
- QWERTY Layout
- DVORAK Layout
- ABCDE
- XPeRT
- AZERTY

Each is named for the first keys in the pattern. The QWERTZ and AZERTY arrangements are commonly used in Europe.

Standard Keyboard



Dvorak Keyboard



Source: Apple IIc Plus Owner's Guide, Copyright 1988, Apple Inc.

Advantages of Keyboard

- Reliable for data input of text and numbers.
- Usually supplied with a computer so no additional cost.

Disadvantages of Keyboard

- Users may be slow for not very accurate typists.
- Slow for accessing menus etc. and difficult to use if you want to move objects around the screen.
- Difficult for people unable to use keyboards through paralysis or muscular disorder.

MOUSE

- The **mouse** is used to control the movement of a pointer on the screen when it is moved horizontally over a flat surface.

- A ball under the mouse rotates when it is moved and turns two rods, one for left/right and one for up/down.

- Buttons on the mouse let you select options from menus and drag objects around the screen etc. Some models are now wireless.

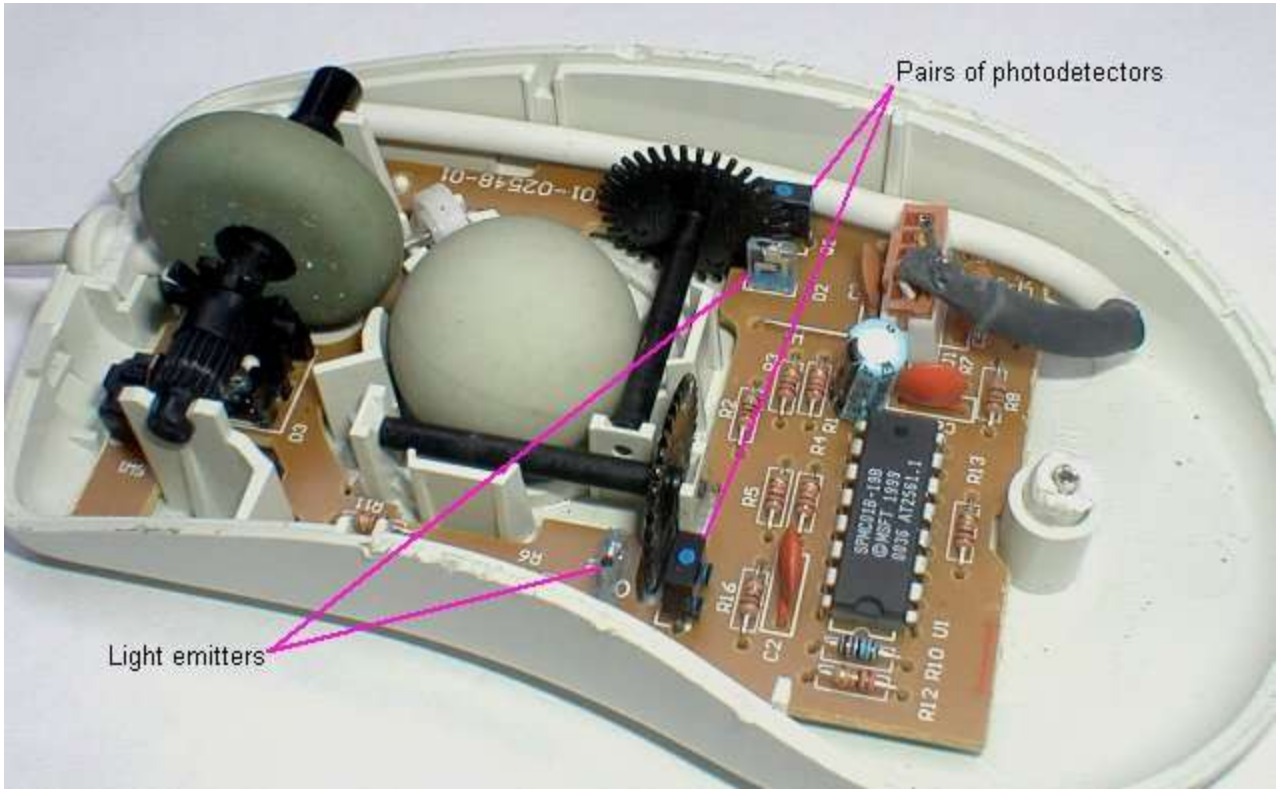
Types of Mouse

- Mechanical Mouse
  - A mouse that uses a rubber ball that makes contact with wheels inside the unit when it is rolled on a pad or desktop.

- Optical Mouse
  - A mouse that uses light to detect movement. It emits a light and senses its reflection as it is moved,

OPTICAL MOUSE

MOUSE



Advantages

- Moves cursor around the screen faster than using keystrokes
- Usually supplied with a computer so no additional cost.
- All computer users tend to be familiar with using them.

Disadvantages

- They need a flat space close to the computer.
- Requires moving hand from keyboard to mouse and back.

TRACK BALL

- A **trackball** is a pointing device consisting of a ball held by a socket containing sensors to detect a rotation of the ball about two axes—like an upside-down mouse with an exposed protruding ball.

- Instead of moving the whole mouse around, the user rolls the trackball only, which is on the top or side.

TRACK BALL

Advantages of Trackball

- Ideal for use where flat space close to the computer is limited.
- Can be useful with laptops as they can be built into the computer keyboard or clipped on.

Disadvantages of Trackball

- Not supplied as standard so an additional cost and users have to learn how to use them.

JOYSTICK

- A **joystick** is an input device consisting of a stick that pivots on a base and reports its angle or direction to the device it is controlling.

- Joysticks are often used to control video games, and usually have one or more push-buttons whose state can also be read by the computer.

- Joysticks are often used for playing computer games such as flight simulators. They can also be used to control the movement of a wheelchair or other machinery.

JOYSTICK

- **Advantages of Joystick**
- Easy to learn to use. Very simple design so they can be inexpensive.

- **Disadvantages of Joystick**
- Control can be a bit crude as the directions in simple joysticks are limited to forward, backwards, left and right.
- Better models offer diagonal movement or better.

Light Pen

- A **light pen** is a computer input device in the form of a light-sensitive wand used in conjunction with a computer's CRT TV set or monitor.

- It allows the user to point to displayed objects, or draw on the screen, in a similar way to a touch screen but with greater positional accuracy.

- A light pen can work with any CRT-based display, but not with LCD screens ,projectors and other display devices.

LIGHT PEN

DIGITIZER

- A digitizer is a input device used for converting pictures, maps and drawing into digital form for storage in computer.

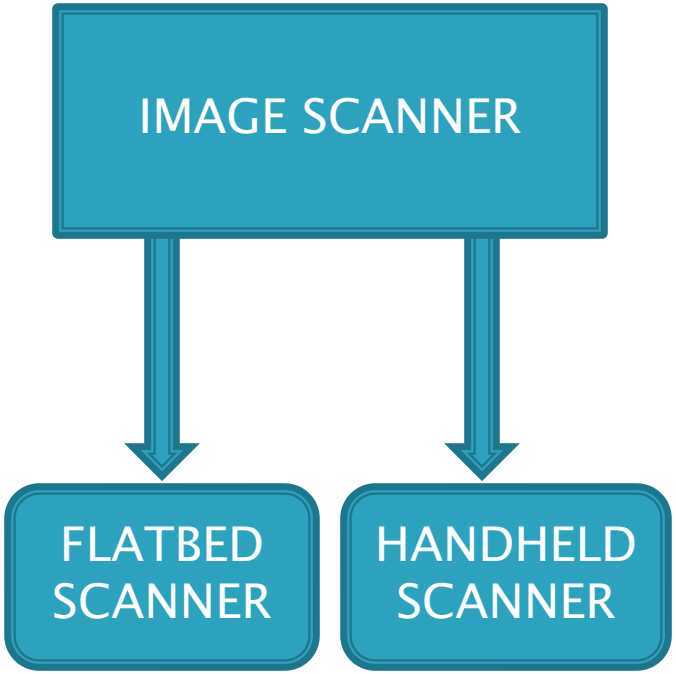
Touch Screen

- A **Touch screen** is an electronic visual display that can detect the presence and location of a touch within the display area.
- The term generally refers to touching the display of the device with a finger or hand.
- Touch Screens can also sense other passive objects, such as a stylus. However, if the object sensed is active, as with a light pen, the term touch screen is generally not applicable.

Touch Screen

Scanning Devices

- Scanning devices are input devices used for direct data entry in to a computer system.



Flatbed Scanner

- A flatbed scanner is a copier machine consist of a box having a glass plate on the top and lid that cover the glass plate.

Handheld Scanner

- A hand held scanner has a set of light emitting diode encased in small case that can be held in hand.

Optical Character Recognition

- OCR is used to convert the bitmap images of a character into ASCII codes
- It can recognize many different OCR fonts, as well as typewriter & computer-printed characters.
- Advanced OCR systems can recognize hand printing.
- OCR software analyzes the light and dark areas of the bitmap in order to identify each alphabetic letter and numeric digit.
- Hand printing is much more difficult to analyze than machine-printed characters.

From Computer Desktop Encyclopedia
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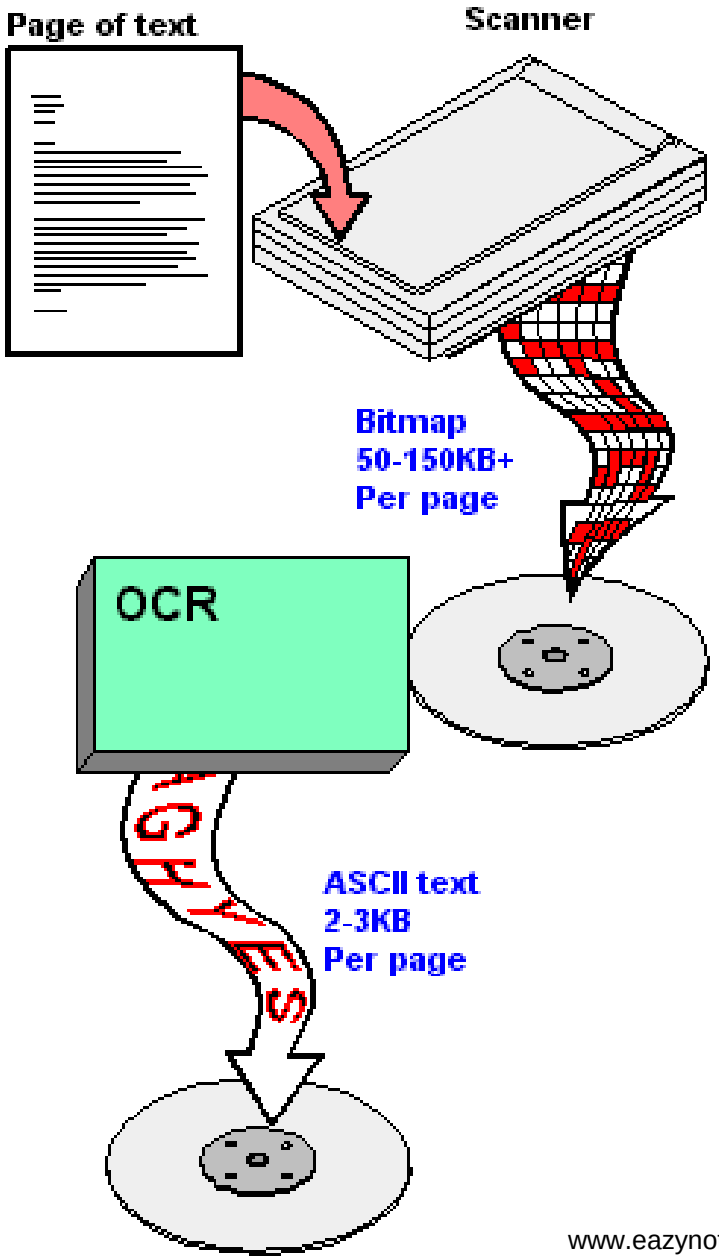
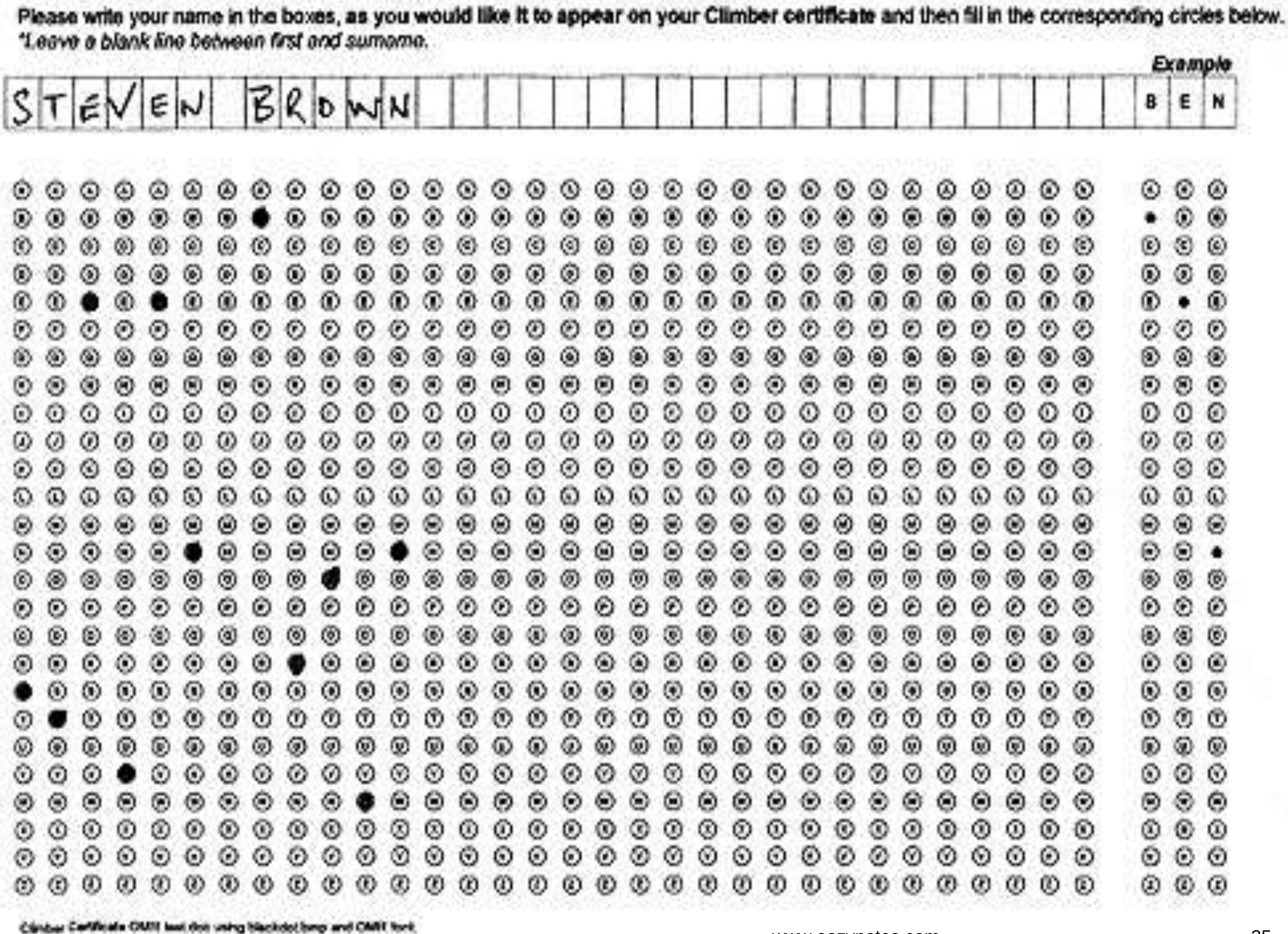


OCR-A FONT

OCR-B FONT

Optical Mark Reader

- OMR are used to recognizing a pre-specified type of mark made by pencil or pen.



Please write your name in the boxes, as you would like it to appear on your Climber certificate and then fill in the corresponding circles below.

*Leave a blank line between first and surname.

Example

S	T	E	V	E	N		B	R	O	W	N

B	E	N

Climber Certificate OMR test doc using blackdot.bmp and OMR font.

Bar Code Reader

- **Bar code readers can read bar codes—patterns of printed bars.**

- Lines of different widths and sizes representing data that, when read, will determine what the scanned object is. Bar codes are often used to help organize and be able to index information or prices about an object.
- Barcode readers and scanners

- A **barcode reader** or **scanner** also known as a **point of sale (POS) scanner** are hardware devices capable of reading a barcode and printing out the details of the product and/or logging that product into a database so a company can easily keep track of its inventory
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Bar Code Reader

- A barcode reader consists of a scanner , a decoder , & cable used to connect the reader with a computer.
- Data coded in the form of small line are known as bar code.
- It directs a beam of light across the bar code & measures the amount of light that is reflected back.
- The scanner converts the light energy into electrical energy, which is then converted into data by decoder & forwarded to a computer.


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Magnetic Ink Character Recognition

- MICR is used in banking industry for faster processing of a large number of cheques daily.
- MICR characters are printed in special typefaces with a magnetic ink or toner.

MICR E13 B Font

Magnetic Ink Character Recognition

Barcode Printing

Voice Recognition Devices

- It allows a person to input data to a computer system by speaking to it.