



Project 1: Exploring the HTML Protocol Stack

Duration: 2–3 weeks

Deliverable: A functional website + report with protocol analysis

Learning Objectives

By the end of this project, students will be able to:

1. Understand how HTML is structured and delivered via HTTP (Ch. 2).
 2. Construct valid HTML pages that include links, embedded objects, and forms.
 3. Observe how browsers request and render HTML and supporting objects (images, CSS, JavaScript).
 4. Use Wireshark to analyze HTTP messages that carry HTML and related files.
 5. Explain the interaction between client (browser), server, and HTML objects at the application layer.
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Project Tasks

Part A: Build a Simple Multi-Page Website

1. Create a **static website** with at least 3 HTML pages.
 - Page 1: Homepage with navigation links to the others.
 - Page 2: Include an embedded image (local or hosted).
 - Page 3: Include a simple form (e.g., text input + submit).
 2. Use basic HTML tags (<html>, <head>, <body>, <a>, , <form>, <input>, etc.).
 3. Optional: Add CSS or JavaScript for design, but focus on HTML structure.
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Part B: Serve the HTML over HTTP

1. Run a **local web server** (options: Python's http.server, Node.js http-server, or Apache/Nginx if comfortable).
2. Load the site in a browser (Chrome/Firefox).
3. Test navigation, image loading, and form submission.

Part C: Analyze HTML Delivery with Wireshark

1. Start Wireshark and capture traffic while loading your website.
 2. Identify and annotate at least:
 - The initial **HTTP GET** for the HTML page.
 - Subsequent **HTTP requests** for embedded objects (image, CSS/JS if used).
 - Status codes (200 OK, 304 Not Modified if cache is tested).
 - Persistent vs non-persistent connections.
 3. Save 2–3 annotated screenshots of packet captures.
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Part D: Write a Short Report (2–3 pages)

Include:

- Description of your HTML website structure.
 - Explanation of how the browser requested and rendered each object.
 - Wireshark findings (with annotated screenshots).
 - Reflection: How does HTML (markup) depend on HTTP (protocol) for delivery?
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Grading Rubric (100 pts)

- **HTML website design (3+ pages, structure & features): 25 pts**
- **Correct hosting & accessibility via HTTP server: 20 pts**
- **Wireshark analysis with annotated captures: 25 pts**
- **Clarity and completeness of report: 20 pts**
- **Creativity (design, extra features, clean code): 10 pts**