COMPUTER PERIPHERALS

Expanding Your Computer's Capabilities

What Are Computer Peripherals?

Peripherals are external devices that connect to your computer to add functionality beyond the basic input, output, and processing capabilities.

Peripherals are classified into three main categories:

Input Devices

Send data TO the computer

Keyboard, mouse, scanner, microphone, webcam

Output Devices

Receive data FROM the computer

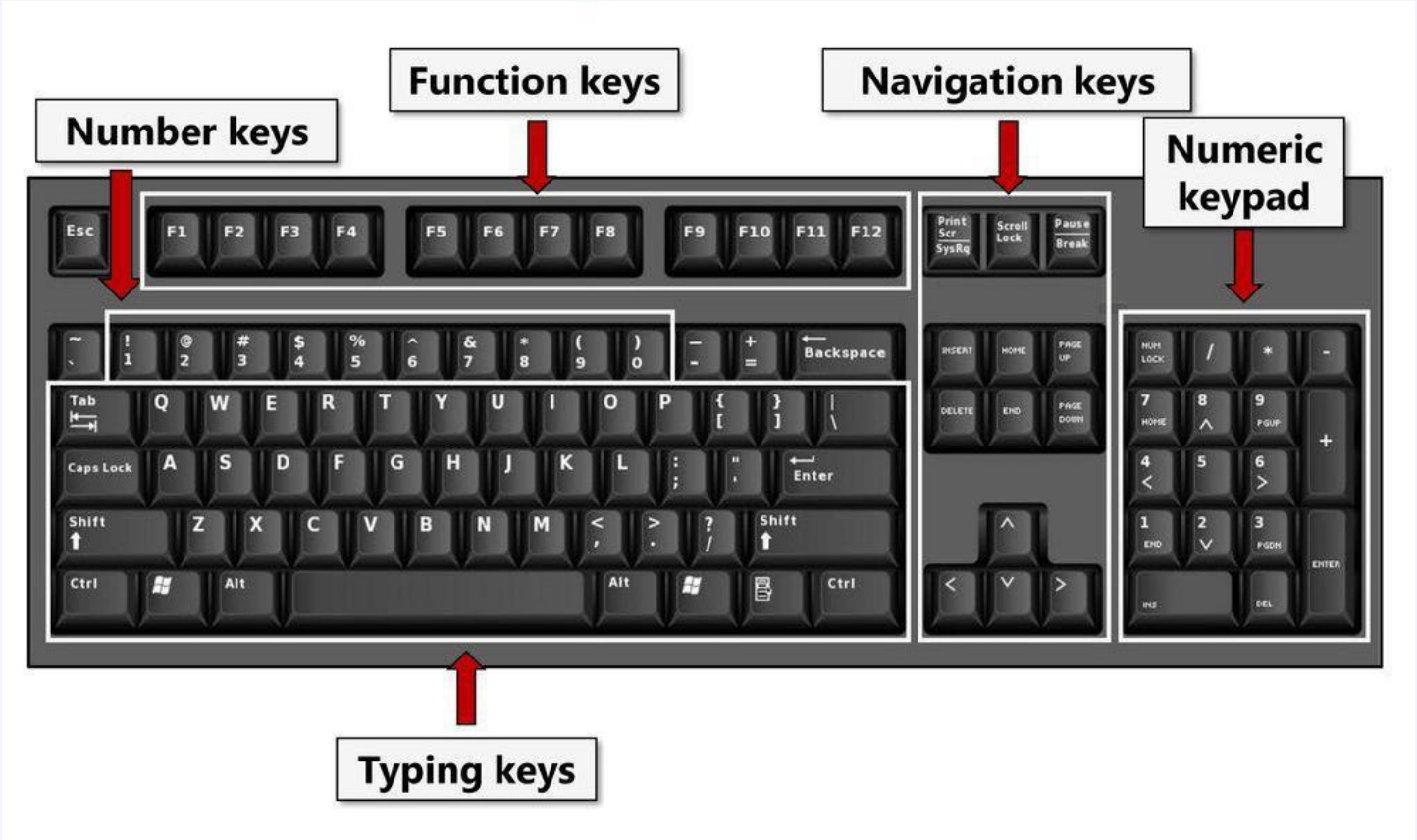
Monitor, printer, speakers, headphones

Storage Devices

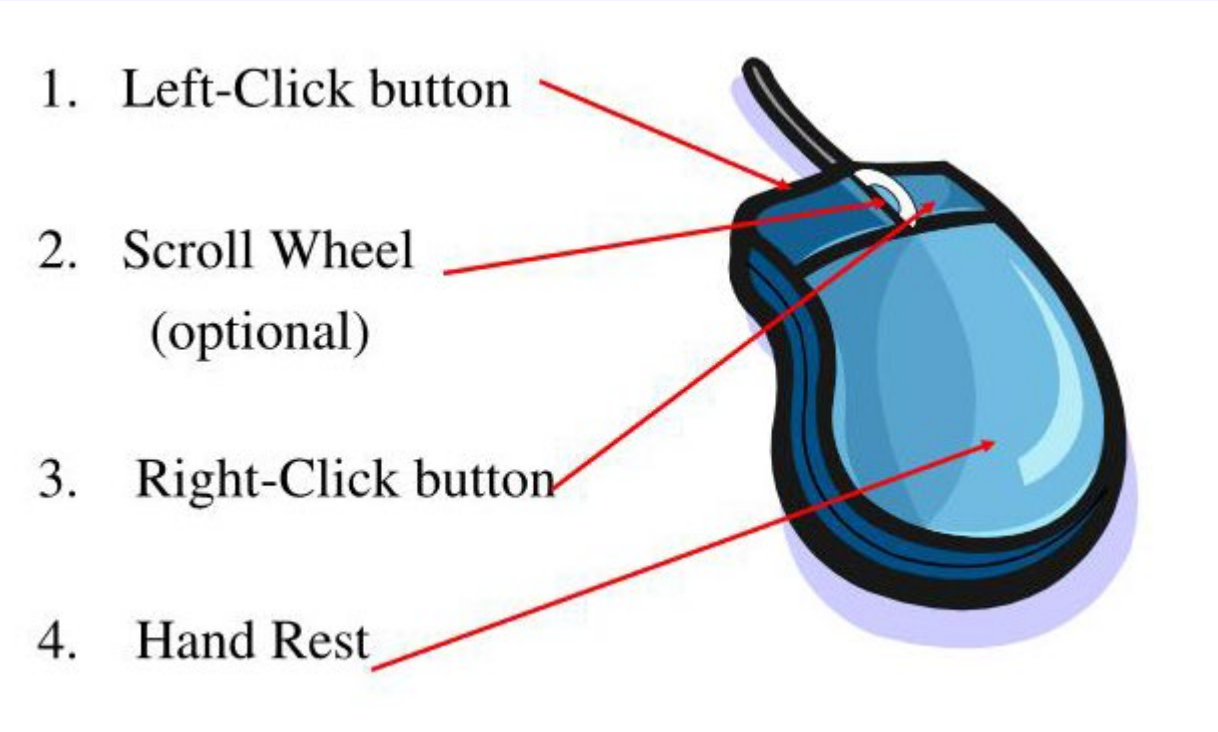
Store data for later use

External hard drives, USB flash drives, memory cards

Input Devices: Keyboard



Input Devices: Mouse



Other Input Devices

Scanner

Converts physical documents and images into digital format

Uses: Digitising paperwork, archiving photos, creating digital copies

Webcam

Captures video and still images for conferencing

Uses: Video calls, streaming, content creation, security

Other Input Devices

Microphone

Captures audio input for recording or communication

Uses: Voice calls, podcasts, voice commands, audio recording

Game Controller

Specialized input for gaming with buttons and joysticks

Uses: Gaming, flight simulation, virtual reality experiences

Other Input Devices

Barcode Reader

Touch Pad

Light Pen

Output Devices: Monitor

Output Devices: Printer

Other Output Devices

Speakers

Output audio for music, videos, and system sounds

2.1, 5.1, 7.1 surround sound systems, wireless options

Headphones

Personal audio output for private listening

Wired, Bluetooth, noise-canceling, studio monitors

Other Output Devices

Projector

Display content on large screens for presentations

LCD, DLP, 4K resolution, portable and ceiling-mount

Plotter

Large-format printing for technical drawings

CAD drawings, blueprints, banners, architectural plans

What Are Storage Devices?

Storage devices are hardware components that store, retrieve, and retain digital data for both short-term and long-term use.

Storage devices are classified by technology and purpose:

Primary Storage

Fast, volatile memory

Examples: RAM, Cache memory

Secondary Storage

Permanent data retention

Examples: Hard drives, SSDs, optical discs

Tertiary Storage

Archival & backup systems

Examples: Tape drives, cloud storage, NAS

Hard Disk Drive (HDD)

IDE

SATA

Magnetic storage with spinning platters

Technology:

- Uses magnetic recording on rotating disks
- Read/write heads move across platters
- RPM: 5400, 7200, 10000, 15000

Capacities & Examples:

- Desktop: 500GB - 20TB
- Laptop: 500GB - 5TB (2.5")
- Seagate Barracuda, WD Blue, Toshiba
- Pros: Large capacity, affordable per GB
- Cons: Slower, mechanical, fragile

Solid State Drive (SSD)

SOLID STATE DRIVE

Flash memory with no moving parts

Technology:

- NAND flash memory chips
- No mechanical parts, silent operation
- Interfaces: SATA III, NVMe, M.2

Capacities & Examples:

- Consumer: 128GB - 8TB
- Samsung 870/980, Crucial MX500
- WD Blue/Black, Kingston NV2
- Pros: Fast, durable, low power
- Cons: Higher cost per GB

USB Flash Drive

Portable flash storage

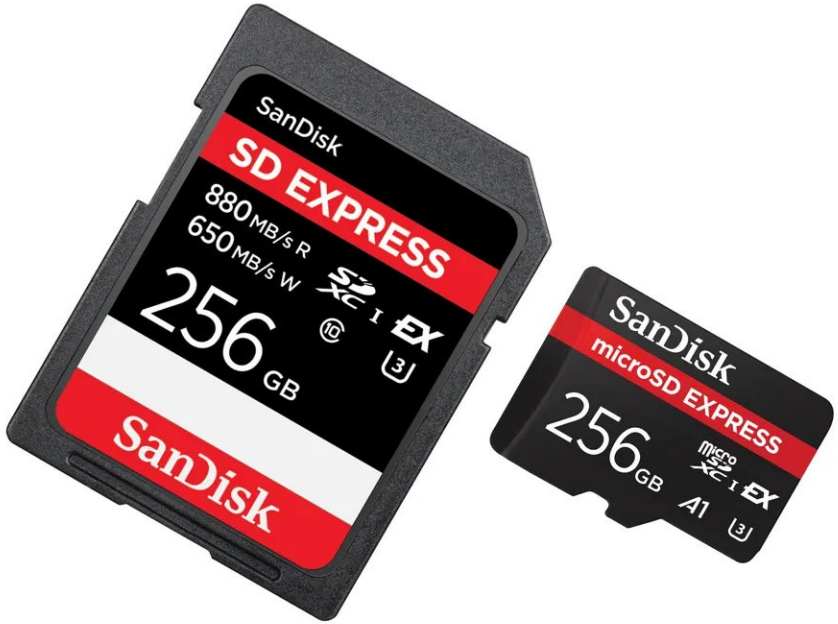
Technology:

- NAND flash memory in compact form
- USB 2.0, 3.0, 3.1, 3.2 interfaces
- Plug-and-play, hot-swappable

Capacities & Examples:

- Range: 8GB - 1TB
- SanDisk Cruzer, Ultra, Extreme
- Kingston DataTraveler
- Uses: File transfer, portable apps, backup

Memory Cards (SD/microSD)



Removable flash storage for devices

Types:

- SD (Secure Digital): Standard, Mini, Micro
- CompactFlash (CF): Professional cameras
- Memory Stick: Sony devices (legacy)

Speed Classes:

- Class 10, UHS-I, UHS-II, UHS-III
- V30, V60, V90 (video speed)
- Examples: SanDisk Extreme/Ultra, Samsung EVO
- Uses: Cameras, phones, drones, tablets

External Hard Drive

Portable storage with large capacity

Types:

- HDD-based: 500GB - 20TB
- SSD-based: 250GB - 8TB
- Portable (2.5") vs Desktop (3.5")

Connections:

- USB 3.0, USB-C, Thunderbolt
- Speeds: 5 Gbps - 40 Gbps
- Examples: WD My Passport, Seagate Backup Plus
- Uses: Backups, file storage, media libraries

Optical Discs (CD/DVD/Blu-ray)

Laser-based storage medium

Types & Capacities:

- CD (Compact Disc): 700 MB
- DVD (Digital Versatile Disc): 4.7-17 GB
- Blu-ray: 25-128 GB per layer
- UHD Blu-ray: 66-100 GB

Formats:

- ROM (Read-only), R (Recordable), RW (Rewritable)
- Uses: Movies, music, software, archival, backups

Cloud Storage

Internet-based remote storage

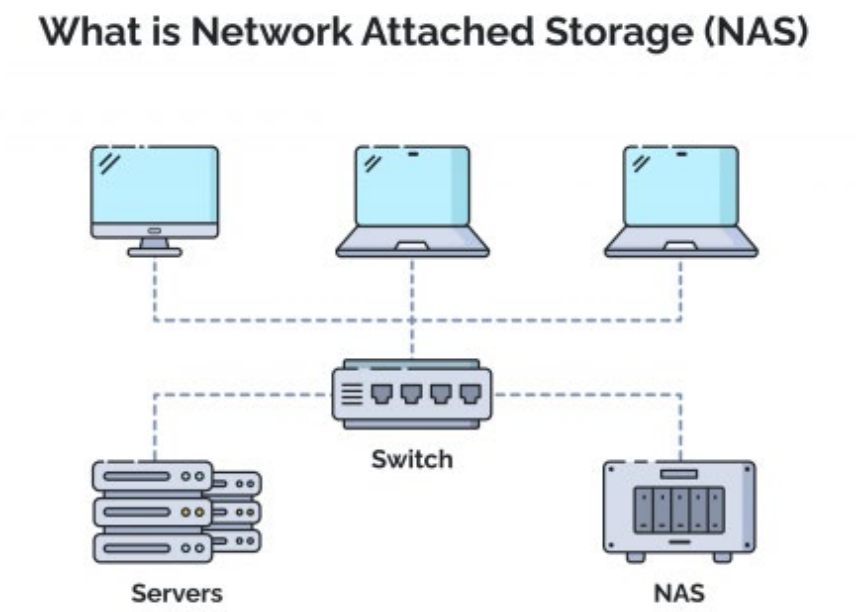
How It Works:

- Data stored on remote servers
- Accessible via the internet from any device
- Automatic synchronisation

Popular Services:

- Google Drive (15GB free, up to 30TB)
- Dropbox, OneDrive, iCloud
- Amazon S3, Backblaze B2
- Benefits: Accessibility, backup, collaboration

Network Attached Storage (NAS)



Dedicated network file server

Features:

- Multiple drive bays (1-12+ drives)
- RAID configurations for redundancy
- Accessible over the local network or the internet
- Built-in apps and services

Popular Brands:

- Synology, QNAP, Western Digital
- Capacity: 2TB - 100TB+
- Uses: Home server, media streaming, backup

Other Storage Types

Tape Drive

1TB - 30TB per cartridge

Long-term archival and enterprise backup

Ex: LTO-9, IBM TS series

Holographic Storage

Up to 4TB per disc

Experimental 3D data storage

Ex: Research technology

Other Storage Types

Zip Drive (Legacy)

100-750 MB

Removable storage (replaced by USB drives)

Ex: Iomega Zip

Floppy Disk (Legacy)

1.44 MB

Historical data storage medium (obsolete)

Ex: 3.5" floppy, used in 1980s-2000s

Connecting Peripherals

Common connection types and ports:

Connection Type	Common Versions	Typical Devices	Maximum Speed
USB	2.0, 3.0, 3.1, 3.2, USB4	Mouse, keyboard, flash drives, printers	Up to 40 Gbps (USB4)
HDMI	1.4, 2.0, 2.1	Monitors, TVs, projectors	Up to 48 Gbps (HDMI 2.1)
DisplayPort	1.2, 1.4, 2.0	High-end monitors, graphics displays	Up to 77.4 Gbps (DP 2.0)
Audio Jack	3.5mm TRS/TRRS	Headphones, speakers, microphones	Analog audio
Ethernet	Cat5e, Cat6, Cat7	Network adapters, NAS	Up to 10 Gbps
Wireless	Bluetooth 5.0+, Wi-Fi 6	Wireless keyboards, mice, headphones	BT: ~3 Mbps, Wi-Fi: 9.6 Gbps

Key Takeaways

- Peripherals expand computer functionality beyond basic capabilities
- Input devices send data TO the computer (keyboard, mouse, scanner)
- Output devices receive data FROM the computer (monitor, printer, speakers)
- Storage devices save and transfer data externally
- Choose peripherals based on compatibility, purpose, and quality
- Use appropriate connection types (USB, HDMI, wireless) for best performance