Functional Units

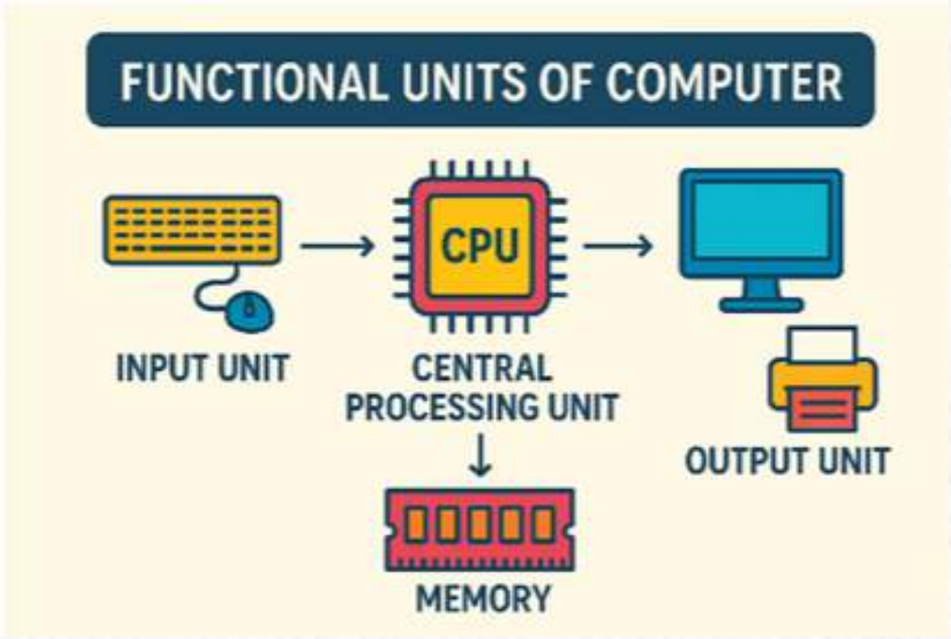
The Blueprint of Computation

super notes.
by CIVILIANZ
TRUST THE PROCESS

INDEX

"Whether you think you can, or you think you can't—you're right."
— Henry Ford

Functional Units of Computers



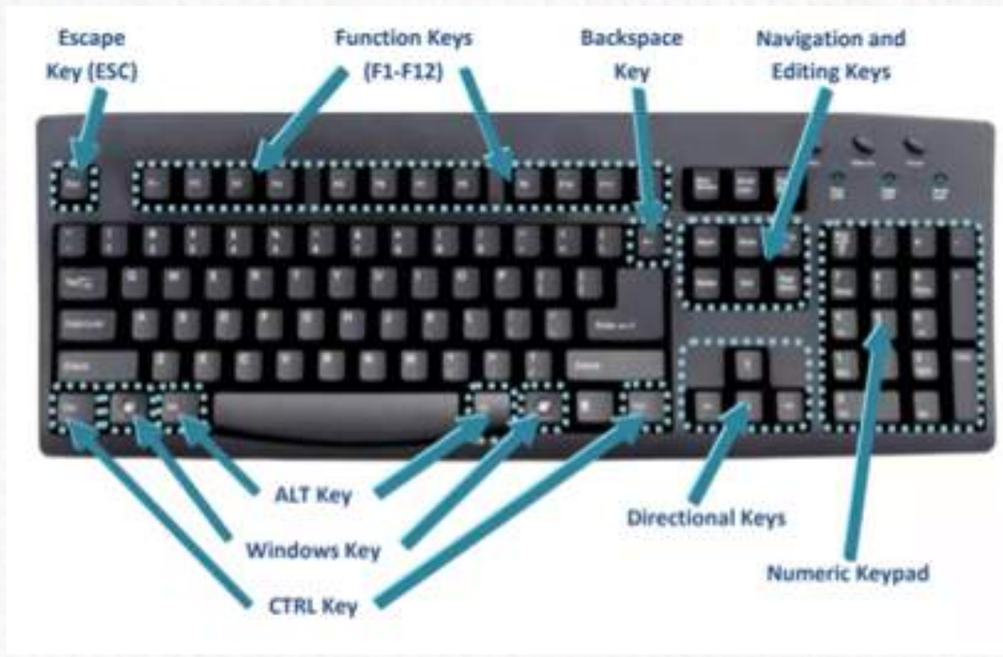
INPUT UNIT

Input devices are the tools that convert input information into binary information understandable by the computer.

Major Input Devices

Keyboard, Mouse, Light pen, Joystick, Scanner, Track ball, Microphone, Digital Camera, Touch screen, Barcode Reader, Optical Mark Reader (OMR), Magnetic Ink Character Recognition (MICR)

KEYBOARD



Keys on keyboard

- Alpha numeric keys - Letters (A-Z) and numbers (0-9)
- Punctuation keys - comma, period, semicolon etc.
- Navigation Keys – Keys used to move the cursor. eg: Arrow keys, Home, End, Page up, Page down etc
- Modifier Keys - Keys used to modify the effect of other keys eg: Shift keys, Alt key, Ctrl key.
- Toggle keys - Caps Lock and Num Lock
- Formatting keys - Keys that help with text formatting
- Function keys - The number of function keys on the keyboard - 12 (F1 to F12)
- The largest key on the keyboard - Space bar
- The key in the top left corner of the keyboard - Escape key (Esc key)
- Number of keys on a Windows keyboard - 104
- Primary input device - Keyboard
- Primary output device - Monitor

Encoding Standards

- Standard used to convert a keystroke into its parallel bit equivalent.
- ASCII - American Standard Code for Information Interchange.
- The code used to represent each character using 7 bits in the computer's memory – ASCII
- Usually, ASCII creates 7-bit code characters.
- 7-bit ASCII code has 128 characters (0-127).
- How many characters are in 8-bit ASCII - 256 (0-255)
- ISCII - Indian Standard Code for Information Interchange/ Indian Script Code for Information Interchange
- ISCII data is represented using 8 bits.

- **Unicode: An international encoding standard used by various languages and scripts.**
- **It assigns a unique number to every character, regardless of the language or platform.**
- **It originally used 16 bits, which can represent up to 65536 characters.**
- **It originally used 16 bits which can represent up to 65536 characters.**

PSC PREVIOUS QUESTION

The process of transmitting the idea or thought into meaningful symbols is called (KAS Prelims Paper I-2020)
(a) Decoding
(b) Encoding
(c) Feedback
(d) Reception
Ans: (b) Encoding

Keyboard shortcuts

- **Shortcuts Key | Action**
- **Ctrl+X | Cut**
- **Ctrl + C | Copy**
- **Ctrl + V | Paste**
- **Ctrl + A | Select All**
- **Ctrl + H | Replace**
- **Ctrl + F | Find**
- **Ctrl + G | Go to**
- **Ctrl + Z | Undo**
- **Ctrl + Y | Redo**
- **Ctrl + B | Bold**

- Ctrl + K | Insert Hyperlink
- Ctrl + N | New Page
- Ctrl + O | Open File
- Ctrl + P | Print
- Ctrl + S | Save Workbook
- Ctrl + U | Underline
- Ctrl + W | Close Window
- Alt+F4 | Exit
- Ctrl+D | To open font dialog box in MS Word
- Alt + Tab | Switch between minimized applications
- F2 | Rename the selected item
- Alt+Enter | View the properties of the selected item

MOUSE

- The pointing device used in the computer - Mouse
- Mouse was invented by - Douglas Engelbart
- The unit used to represent the speed of the mouse - Micky
- The company that developed the mouse - Xerox PARC
- The first mouse was introduced in the market by - Apple
- The blinking symbol that indicates the next position of the character - Cursor
- The device used to move the cursor on the computer screen - Mouse
- The symbols and images on the monitor that indicate program files or other functions in the computer are - Icons.
- Usually, the operation of a wireless mouse is based on infrared rays.

OTHER INPUT DEVICES

- Touch screen is an input/ output touch sensible display.
- Touch screen is sensitive to - Pressure
- Touch screen technology is widely used in bank ATMs, mobile phones, tablet computer etc.
- Touch pad - A pointing device used in portable computers like laptops.
- Track ball is a stationary pointing device with a ball mechanism on top.
- Joystick is a pointing device with a vertical stick mounted on a base.
- Joystick is used for playing computer games and in ultrasound scanners in medical field.
- Light pen is a pen shaped pointing device that can detect the presence of light.
- Scanner is an input device which converts paper documents (images and printed text) into electronic format and transfers them to a computer.
- Biometric Sensor is an input device which uses unique biological traits like fingerprints, retina, Iris pattern etc, to identify, verify and authenticate the identity of the user.

OMR

- The system used for the evaluation of competitive examinations - OMR (Optical Mark Reader)
- PQ - An optical input device that interprets pencil marks on paper media is - Optical Mark Reader.

BARCODE READER/ SCANNER

- A barcode is simply a numeric code represented as a 'series of lines.
- These lines can be read by a barcode reader/ scanner.
- When the laser beam falls on it, the barcode reader measures the amount of reflected light.

OCR & MICR

- OCR (Optical Character Recognition) converts a scanned image (bitmap) to usable word processing format for editing by analysing for light and dark areas in order to identify each alphabetic letter or digits.
- MICR (magnetic ink character recognition) is primarily used by the banking industry to facilitate the processing of cheques.

OUTPUT UNIT

User gets the result of processed data through output devices.

Major Output Devices

Monitor, Printer, Projector, Sound card, Speaker, Video card, Plotter, Head phone

MONITOR

- Primary output device of a computer - Monitor
- 'Black and White Monitor' is known as Monochrome Monitor

Pixel and Resolution

- The smallest controllable element representing an image on the screen is known as a Pixel.
- The number of pixels on a screen is called Resolution.
- The resolution of a monitor is related to the number of pixels on the monitor.
- Pixel is the short form for - Picture element
- Resolution depends on the size of the pixel.
- Images with smaller pixels have higher resolution.
- Images with higher resolution take up more memory space on the disk.

Resolutions

- Monitor - PPI (Pixels Per Inch)
- Printer - DPI (Dots Per Inch)
- Scanner SPI (Samples Per Inch)

PRINTER

Printers before 1950 are known as Punch cards.
Printers can be divided into two categories.

➢ Impact printer
➢ Non-Impact Printers

In impact printers printing heads touch on the paper.

Examples of impact printers are

Dot-matrix printer
Drum printer
Line printer

Chain printer
Character printer
Daisy wheel printer.

- **Printers used to generate carbon copies - Dot matrix printer**
- **The printing heads of non-impact printers do not touch the paper.**
- **Examples of non-impact printers - Laser printer, Inkjet printer, Thermal printer**
- **The fastest printer - Laser printer**
- **Laser printers are also called page printers because they print one page at a time.**
- **The output resolution of a printer is measured in DPI (Dots Per Inch).**
- **Plotter is the output device commonly used for Computer-Aided Design (CAD) and Computer-Aided Manufacturing (CAM) applications.**

HARD & SOFT COPY

- **The printed copy of a document is known as Hard copy.**
- **The non-printed copy of a document is known as Soft copy.**

IMPORTANT SOURCES USED

- **Class 9 → Computer Science/IT → Introduction to Information Technology**
- **Class 10 → Computer Science/IT → Foundations of Information Technology**

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PRACTICE QUESTIONS

1.Which is the correct statement regarding input devices?

(A) They are devices that provide output information.

(B) They are devices that convert information into binary form understandable by the computer.

(C) They are devices that process data.

(D) They are devices that store data in the computer.

Correct Answer: (B) They are devices that convert information into binary form understandable by the computer.

2.Which of the following is the primary input device of a computer?

(A) Monitor

(B) Printer

(C) Keyboard

(D) Speaker

Correct Answer: (C) Keyboard

3. Which category do the keys 'Shift', 'Alt', 'Ctrl' on the keyboard belong to?

(A) Toggle keys

(B) Function keys

(C) Modifier keys

(D) Navigation keys

Correct Answer: (C) Modifier keys

4. How many bits does the American Standard Code for Information Interchange (ASCII) typically use to represent each character?

(A) 8 bits

(B) 16 bits

(C) 5 bits

(D) 7 bits

Correct Answer: (D) 7 bits

5. What is the Unicode encoding standard primarily used for?

(A) Only for banking transactions.

(B) Only for keyboard shortcuts.

(C) For using various languages and scripts.

(D) To determine printer resolution.

Correct Answer: (C) For using various languages and scripts.

6. How many keys are typically found on a Windows keyboard?

(A) 101

(B) 104

(C) 108

(D) 99

Correct Answer: (B) 104

7. Which input device is mainly used for playing computer games?

(A) Touch screen

(B) Light pen

(C) Joystick

(D) Track ball

Correct Answer: (C) Joystick

8. What is the printed copy of a document known as?

(A) Soft copy

(B) Hard copy

(C) Binary copy

(D) Media copy

Correct Answer: (B) Hard copy

9. Who invented the Mouse?

(A) Bill Gates

(B) Steve Jobs

(C) Douglas Engelbart

(D) Charles Babbage

Correct Answer: (C) Douglas Engelbart

10. What is the smallest controllable element representing an image on the screen called?

(A) Dot

(B) Pixel

(C) Bit

(D) Resolution

Correct Answer: (B) Pixel