

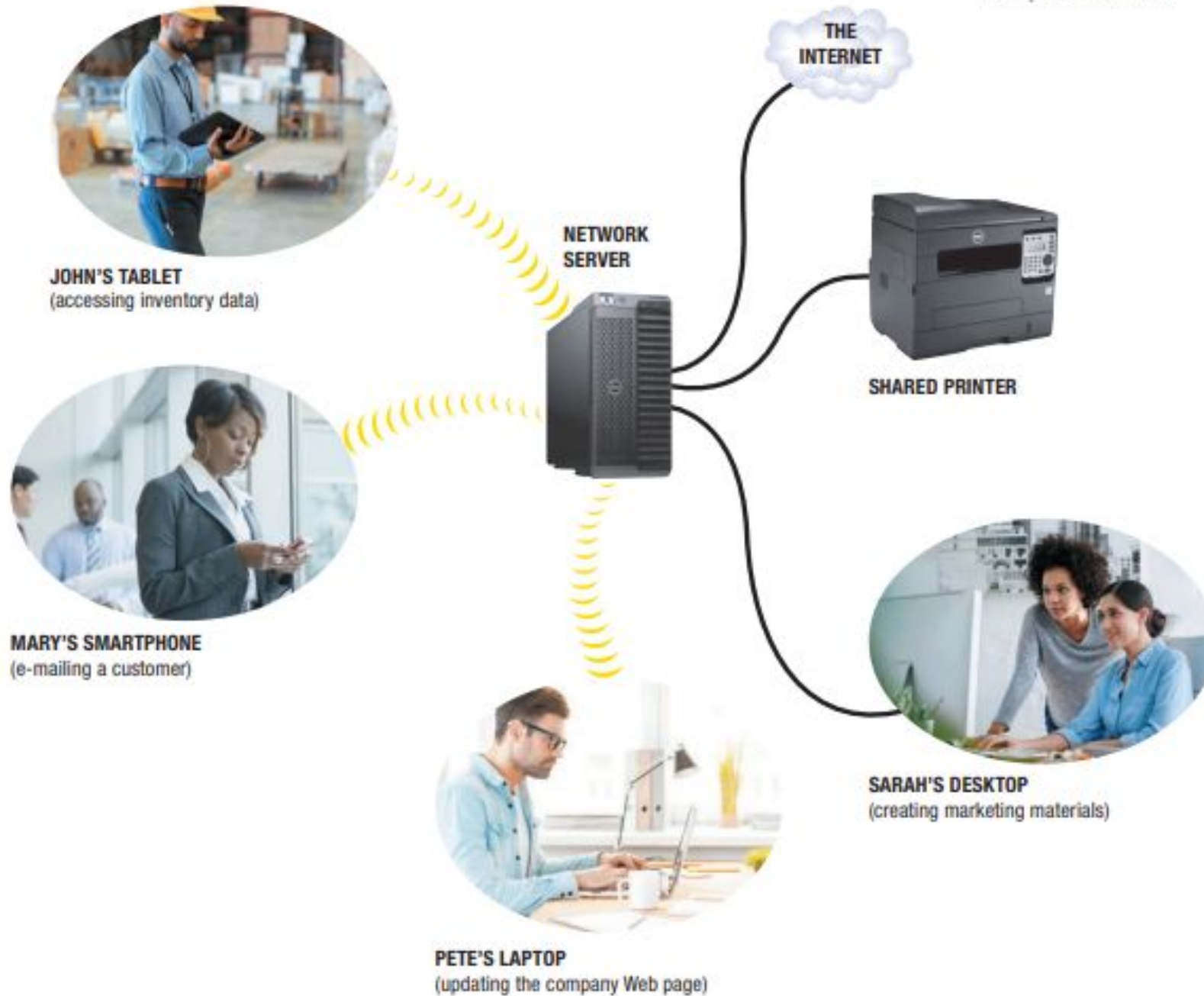
Computer Networks and the Internet

chapter 02
Ghulam Mustafa

Computer Networks and the Internet

- **Computer Network:** Collection of connected computers/devices.
- **Purpose:** Share hardware, software, data, and enable electronic communication.
- **Sizes/Types:** Vary from home to office networks.
- **Home Networks:** Share printer, Internet, and files.
- **Office Networks:** Access records, communicate, share printers, and Internet access.

computer network.



What Are the Internet and the World Wide Web?

- Internet: The largest and most well-known computer network, linking billions of devices all over the world.
- Components related to the **Internet**.
 1. Internet service provider (ISP)
 2. World Wide Web (Web).
 3. Web page.
 4. Hyperlink.
 5. Web site.
 6. Web server.
 7. Web browser.



Internet service provider (ISP).

- An **Internet Service Provider (ISP)** is a company that provides individuals and organizations access to the Internet.

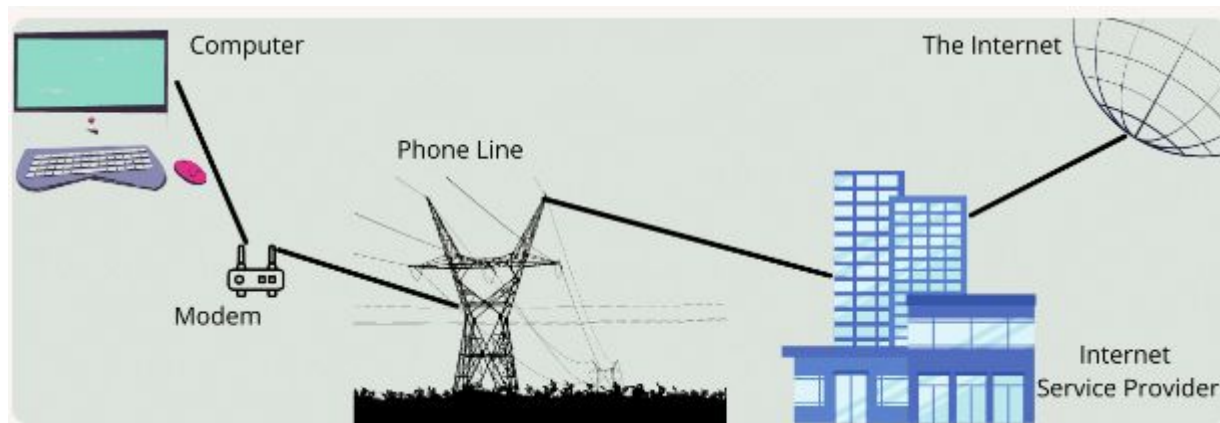
Internet Service Provider



Internet service provider (ISP).

Types of ISPs:

1. **Dial-up ISPs:** Provide Internet access using a standard telephone line. This is the oldest type of ISP, and it is slow compared to modern options.

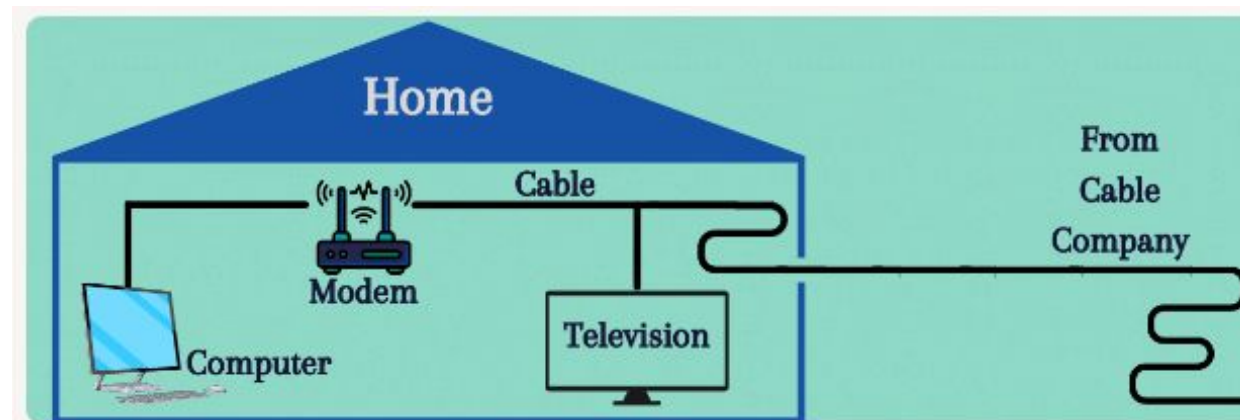


b. Limitations of Dial Up Internet Access

- Slow access
- Limited bandwidth
- Cannot use phone and web at same time

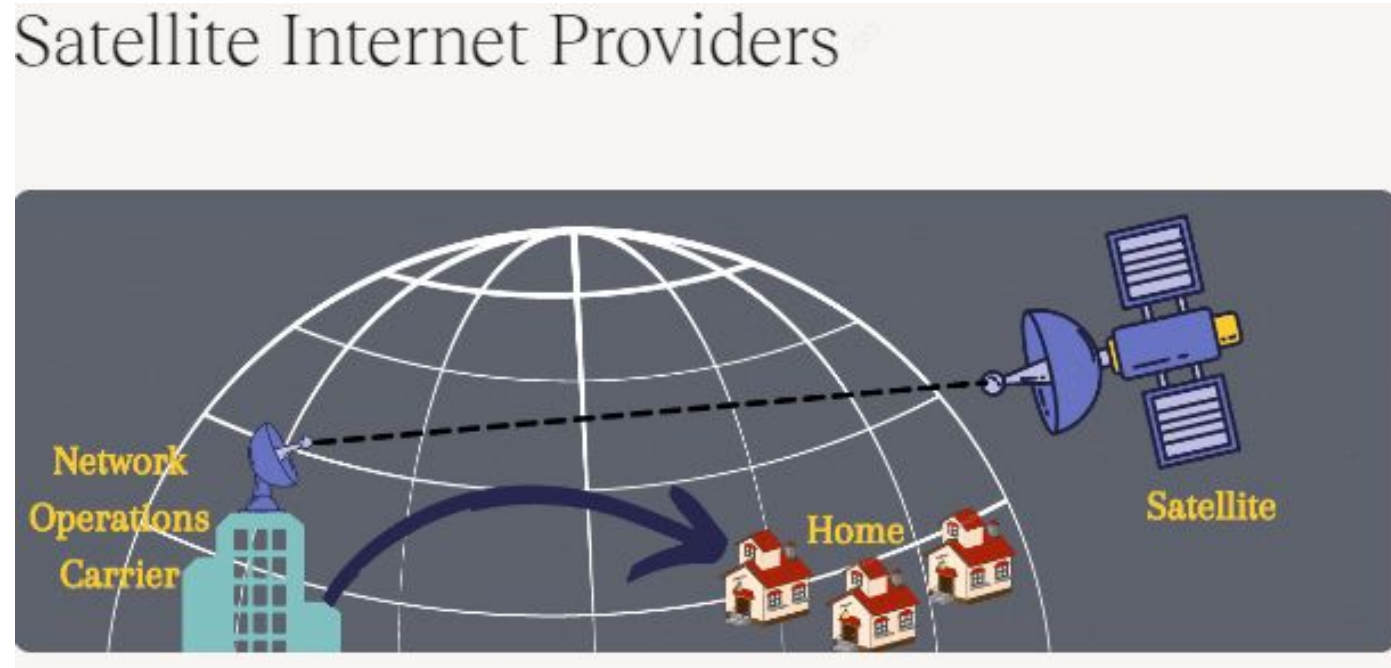
Internet service provider (ISP).

1. **Broadband ISPs:** Offer high-speed Internet access using technologies like Digital Subscriber Line (DSL), Cable, and Fiber-Optic.
 1. **DSL ISPs:** Use existing telephone lines to provide Internet service.
 2. **Cable ISPs:** Use cable TV lines for Internet access.
 3. **Fiber-Optic ISPs:** Offer the fastest speeds by transmitting data as light through glass or plastic fibers.



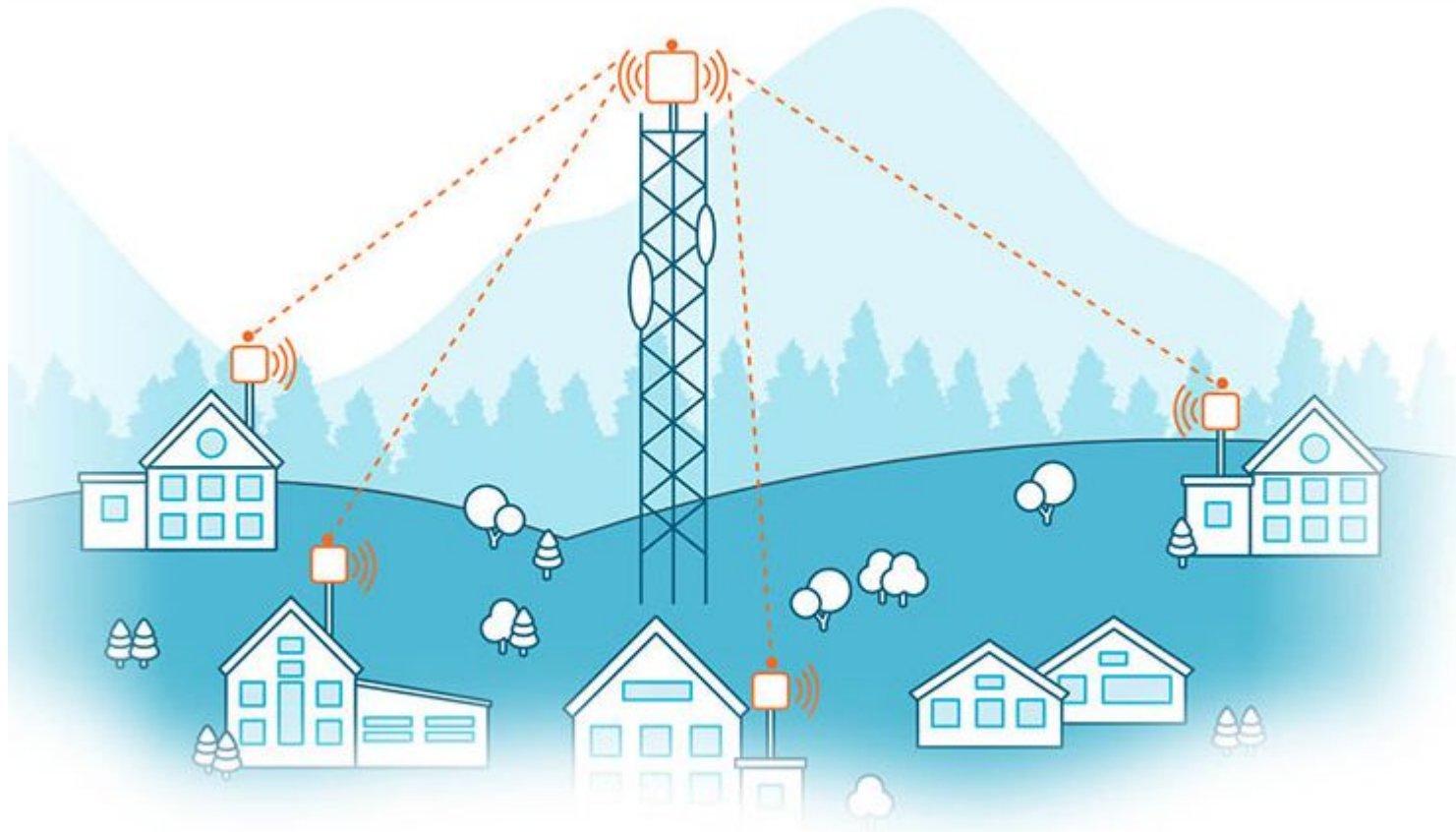
Internet service provider (ISP).

Satellite ISPs: Deliver Internet service via satellites, useful in areas where other types of connectivity are not available.



Internet service provider (ISP).

Mobile ISPs: Provide Internet access through mobile networks, using 3G, 4G, or 5G technologies.



World Wide Web (Web)

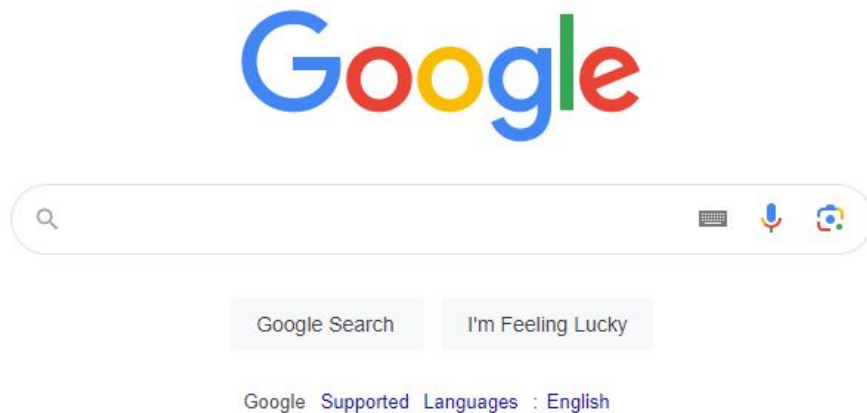
World Wide Web, which is also known as a Web, is a collection of websites or web pages stored in web servers and connected to local computers through the internet. These websites contain text pages, digital images, audios, videos, etc.



Types of Web:

Surface Web:

- ❑ The part of the Web everyone can see.
- ❑ Includes websites like Google, Wikipedia, and online stores.



Types of Web:

Deep Web:

- The hidden part of the Web not indexed by search engines.
- Contains things like private databases, academic resources, and subscription services.



Types of Web:

Dark Web:

- A secret part of the Web, accessible only with special software.
- Often used for privacy, but sometimes for illegal activities.



Types of Web:

Static Web:

Web pages that stay the same unless manually updated.

Examples: Simple websites with fixed content.



Abdul Haseeb

Lecturer

AI-Multimedia Gaming

Mr. Abdul Haseeb Shaikh is a passionate educator and researcher specializing in the captivating realm of Artificial Intelligence (AI) and Multimedia Gaming. With a commitment to fostering innovation and interdisciplinary collaboration, Mr. Abdul Haseeb aims to inspire the next generation of creative minds and technologists at the Aror University of Art, Architecture, Design, and Heritage Sindh.

Mr. Abdul Haseeb's dedication lies in shaping the forefront of AI and Multimedia Gaming through comprehensive education, groundbreaking research, and symbiotic collaboration. His aspiration is to ignite the spark of creativity and technological advancement in students, ushering in a new era of immersive and innovative gaming experiences. By interweaving AI, narrative prowess, and design ingenuity, Mr. Abdul Haseeb envisions a paradigm shift in how players engage with digital realms.

Mr. Abdul Haseeb expertly imparts knowledge in a range of subjects, including Programming, AI, Machine Learning, Deep Learning, Core Computer Science topics, and Cybersecurity. His teaching philosophy integrates hands-on experience and theoretical foundations to equip students with holistic insights into the dynamic field of AI and Multimedia Gaming.

Types of Web:

Dynamic Web:

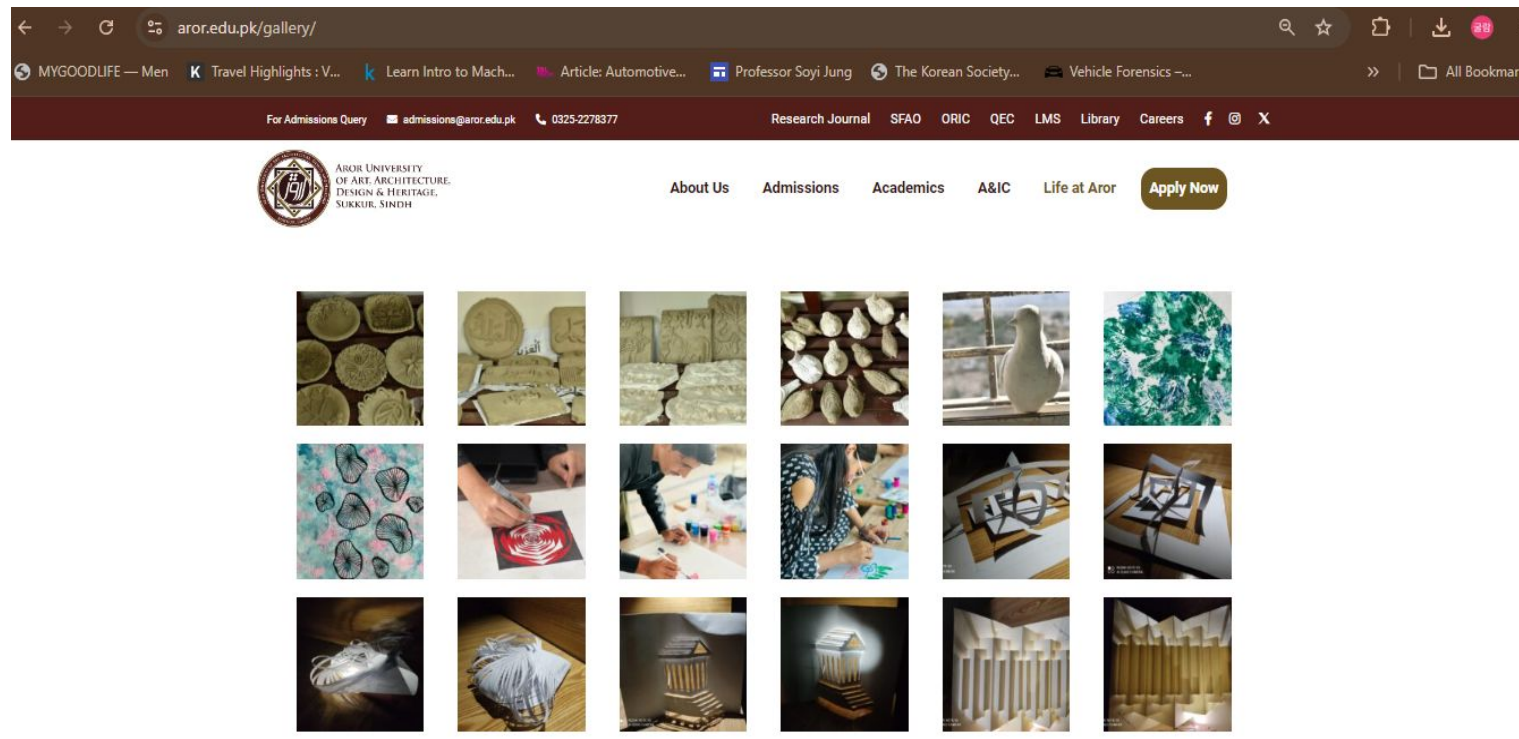
Web pages thchange based on user actions.

Examples: Social media at sites, online stores.



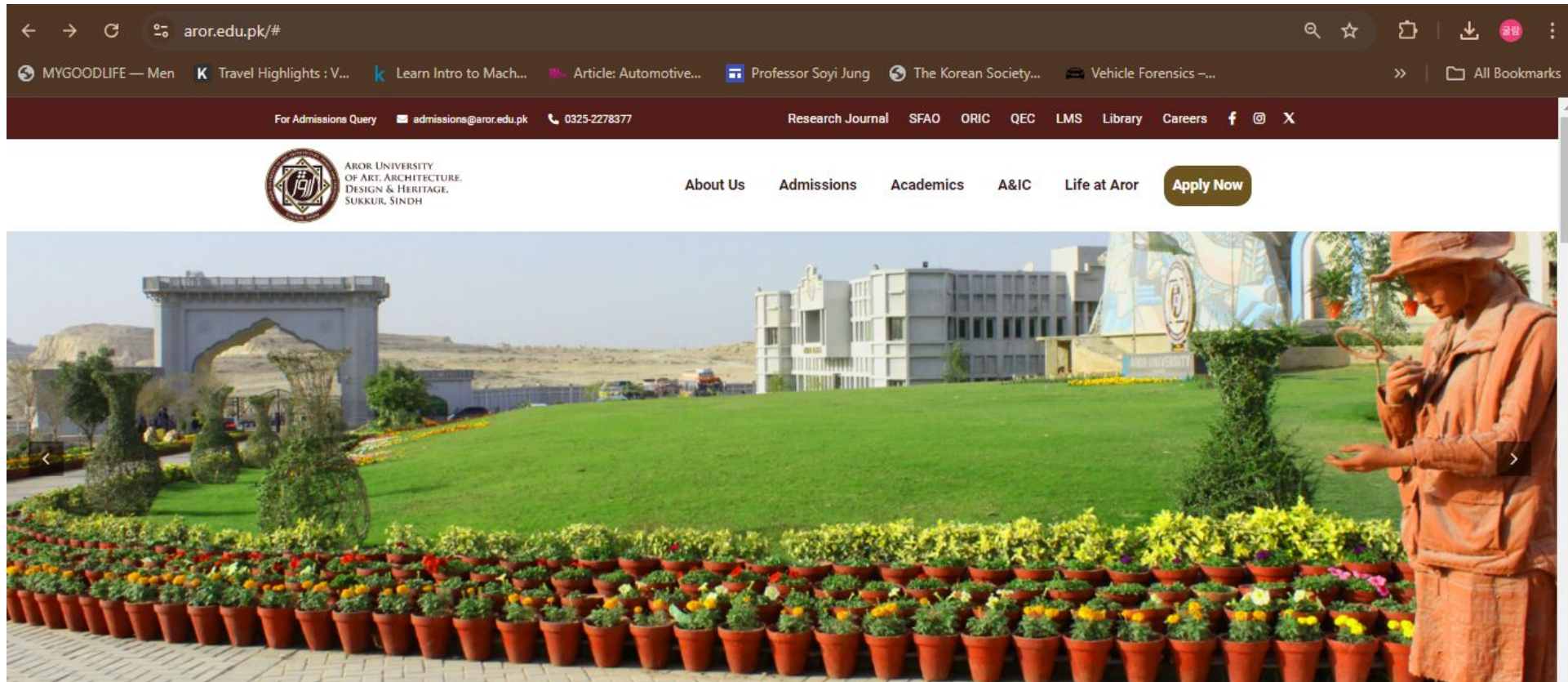
Web page:

A document, typically containing hyperlinks to other documents, located on a Web server and available through the World Wide Web.



Website :

A **Website** is a collection of related web pages hosted on a server and accessible via the Internet.



Types of Websites :

Personal Website:

- Created by individuals for personal use, such as blogs or portfolios.
- Examples: Personal blogs, artist portfolios.

Hi,
I'm **Marlon**
Web Designer
[Contact](#)



Business Website:

- Represents a company or organization to showcase products, services, and information.
- Examples: Corporate websites, e-commerce sites like Amazon.



Types of Websites :

Educational Website:

- Provides educational content, resources, and courses.
- Examples: Online learning platforms like Coursera, school or university websites.



Entertainment Website:

- Offers content for entertainment purposes like videos, games, or music.
- Examples: Streaming services like Netflix, YouTube.

The Netflix logo, consisting of the word "NETFLIX" in a bold, red, sans-serif font, centered on a black rectangular background.

Types of Websites :

News Website:

- Delivers the latest news, articles, and current events.
- Examples: News outlets like BBC, CNN.



Social Media Website:

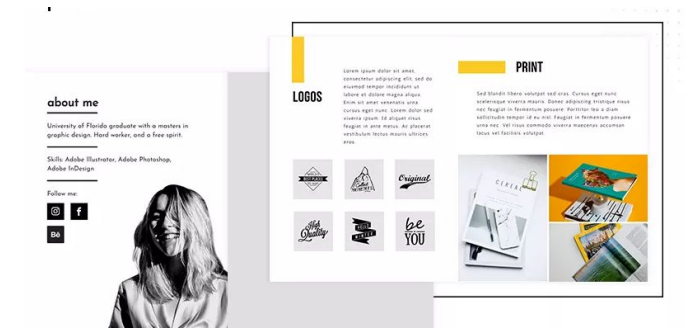
- Allows users to interact, share content, and connect with others.
- Examples: Facebook, Twitter, Instagram.



Types of Websites :

Portfolio Website:

- Used by professionals to showcase their work and skills.
- Examples: Designer portfolios, photography galleries.



Non-Profit Website:

- Represents non-profit organizations to share their mission, accept donations, and provide information.
- Examples: Charity websites, advocacy group sites.



Accessing a Network or the Internet:

1. **Internet address:** A unique address that identifies a computer, person, or Web page on the Internet, such as an IP address, a domain name, a URL, or an e-mail address.
2. **IP address:** A numeric Internet address used to uniquely identify a computer or other device on the Internet.
3. **Domain name:** A text-based Internet address used to uniquely identify a computer on the Internet.

IP Addresses and Domain Names:

1. **IPAddresses:** Numeric identifiers for devices on the Internet (e.g., 134.170.185.46).
2. **Domain Names:** Text-based names (e.g., microsoft.com) linked to IP addresses for easy access.
3. **Uniqueness:** Each IP address and domain name is unique.
4. **Domain Registration:** IP addresses and domain names are registered globally.
5. **DNS:** Translates domain names to IP addresses to access websites.

IP Addresses and Domain Names:

- **IPv4 vs. IPv6:** IPv4 has 4 parts (e.g., 192.168.1.1); IPv6 has 8 parts (e.g., 2001:0db8::1428:57ab) for more unique addresses.
- **Domain Structure:**
 1. **TLD (Top-Level Domain):** Indicates type/location (.com, .edu, .jp).
 2. **Second-Level Domain:** Reflects organization or individual (e.g., google in google.com).
- **Domain Names:** Nearly 300 million registered globally.

ORIGINAL TLDS	INTENDED USE
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<i>.com</i>	Commercial businesses
<i>.edu</i>	Educational institutions
<i>.gov</i>	Government organizations
<i>.int</i>	International treaty organizations
<i>.mil</i>	Military organizations
<i>.net</i>	Network providers and ISPs
<i>.org</i>	Noncommercial organizations

NEWER TLDS	INTENDED USE
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<i>.aero</i>	Aviation industry
<i>.biz</i>	Entrepreneurs and growing businesses
<i>.expert</i>	Individuals branding themselves as an expert
<i>.fr</i>	French businesses
<i>.info</i>	Resource sites
<i>.jobs</i>	Employment sites
<i>.name</i>	Individuals (personal branding)
<i>.nyc</i>	New York City businesses
<i>.us</i>	United States businesses

Uniform Resource Locator:

- **URL (Uniform Resource Locator):** Uniquely identifies a specific web page.
- **Components:** Includes protocol, web server, folder paths, and web page filename.
- **Common Protocols:**
 1. **http://** for regular web pages.
 2. **https://** for secure web pages (e.g., online transactions).
 3. **ftp://** for file transfers.
- **File Extensions:** Indicate the type of web page (.html, .htm).
- **Example:** A URL like `http://google.com/about/careers/index.html` specifies a non-secure page in the "careers" folder within "about" on the google.com server.

Uniform Resource Locator:



Web page URLs usually begin with `http://` (for nonsecure Web pages) or `https://` (for secure Web pages).



This part of the URL identifies the Web server hosting the Web page.



Next comes the folder(s) in which the Web page is stored, if necessary.



This is the Web page document that is to be retrieved and displayed.

`http://` `google.com` `/about/careers` `/index.html`

Igor Letic/Shutterstock.com,
Courtesy of Dell Inc., Google Inc.

E-Mail Addresses:

E-mail Address Structure:

- **Format:** username@domain.com
- **Parts:**
 - **Username:** The name before the @ symbol (e.g., jsmith)
 - **Domain:** The part after the @ symbol, showing where the email is hosted (e.g., cengage.com)
- **Examples:**
 - jsmith@cengage.com
 - maria_s@cengage.com
 - sam.peterson@cengage.com

E-Mail Addresses:


- **Username Details:**

- Usually combines the person's first and last names
- Can have periods (.), underscores (_), or numbers
- No spaces allowed
- Must be unique within the domain (e.g., no two jsmith@cengage.com)

- **Uniqueness Across Domains:**

- The same username can exist in different domains
- (e.g., jsmith@cengage.com and jsmith@stanford.edu are different)

Pronouncing Internet Addresses:

 **FIGURE 1-24**
Pronouncing
Internet addresses.

Pronouncing Internet Addresses

Because Internet addresses are frequently given verbally, it is important to know how to pronounce them. Figure 1-24 shows some examples of Internet addresses and their proper pronunciations, and a few guidelines are listed next.

TYPE OF ADDRESS	SAMPLE ADDRESS	PRONUNCIATION
Domain name	berkeley.edu	berkeley dot e d u
URL	irs.gov/freefile	i r s dot gov slash free file
E-mail address	president@whitehouse.gov	president at white house dot gov

