Activity: Understanding the Internet and Hands-On HTML Basics

Objective:
By the end of this activity, learners will:

1. Understand basic concepts about how the internet works, including **IP Address**, **DNS**, and **Domain Names**.
2. Experiment with basic HTML tags like `<h1>`, `<p>`, `<ul>`, `<li>`, `<a>`, and bonus tags `<img>` and `<ol>`.
3. Develop foundational knowledge to build web pages while gaining theoretical insight into how the internet supports these technologies.

Time: 1 Hour
Structure:

- **Section 1:** Theory (30 minutes)
- **Section 2:** Hands-On HTML Practice (30 minutes)

Section 1: Theory – How Does the Internet Work?

Instructions:
Answer the following questions in your own words. Use class notes, discussions, or research online (Google, W3Schools, etc.) to find answers. Write your responses in the space provided.

Part A: Core Internet Concepts
How does the INTERNET work? | ICT #2

1. **What is an IP Address?**
   - Explain what an IP Address is and its role in connecting devices over the internet.
     i. An IP Address is similar in concept to physical mailing addresses for houses. Both an IP Address for devices and a physical mailing address for houses uniquely identify the device/house they are assigned to. And much like a physical address is assigned to a building, whether it be a house or business, an IP Address is a unique numerical label for any device connected to the Internet. The unique numerical label is a logical addressing scheme made up of numbers that allows computers or devices to find other computers and/or devices on the Internet, much like a physical address for houses allows the person at one house to physically find or send a letter to someone at another house. IP addresses allow computers or devices to send information to other

computers or devices. An example would be a person watching a video on how the Internet works. The person requests to watch a video on a computer. The computer requests the video from a server, and the server sends the video to the computer.

- Example: "Why do websites need IP addresses to work?"
    i. The server hosting a website has a unique IP address that allows devices on the Internet to find it. However, one server can host more than one website. Each website on the server has an additional piece of information called a ‘host header’ within the IP address so that the device requesting a website actually receives the correct website. The IP address of the website contains information identifying the host server.

2. **What is DNS (Domain Name System)?**
    - Describe how DNS works and why it’s important.
        i. DNS is an acronym for Domain Name System. As mentioned before, a DNS is much like a phonebook for the Internet. This phonebook translates human-readable addresses for websites to the IP addresses.
    - Example: "How does DNS help you visit a website like `www.google.com` instead of typing an IP address?"
        i. A person types ‘www.google.com’ into a web browser. The browser then sends a request to the DNS server for the corresponding IP address of the server from which to get the website.
3. **What is a Domain Name?**
    - Define a domain name and explain how it is different from an IP address.
        i. A domain name is a human-readable name for an address in a text-friendly form that is much easier to remember than the numerical form of an IP address.
    - Example: "Why do people buy domain names for websites instead of using IP addresses?"
        i. People buy domain names for websites instead of IP addresses because those domain names are human-readable. The domain names are often memorable and can be linked to the identity of the organization that is buying the name.
4. **How Does the Internet Work?**
    - Summarize how information travels from your computer to a website and back.
    - Include terms like **request**, **server**, and **browser**.
        i. A person makes a request for information, such as a video, via a browser on a device using a domain name. The computer pings a DNS server to find the actual IP address. The IP address is used along with other identifying information, such as the host header of the website. Once the server receives the request, it sends the information back to the device via digital packets containing the IP address of the device via light pulses through a complex network of optical cables. It will eventually flow to your device, which uses the information in the digital packets to put the video together as it should so it looks as it should.

Part B: Browsers and HTML

5. **What is a Web Browser?**
    - Define what a web browser does.
        i. A web browser is an application software that is used by the user to interact with the Internet. The web browser interprets web pages containing the HTML, JavaScript, and CSS into visual and interactive web pages. Examples of web browsers are Chrome, Internet Explorer, Mozilla, etc.
    - Example: "How does a browser help users interact with the internet?"
        i. The web browser accepts human-readable addresses (DNS addresses) and then, via a DNS Server, sends a request to the server for the information. The server sends the information back to the browser, which then renders the HTML, JavaScript, and CSS into the visual and interactive web page that the user expects.
6. **What is HTML?**
    - Write a short definition of HTML and its role in building web pages.
        i. HTML is HyperText Markup Language. HTML structures web pages and defines elements used in the pages like paragraphs, headings, links, etc.
    - Example: "Why is HTML considered the backbone of web pages?"
        i. HTML provides the structure and organization of a web page. Without HTML, web pages would be unorganized and lack the ability to display meaningful information.
7. **What Happens When You Enter a URL into a Browser?**
    - Describe the steps involved, from entering a URL to seeing the web page.
        i. The browser sends a request for a web page.
        ii. The server sends the raw data for the web page back to the requesting computer.
        iii. The web browser renders or interprets the HTML, JavaScript, and CSS into the interactive and visual web page that the user expects.

Section 2: Hands-On HTML Practice

Instructions:

1. Open a text editor (e.g., Notepad, VSCode, Sublime Text).
2. Create a new file and save it as `index.html`.
3. Add the following **basic structure** to your HTML file:

```
<!DOCTYPE html>
<html lang="en">
<head>
```

```
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-
scale=1.0">
  <title>My First Web Page</title>
</head>
<body>
  <!-- Write your code here -->
</body>
</html>
```

4. Complete the tasks below by adding the requested tags inside the `<body>` section of your HTML file. Save the file and open it in a browser to see the results.

Part A: Basic Tags Practice

1. **Add a Heading**:
   - Use an `<h1>` tag to create a large heading with the text "Welcome to My Web Page".
2. **Add a Paragraph**:
   - Use a `<p>` tag to write a short introduction about yourself.
3. **Create a List**:
   - Use `<ul>` and `<li>` tags to create an unordered list of your favorite hobbies.
4. **Add a Link**:
   - Use an `<a>` tag to add a clickable link to your favorite website (e.g., Google, YouTube).

Part B: Bonus Tags

1. **Add an Image**:
   - Use an `<img>` tag to add a picture of your choice. You can use a placeholder image like: `https://via.placeholder.com/150`
2. **Create an Ordered List**:
   - Use `<ol>` and `<li>` tags to create an ordered list of the top three places you'd like to visit.

Questions After Experimenting

Answer these questions based on your hands-on practice:

1. **What happens if you forget to close a tag like `<h1>`?**
    a. All the text following and to the next header is included as an H1 header.
2. **What is the purpose of the `<a>` tag's `href` attribute?**
    a. Href is the hyperlink that <a> follows when clicked. It specifies the destination of the hyperlink and is how navigation is enabled across the Internet and even within a web page. If the href attribute is not included in the <a> tag, the text between the opening and closing <a></a> tags are treated as any text that is not hyperlinked.
3. **How does saving your file as `.html` affect how your browser opens it?**
    a. .html indicates to the browser that the file contains HTML code and should be parsed as such.

Wrap-Up and Submission

1. Submit your completed theory answers and HTML code to the shared class platform (e.g., Google Drive or email).
2. Be ready to share your web page and explain your experience in class.

Key Takeaway:
This activity combines theory and practice to help you understand how the internet works and how basic HTML tags create web pages. These concepts are fundamental as you begin your journey into web development! 🚀

🔧 Bonus Activity: Build Your Own Mini Web Project

Objective:
Apply the theory and HTML skills you've learned by building a simple, creative, multi-section web page.

Time: 30–45 minutes (Can be done in class or as homework)

💡 Overview:

You'll create a simple personal or themed webpage with **multiple sections** using HTML. This project helps you explore **semantic HTML tags**, learn about **HTML structure**, and express yourself creatively.

🛠 Instructions:

Open your `index.html` file (or create a new one if needed) and add the following:

Part A: Use Semantic Tags

Include **at least three** of the following semantic tags inside your `<body>`:

- `<header>` – Add a site title or welcome message
- `<nav>` – Add a simple navigation with links (they can link to other sections using `#`)
- `<section>` – Use this to group related content (e.g., About Me, Hobbies)
- `<article>` – Create a short blog-style entry about a topic you like
- `<footer>` – Add your name, email, or a thank-you message

Part B: Style It with Inline CSS (Optional Challenge)

Add some simple **inline styling** to make your page more attractive:

- Change the color of headings using the `style` attribute
- Add a background color to a section
- Change the font size of a paragraph

Example:

```
<h1 style="color: navy;">Welcome to My Web Page</h1>

<p style="font-size: 18px;">I'm excited to learn HTML!</p>
```

Part C: Add More Content!

You can enhance your page with:

- An **additional image**
- A **second list** (unordered or ordered)
- More links that use `target="_blank"` to open in new tabs

🧠 Bonus Questions – Reflect & Discuss:

1. What did you enjoy most about building your own page? Finding the content to populate it.
2. Which tag was new to you in this activity? How did it work? The '<section>' tag. I like how it's a tag to use for grouping like items on the page.
3. What would you like to add to your webpage if you had more time or knew more HTML? More articles and pages as well as styles.
4. Why do you think semantic tags (like `<header>`, `<footer>`, `<section>`) are helpful for websites? These tags help group and organize the information that displays on a webpage.

📦 Submission:

- Save your updated `index.html` file.
- Submit it with your answers to the bonus questions.
- Be ready to present your mini-project and walk through your code.

🎯 Key Takeaway:

Creating a full mini-page helps you see how different parts of a webpage come together. You've now worked with both **structure** and **style**, setting a strong foundation for the future web.