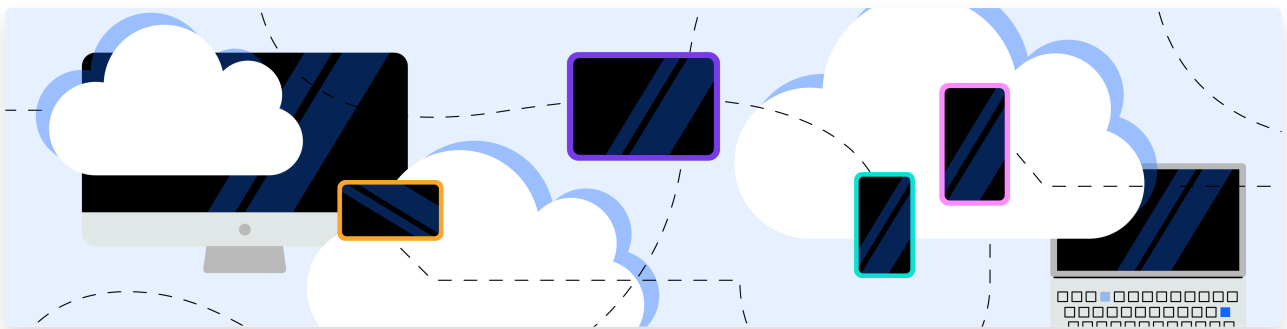


# Computer Systems and the Internet

## Textbook

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## The Internet



For most of history, if you were sending a letter to a friend who lives far away It took quite a while to get there. Now, picture how much faster it would be if you could just click a button and send it instantly. That's what the internet does, it lets us share information, play games, and talk to people around the world in the blink of an eye! Let's explore the different parts of the internet that make it all possible.

## Network

A network connects computers so they can communicate and send information to each other. Here are the key parts of a network:

- **Links:** These are like roads that connect computers and devices. Some are wired (like roads made of cables), and some are wireless (like invisible airways where information travels).
- **Nodes:** Nodes are like buildings along the road where information is sent and received. Your computer, phone, or tablet is a node!
- **Packets:** Packets are tiny pieces of information that travel across the network, like letters or puzzle pieces that fit together to make a webpage, a video, or a message.
- **Hubs:** Hubs act like traffic circles where different roads meet, helping multiple devices in a network share information with each other.
- **Routers:** Routers decide the best route for packets to travel so information reaches the right place quickly.
- **Switches:** Switches are like hubs but smarter. They are like smart traffic lights, sending each packet exactly where it needs to go, making the network work faster and more smoothly.

## Wired or Wireless

A network can be either wired or wireless.

- **Wired Connections:** These use cables to connect devices to the internet. They are usually faster and more reliable.
- **Wireless Connections:** These use radio waves to connect devices without cables. While convenient, they can be slower and less reliable than wired connections.

## Types of Network



There are 2 types of networks. Local Area Network (LAN) or Wide Area Network (WAN)

- **Local Area Network (LAN):** A LAN is a network of devices in a small area, like a home, school, or office. It can be connected using cables or wireless signals.
  - Imagine your home, school, or library has a special group of computers that can talk to each other. That's a **LAN**—a small network that connects devices in one place. It can use wires (like plugging in a charger) or wireless signals (like Wi-Fi).
- **Wide Area Network (WAN):** A WAN connects LANs that are far apart. The internet is the largest WAN, connecting networks around the world.
  - Now, imagine connecting your school's computers to another school in a different city or country. That's a **WAN**—a big network that links smaller networks (LANs) together, even if they are far apart. The biggest WAN in the world is the **internet** because it connects people everywhere!

Together, these components allow us to use the internet to connect with others, access information, and enjoy all kinds of online activities.

## Other Ways Computers Connect

Besides networks, computers can connect in other ways:

- **Wireless Connections (Bluetooth):** For very short distances, devices use **Bluetooth**. This is how your wireless headphones connect to your phone to play music, or how a special mouse connects to your computer without a cable.
- **Mobile Data (Cellular):** Your phone often uses **mobile data** (like 4G or 5G) to connect to the internet when you're out and about and there's no Wi-Fi. It uses signals from big towers, kind of like how phone calls work.
- **USB Connections:** Sometimes, you connect devices directly with a cable called a **USB** (Universal Serial Bus) cable. This is how you might plug in a flash drive to save files, or connect a printer to your computer.

No matter how they connect – whether through wired networks, wireless networks (like Wi-Fi), Bluetooth, mobile data, or USB – all these ways help computers work together, share information, and keep us connected to the big digital world!

## Working Together with Technology

Computers aren't just for individual work; they're amazing tools for teamwork too! Technology can foster (help grow) teamwork by making it easier for groups to work on projects together, even when they're not in the same room.

Here are some ways technology helps us collaborate:

- **Shared Documents:** Imagine writing a story or creating a presentation with friends. With shared documents online, everyone can type and add ideas to the *same document* at the *same time*! You can see what your teammates are adding instantly.
- **Apps:** Many apps are built for teamwork. You might use one to brainstorm ideas, draw together, or even build code as a group. Everyone can add their piece to the project, making it better and faster.

By using these tools, you can share your ideas instantly, build on each other's work, and combine your strengths to create something amazing, showing great teamwork!

## Critical Thinking Questions

1. How do you think a router helps packets travel across the internet?
2. Why do you think there are different types of networks, like LANs and WANs?

## Questions (5)

### 1. What connects computers and devices together in a network similar to a road?

MULTIPLE CHOICE

Choose the correct answer:

- A. Links
- B. Nodes
- C. Hubs
- D. Routers

## 2. What do routers do in a network?

MULTIPLE CHOICE

Choose the correct answer:

- A. Connect multiple devices together
- B. Send packets between different networks and devices
- C. Stores websites for people to visit
- D. Make networks faster and more efficient

## 3. Which type of connection uses radio waves to connect devices?

MULTIPLE CHOICE

Choose the correct answer:

- A. Wired connections
- B. Wireless connections
- C. LAN connections
- D. WAN connections

## 4. True or False: A Local Area Network (LAN) connects computers and devices within a small area, such as a home, school, or office.

MULTIPLE CHOICE

Choose the correct answer:

- A. True
- B. False

## 5. True or False: The internet is an example of a Local Area Network (LAN).

MULTIPLE CHOICE

Choose the correct answer:

- A. True
- B. False

## Games (2)

### 1. Computer Systems and the Internet Typing Game


Full Screen

Audio

Instructions

Restart

Pause



0s 100%

The internet is like a big

### 2. Computer Systems and the Internet Matching Game

Full Screen

Audio

Instructions

Answer Key

Pause

Clear All

Check Matches

Attempts: 0

Links

Nodes

Packets

These send packets between different networks. They decide the best path for packets to travel.

Like roads that connect computers and devices together. They can be cables (wires) or even wireless signals.

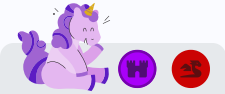
Small bits of information sent over the internet.

Routers

Switches

Like hubs, but smarter. They send packets only to the device that needs them, making networks faster and more efficient.

The places where different links meet. They can be computers, phones, or any device that connects to the internet.



## Answer Keys & Solutions

### Questions

1. What connects computers and devices together in a network similar to a road?

MULTIPLE CHOICE

Correct Answer:

- |            |             |
|------------|-------------|
| A. Links   | ✓ Correct   |
| B. Nodes   | ✗ Incorrect |
| C. Hubs    | ✗ Incorrect |
| D. Routers | ✗ Incorrect |

**Explanation:**

These are like roads that connect different devices.

2. What do routers do in a network?

MULTIPLE CHOICE

Correct Answer:

- |  |             |
|--|-------------|
| A. Connect multiple devices together                   | ✗ Incorrect |
| B. Send packets between different networks and devices | ✓ Correct   |
| C. Stores websites for people to visit                 | ✗ Incorrect |
| D. Make networks faster and more efficient             | ✗ Incorrect |

**Explanation:**

They decide the best path for information to travel between networks.

3. Which type of connection uses radio waves to connect devices?

MULTIPLE CHOICE

Correct Answer:

A. Wired connections

✗ Incorrect

B. Wireless connections

✓ Correct

C. LAN connections

✗ Incorrect

D. WAN connections

✗ Incorrect

#### Explanation:

This type of connection allows you to move around without being tied to cables.

**4. True or False: A Local Area Network (LAN) connects computers and devices within a small area, such as a home, school, or office.**

MULTIPLE CHOICE

**Correct Answer:**

A. True

✓ Correct

B. False

✗ Incorrect

#### Explanation:

LAN stands for Local Area Network.

**5. True or False: The internet is an example of a Local Area Network (LAN).**

MULTIPLE CHOICE

**Correct Answer:**

A. True

✗ Incorrect

B. False

✓ Correct

#### Explanation:

Consider the size and scope of the internet as described.

## Games

### 1. Computer Systems and the Internet Typing Game

*Typing game - no answer key needed. Students practice typing the provided content.*

## 2. Computer Systems and the Internet Matching Game

### Matching Game Solutions:

1. →
2. →
3. →
4. →
5. →

*Students must drag items from the left to match with corresponding items on the right.*