Web Programming

Week 2: Web Fundamentals & Environment Setup

Fenerbahce University

Web Fundamentals & Environment Setup

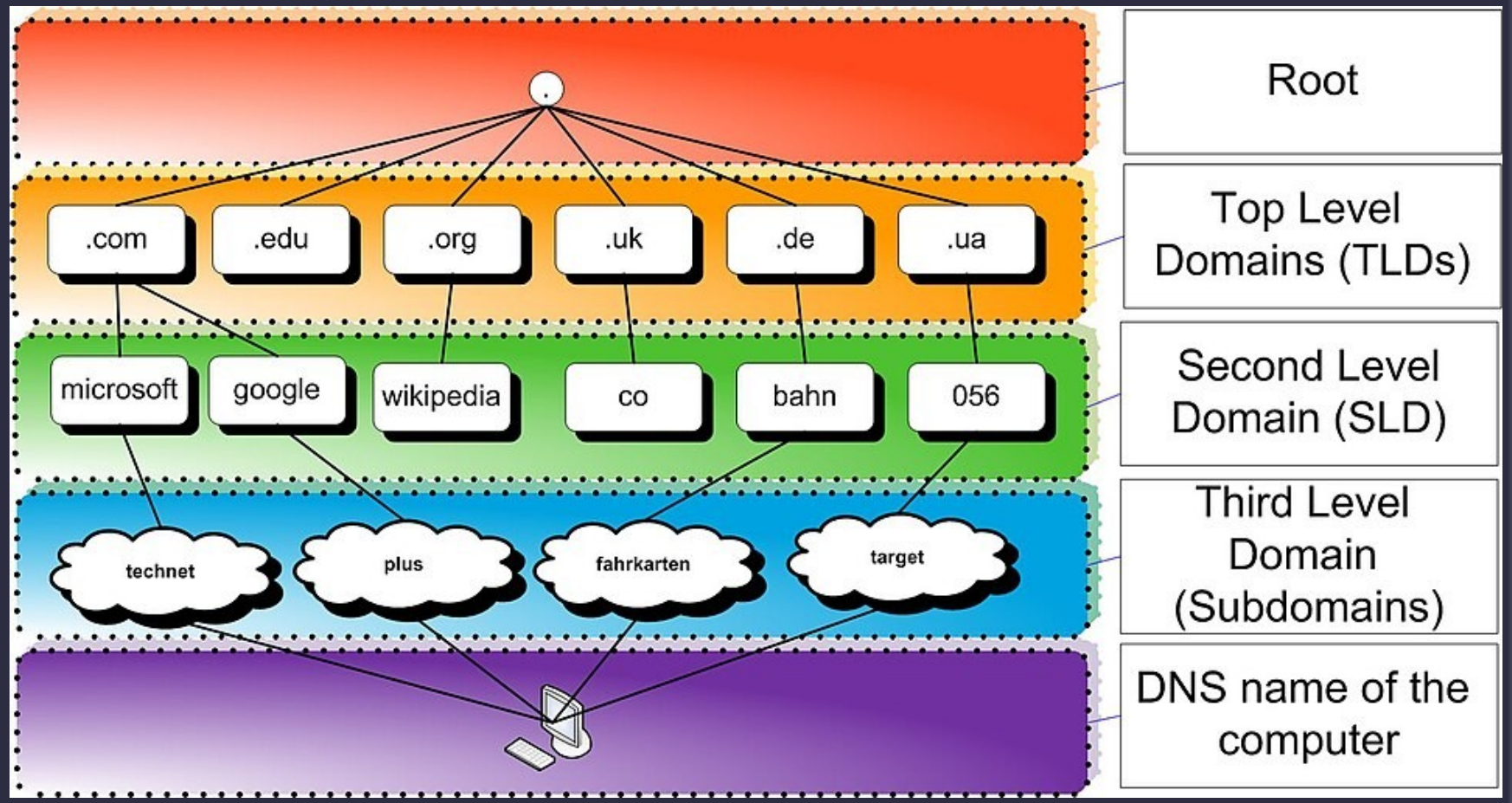
DNS
WWW
HTTP
HTTPS
Domain
Where to buy a domain?
What is a server?
Server OS
Windows
Linux
Apache Server + PHP Installation
Simple HTML
AI tools: HTML + CSS CV Site

DNS (Domain Name System)

- How names become IP addresses
- Records, caching, and troubleshooting

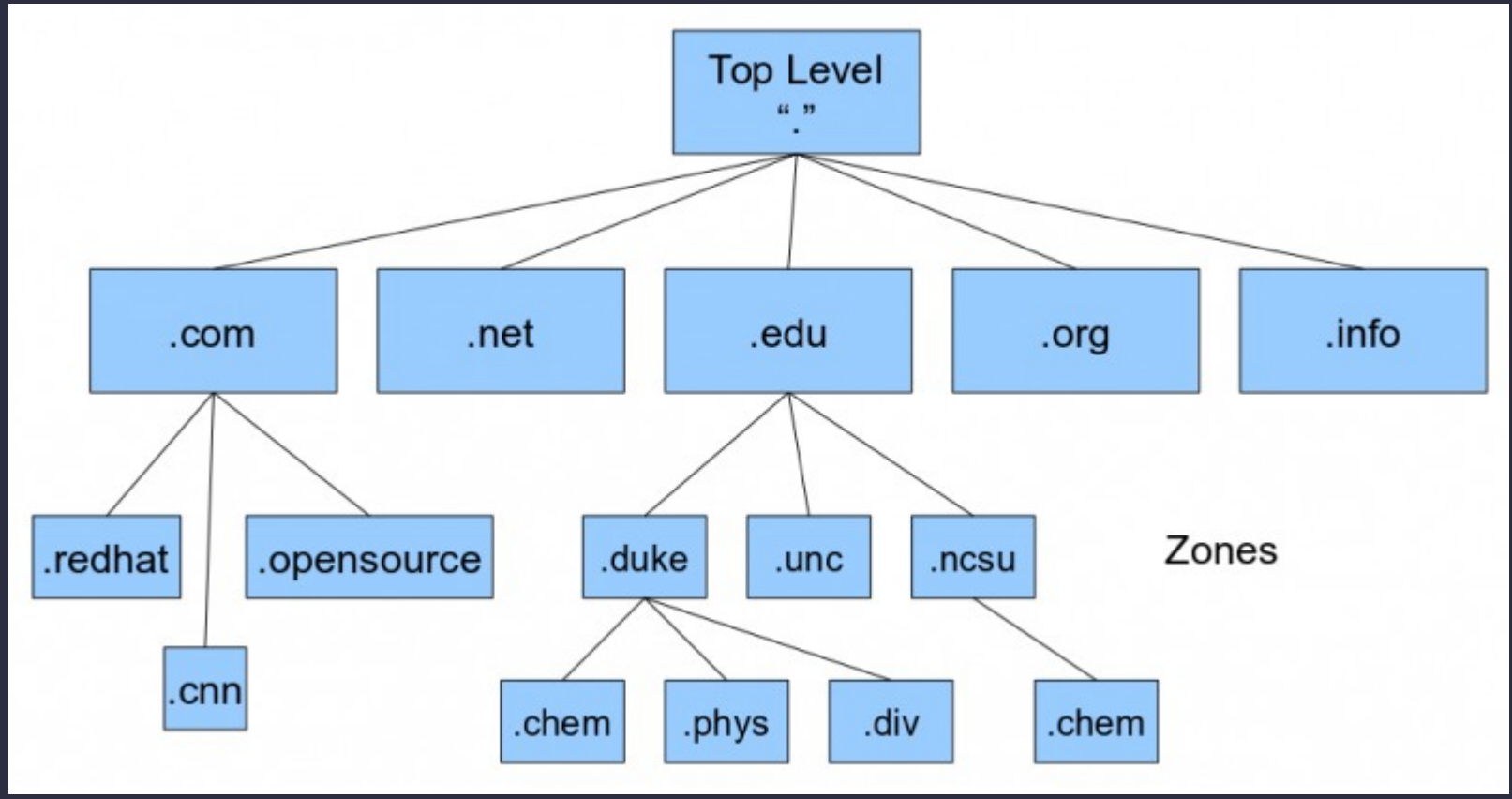
Why DNS Exists

- Humans remember names (example.com); networks route to IP addresses.
- DNS is a distributed database that maps names to records (A/AAAA/CNAME, etc.).
- Without DNS, you would have to memorize IP addresses for every site.



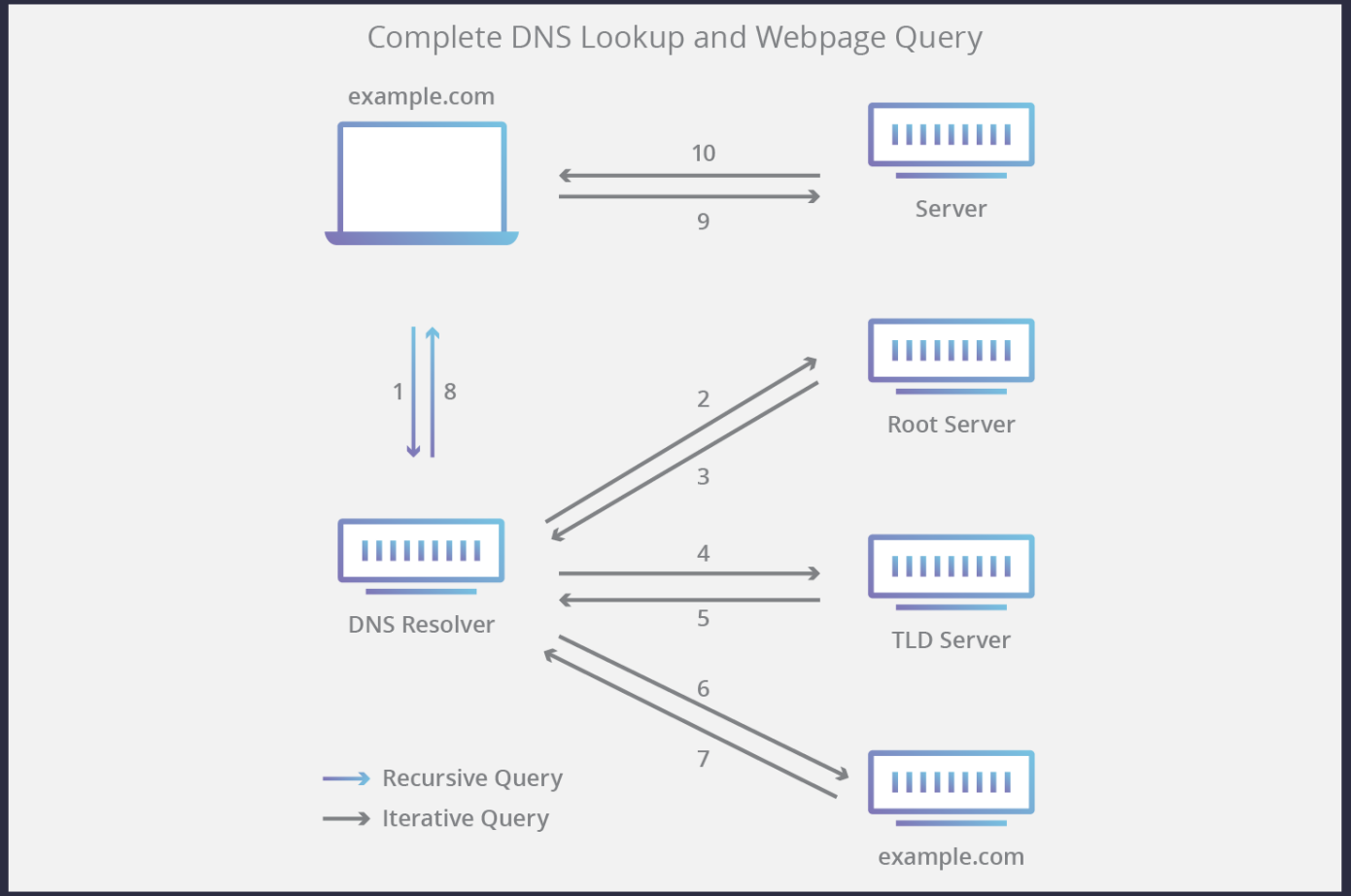
Domain Name Hierarchy

- Root (.) → Top-Level Domain (TLD) → Second-Level Domain → Subdomain.
- Example: blog.example.com
- Different organizations manage different parts (root, TLDs, authoritative zones).



DNS Lookup: What Happens When You Type a URL

- Your device asks a recursive resolver (often your ISP or a public resolver).
- The resolver queries root → TLD → authoritative name servers.
- Results are cached (TTL) to speed up future requests.



Common DNS Record Types

- A — maps a name to an IPv4 address
- AAAA — maps a name to an IPv6 address
- CNAME — alias (points a name to another name)
- MX — mail servers for a domain
- TXT — text records (SPF/DKIM/verification)
- NS — authoritative name servers for a zone

TTL & Caching (Why DNS Changes Take Time)

- TTL (Time To Live) tells resolvers how long they can cache a record.
- Lower TTL = faster changes, but more DNS queries.
- Higher TTL = fewer queries, but changes propagate more slowly.
- Browsers/OS/resolvers may cache results at multiple layers.

Try It: DNS Lookup From Your Computer

- `nslookup example.com`
-
- `# (macOS/Linux)`
- `dig example.com A +short`
-
- `dig example.com AAAA +short`

- Run the commands and compare outputs.
- Which name server answered you?
- What is the TTL value (if shown)?

Internet vs World Wide Web (WWW)

- Internet = the global network (hardware + routing).
- Web (WWW) = a service that runs on the Internet (HTTP/HTTPS + browsers + servers).
- You can use the Internet without the Web (email, gaming, SSH, etc.).

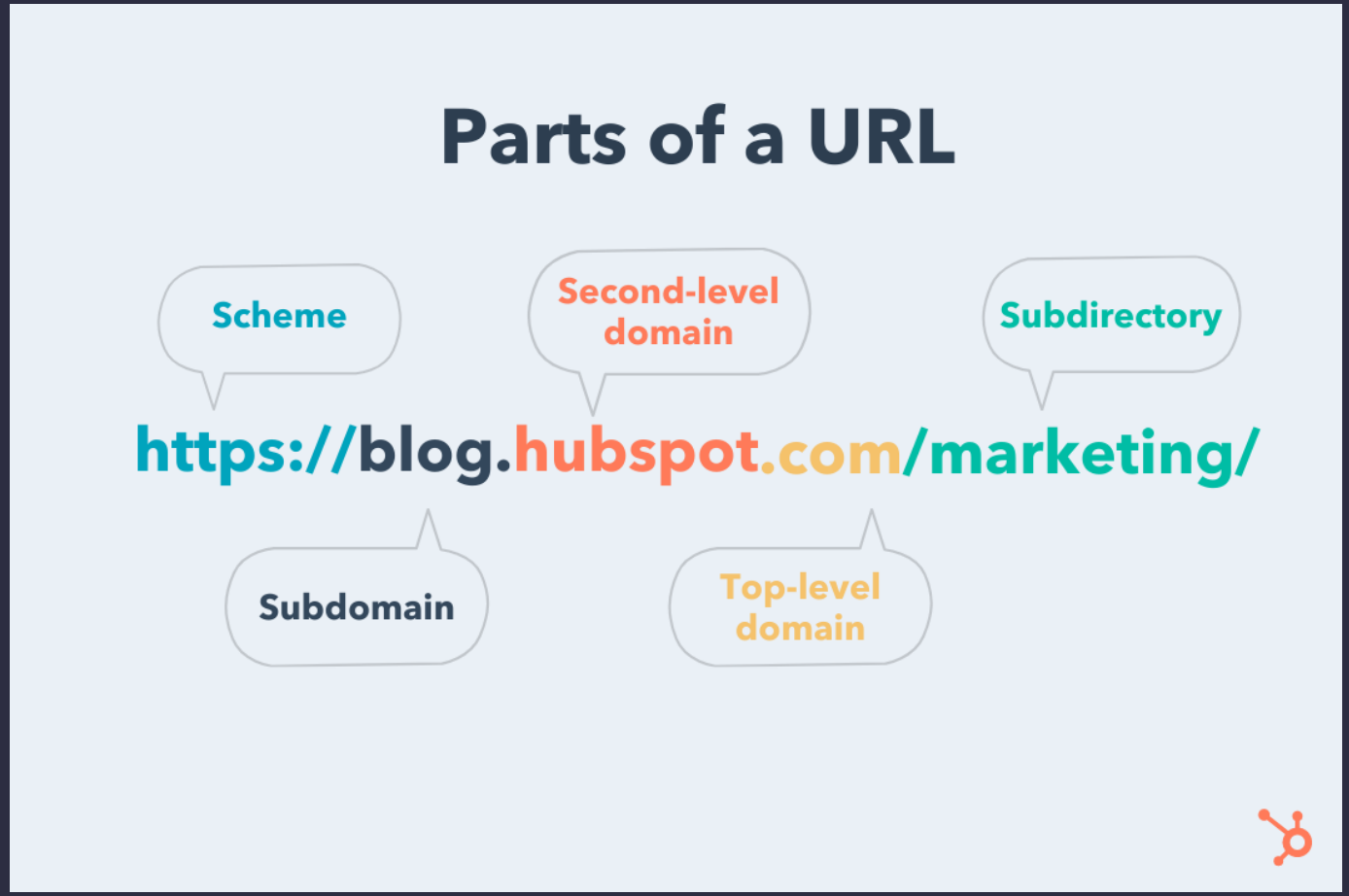
Client–Server

- Client = your browser/app.
- Sends requests (e.g., GET /index.html).
- Renders the response for the user.

- Server = a computer/service that responds.
- Stores files + runs code (PHP, Node, etc.).
- Returns responses (HTML/CSS/JS/JSON).

Anatomy of a URL

- Scheme: https
- Host: blog.example.com
- Path: /marketing/
- Optional: query (?q=...) and fragment (#section)



Resources on the Web (More Than “Web Pages”)

- HTML documents, images, videos, fonts, JSON APIs…
- Each response has a MIME type (Content-Type).
- Common types: text/html, text/css, application/javascript, application/json, image/png

HTTP (Hypertext Transfer Protocol)

- How requests and responses work
- Methods, status codes, headers

What Is HTTP?

- HTTP is an application-layer protocol used to transfer resources on the Web.
- It is stateless: each request is independent (sessions are built on top).
- HTTP runs over TCP (most common) or QUIC (HTTP/3).

HTTP Message Basics

- Request line: METHOD /path HTTP/1.1
- Headers: Host, Accept, User-Agent...
- Optional body (POST/PUT/PATCH)

- Status line: HTTP/1.1 200 OK
- Headers: Content-Type, Cache-Control...
- Body: HTML/CSS/JS/JSON/image...

Common HTTP Methods

- GET — read a resource (should not change server state).
- POST — create/submit data (often changes state).
- PUT — replace a resource (idempotent).
- PATCH — partially update a resource.
- DELETE — remove a resource.
- HEAD/OPTIONS — metadata & capabilities.

HTTP Status Codes (Big Picture)

- 1xx Informational
- 2xx Success (200 OK, 201 Created)
- 3xx Redirect (301, 302, 307, 308)
- 4xx Client error (400, 401, 403, 404)
- 5xx Server error (500, 502, 503)

Headers You'll See Every Day

- Content-Type — what the body is (HTML, JSON, image…).
- Accept — what the client can handle.
- Cache-Control — caching rules.
- Authorization — credentials (tokens).
- Set-Cookie / Cookie — state management.

Request Bodies & Formats

- HTML forms: application/x-www-form-urlencoded or multipart/form-data
- APIs: application/json
- Files: multipart/form-data
- Always validate and sanitize input on the server.

Cookies & Sessions (Stateless → Stateful)

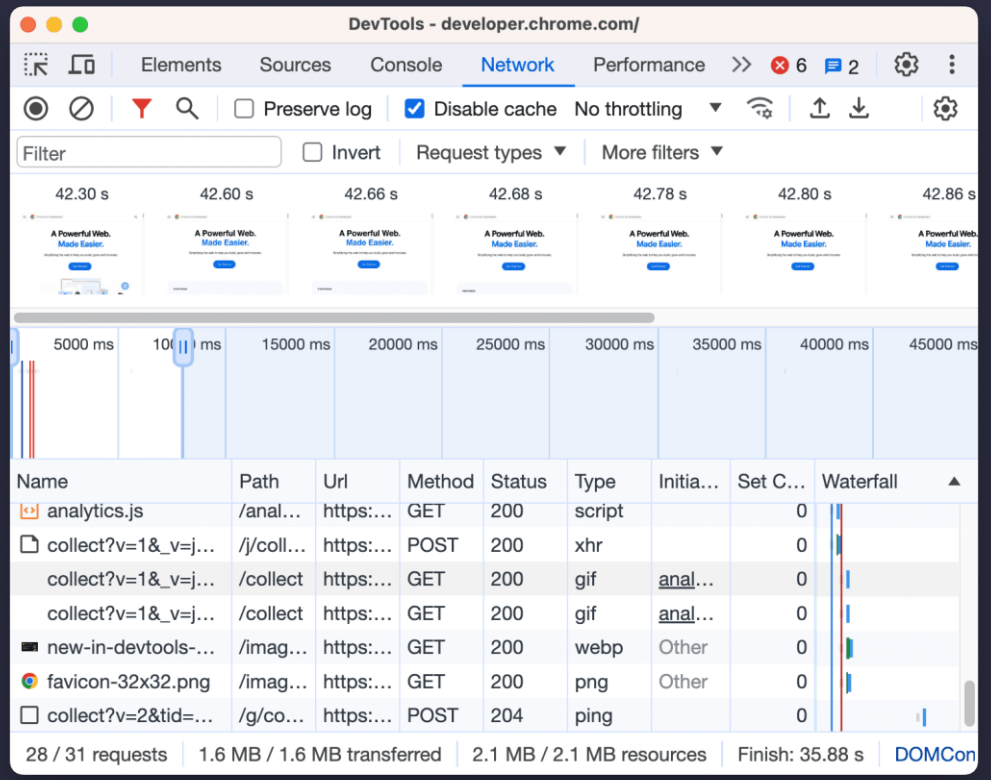
- A cookie is a small piece of data stored by the browser for a site.
- Servers use cookies to keep session IDs (login state).
- Security flags: HttpOnly, Secure, SameSite.

Caching 101

- Caching saves time and bandwidth.
- Cache-Control: max-age, no-store, must-revalidate…
- ETag / If-None-Match enables conditional requests (304 Not Modified).

DevTools: Network Panel (Your Best Friend)

- See every request: URL, method, status, timing, size.
- Inspect request headers, response headers, and cookies.
- Use “Disable cache” while developing.



Hands-On: Inspect a Request

- 1) Open a website
- 2) Press F12 (DevTools)
- 3) Network tab → Reload
- 4) Click a request
-
- Look for:
- - Status code
- - Response headers
- - Content-Type
- - Cache-Control

- Pick one CSS file and one image.
- How big are they? Are they cached?
- What happens on reload?

HTTPS (HTTP + TLS)

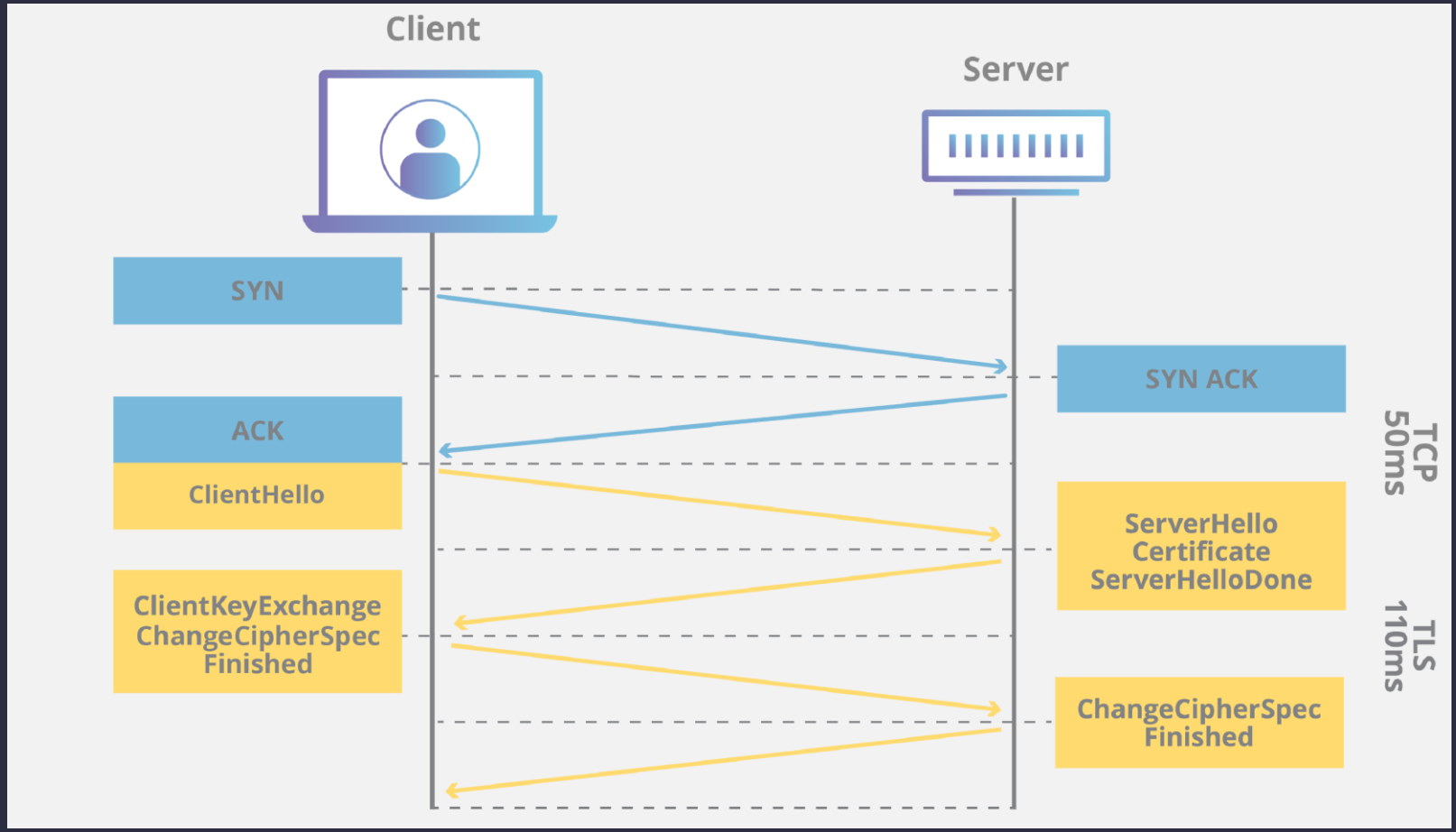
- Encryption, integrity, and identity
- Certificates and trust

Why HTTPS?

- Encrypts traffic (prevents eavesdropping).
- Protects integrity (detects tampering).
- Authenticates the server (certificate + trusted CAs).
- Required for many modern web features (e.g., Service Workers).

TLS Handshake (High Level)

- Client and server agree on encryption parameters.
- Server presents a certificate (proof of identity).
- They derive shared keys and switch to encrypted communication.



Certificates: What's Inside?

- Subject (domain name) and validity dates
- Public key
- Issuer (Certificate Authority)
- Digital signature

What Your Browser Verifies

- The certificate is valid (not expired, not revoked in some cases).
- The domain name matches the certificate (SAN / CN).
- The certificate chain links to a trusted root CA.
- The connection is encrypted using TLS.

HTTP vs HTTPS

- **HTTP**

- Data is readable on the network.
- Vulnerable to tampering (MITM).
- No built-in identity verification.

- **HTTPS**

- Encrypted communication (TLS).
- Integrity protection.
- Server identity verified via certificate chain.

Getting HTTPS for a Real Website

- Most hosting providers support free certificates (Let’s Encrypt).
- You can also use a CDN (Cloudflare, etc.) to enable HTTPS.
- Best practice: redirect HTTP → HTTPS and enable HSTS when ready.

Domains

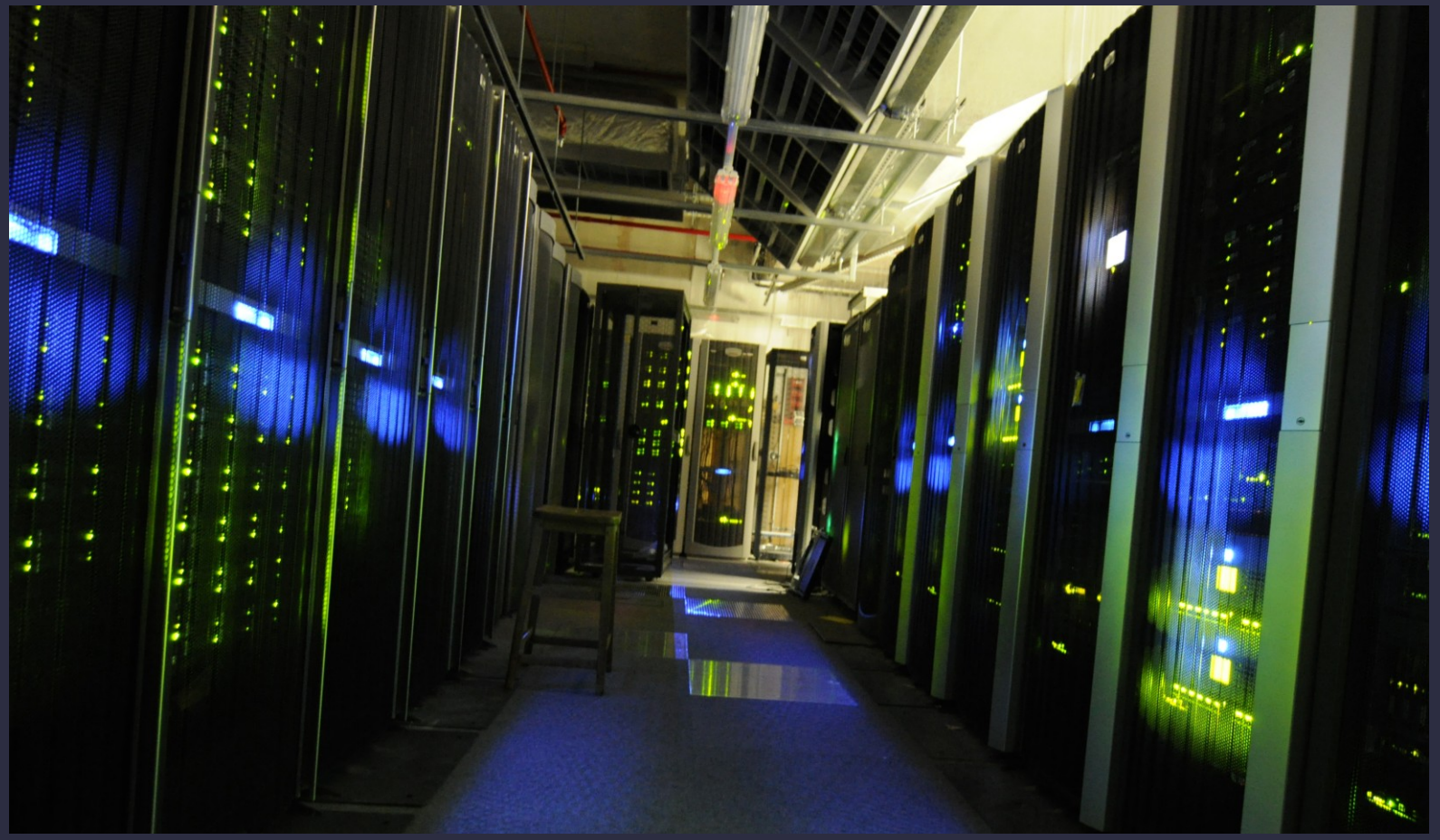
- Domain vs URL vs DNS
- Buying a domain
- Connecting it to hosting

Servers & Hosting

- What “server” means
- Hosting types
- Ports and deployment

What Is a Server?

- A server is a program (and often a machine) that provides a service to clients.
- For the Web: a web server responds to HTTP/HTTPS requests.
- Servers can be physical machines, VMs, or containers in the cloud.



Common Hosting Options

- Shared hosting
- Cheaper, easy setup
- Limited control/performance

- VPS / Cloud VM
- More control (root access)
- You manage updates/security

Server Roles in a Typical Web App

- Web server (Apache/Nginx)
- Serves static files (HTML/CSS/JS/images)
- Reverse proxy to apps

- App server (PHP, Node, Python...)
- Runs business logic
- Talks to databases/APIs

Ports You Should Know

- 80 — HTTP
- 443 — HTTPS
- 22 — SSH (remote server management)
- 3306 — MySQL (database, usually not exposed publicly)

Deployment Overview (Simple Version)

- Put your files/code on a server (hosting).
- Configure DNS to point your domain to that server.
- Ensure the web server serves your project (document root).
- Enable HTTPS and keep software updated.

Server OS (Windows vs Linux)

- Where servers usually run
- Command line essentials
- Remote access

Windows vs Linux (For Web Servers)

- **Windows**

- Great for Microsoft ecosystem (AD, .NET, IIS).
- GUI-friendly, but servers often still use CLI/PowerShell.
- Licensing can add cost.

- **Linux**

- Very common for web hosting (Apache/Nginx, SSH).
- Strong CLI tooling, automation-friendly.
- Many distributions (Ubuntu, Debian, CentOS, etc.).

Linux Basics You'll Meet Often

- Filesystem: /etc (config), /var (logs), /home (users), /usr (programs).
- Permissions: read/write/execute (rwx) for user/group/others.
- Common commands: ls, cd, mkdir, cp, mv, rm, cat, nano/vim

SSH: Connect to a Server

- `ssh username@server_ip`
-
- `# Example`
- `ssh student@203.0.113.10`
-
- `# Copy a file to the server`
- `scp index.html student@203.0.113.10:/var/www/html/`

- SSH is the standard secure remote shell for Linux servers.
- You'll use it later for deployment.
- Today we focus on local setup (XAMPP).

Quick Check (Server OS)

- Why do many servers prefer Linux?
- What does 'rwx' mean in file permissions?
- What is SSH used for?

Web Design

WampServer
a Windows web development environment.

WampServer is a Windows web development environment.
It allows you to create web applications with

- Apache2
- PHP
- MySQL database.

Alongside, PhpMyAdmin allows you to manage easily your databases.

Web Design

WampServer

Before install WampServer, Install Visual C++ Packages

https://www.techpowerup.com/download/visual-c-redistributable-runtime-package-all-in-one/

Web Design

WampServer

Before install WampServer, Install Visual C++ Packages

Name	Date modified	Type	Size
install_all	09-Feb-24 11:38 AM	Windows Batch File	2 KB
vcredist2005_x64	09-Feb-24 11:38 AM	Application	3,102 KB
vcredist2005_x86	09-Feb-24 11:38 AM	Application	2,644 KB
vcredist2008_x64	09-Feb-24 11:38 AM	Application	5,086 KB
vcredist2008_x86	09-Feb-24 11:38 AM	Application	4,375 KB
vcredist2010_x64	09-Feb-24 11:38 AM	Application	10,034 KB
vcredist2010_x86	09-Feb-24 11:38 AM	Application	8,780 KB
vcredist2012_x64	09-Feb-24 11:38 AM	Application	7,019 KB
vcredist2012_x86	09-Feb-24 11:38 AM	Application	6,401 KB
vcredist2013_x64	09-Feb-24 11:38 AM	Application	7,032 KB
vcredist2013_x86	09-Feb-24 11:38 AM	Application	6,358 KB
vcredist2015_2017_2019_2022_x64	04-Dec-25 2:40 PM	Application	18,124 KB
vcredist2015_2017_2019_2022_x86	04-Dec-25 2:41 PM	Application	6,716 KB

Web Design

WampServer

Download Link: https://www.wampserver.com/en/

Web Design

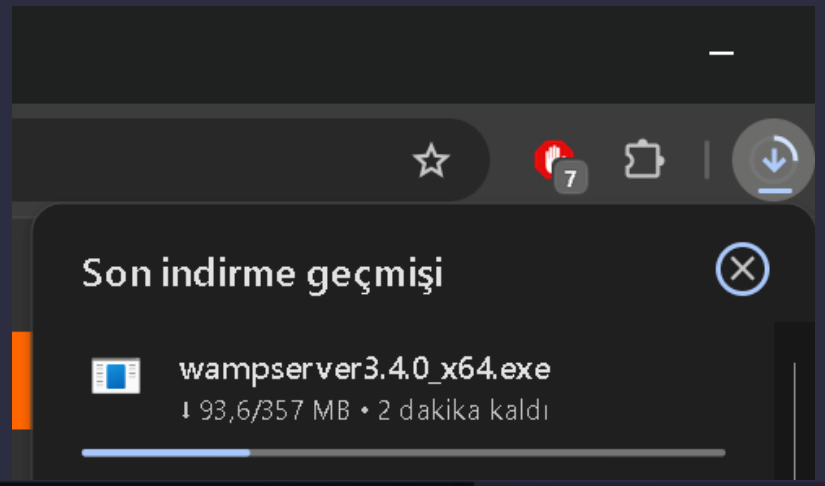
WampServer

Web Design

WampServer

DOWNLOAD WAMPSERVER 64 BITS (X64) 3.3.7

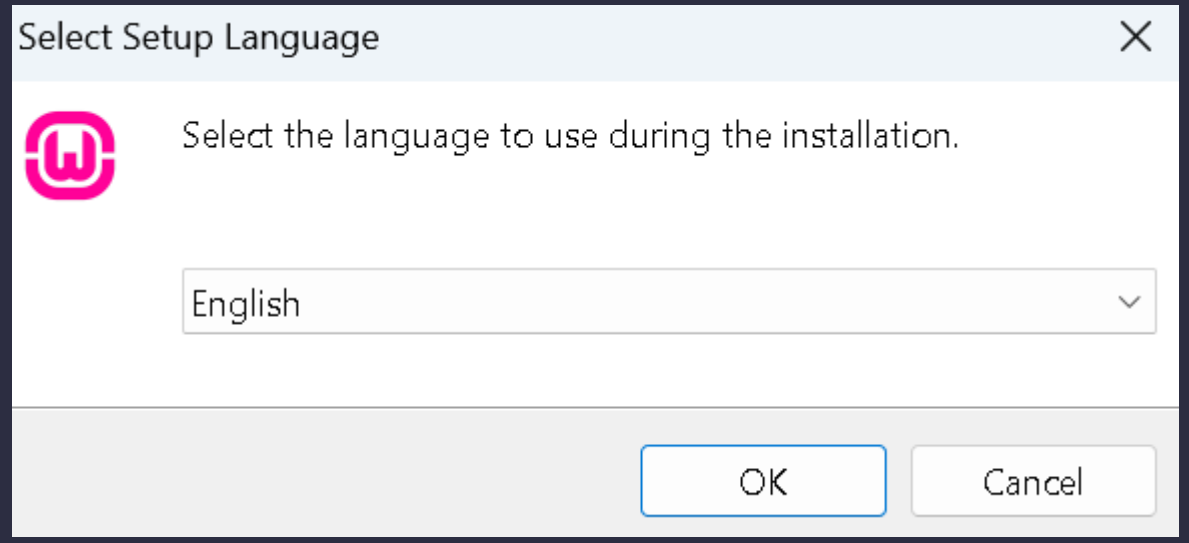
WampServer est disponible gratuitement (sous licence GPL). Vous pouvez remplir ce formulaire qui nous permettra de vous faire parvenir les actualités formation d'Alter Way, société éditrice, ainsi que toutes les informations liées aux évolutions de WampServer. Si vous ne le souhaitez pas, vous pouvez you can download it directly.



Web Design

WampServer

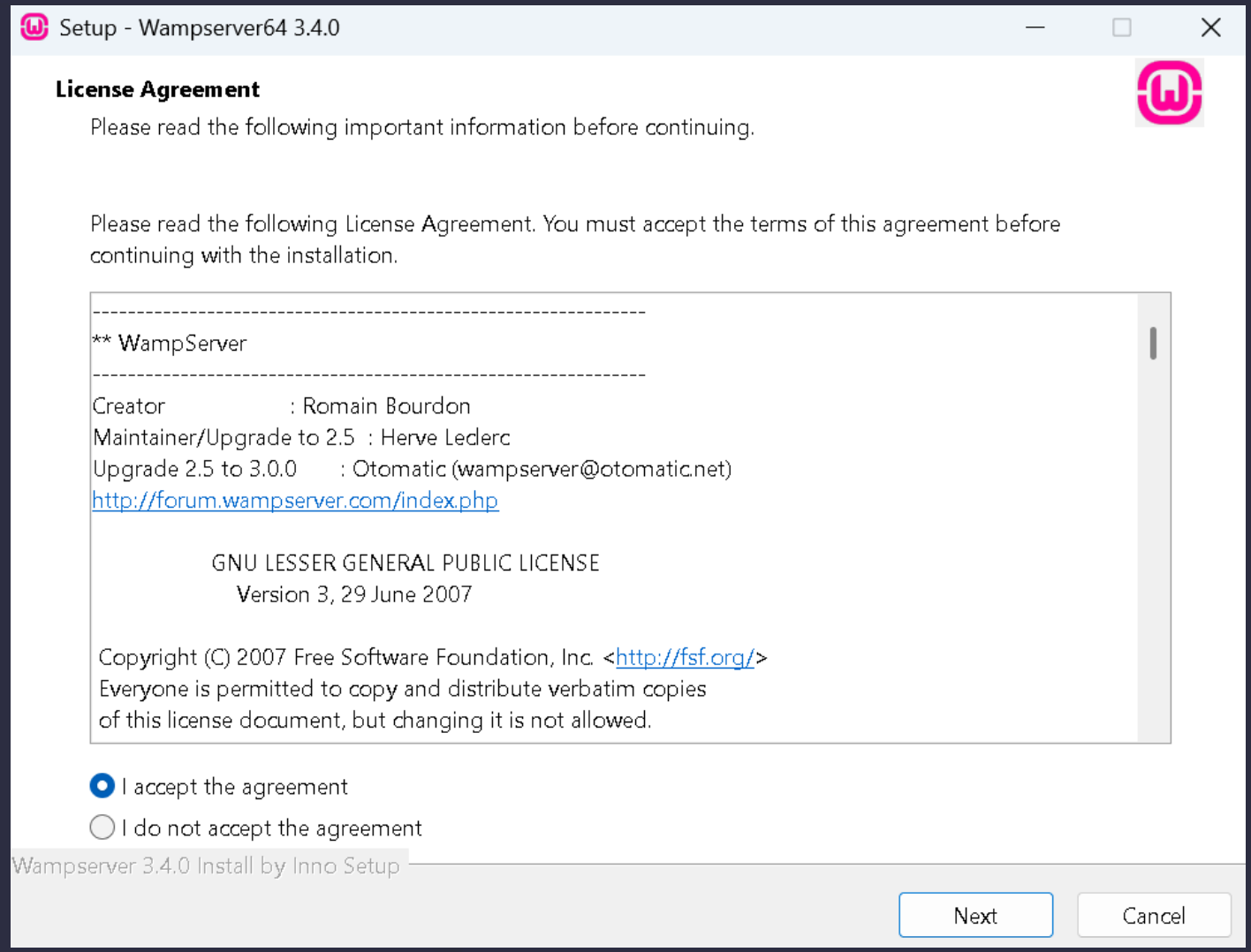
Installation



Web Design

WampServer

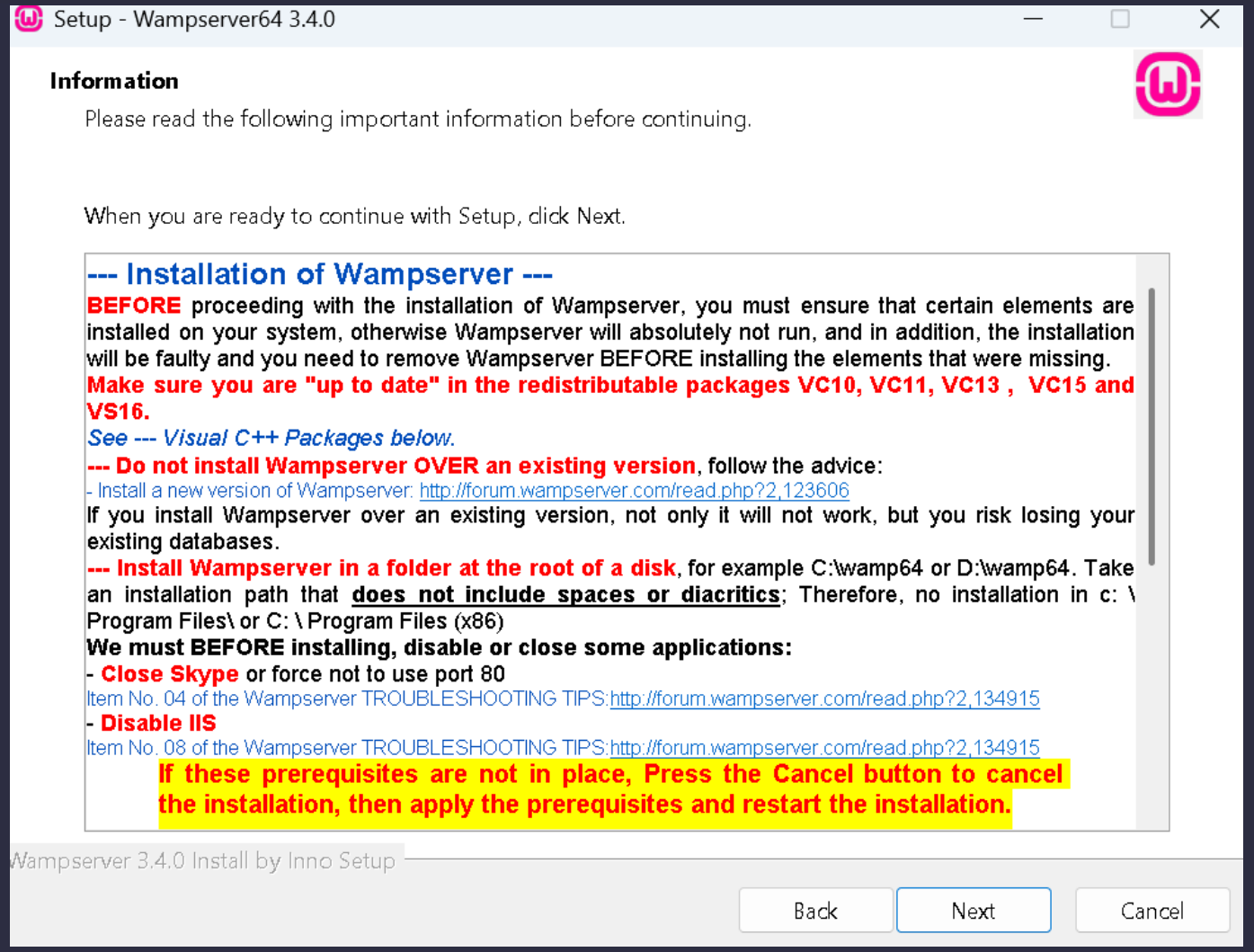
Installation



Web Design

WampServer

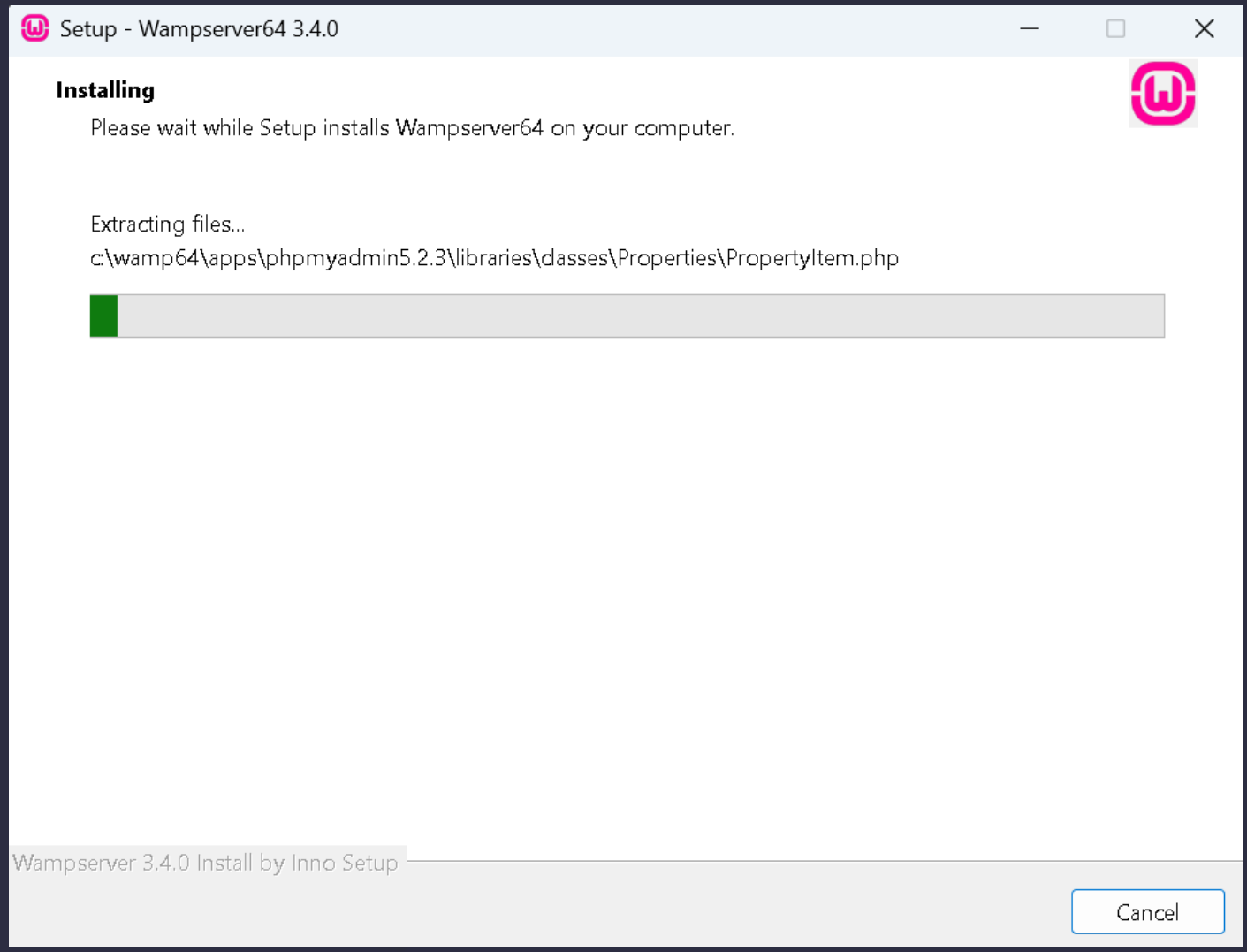
Installation



Web Design

WampServer

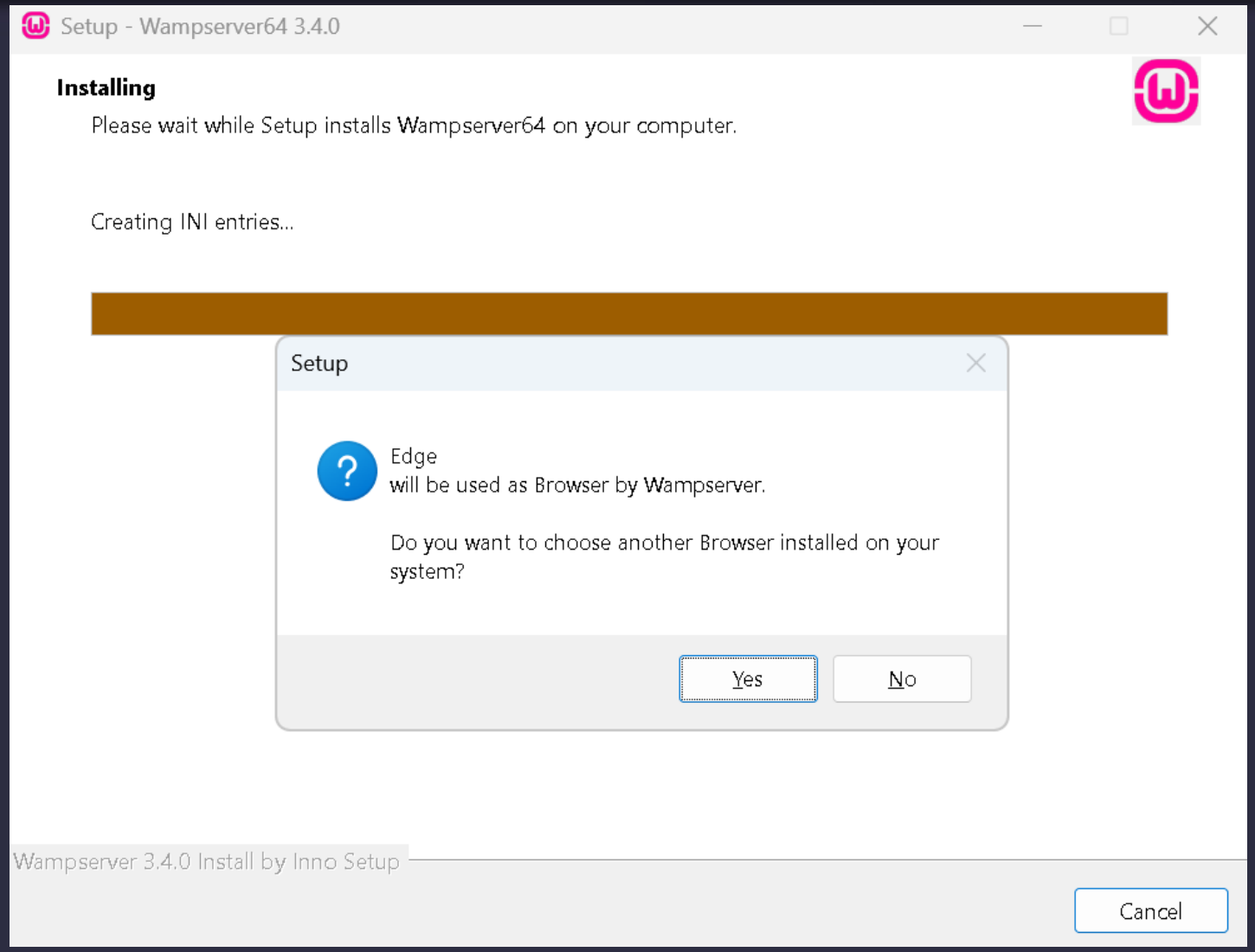
Installation



Web Design

WampServer

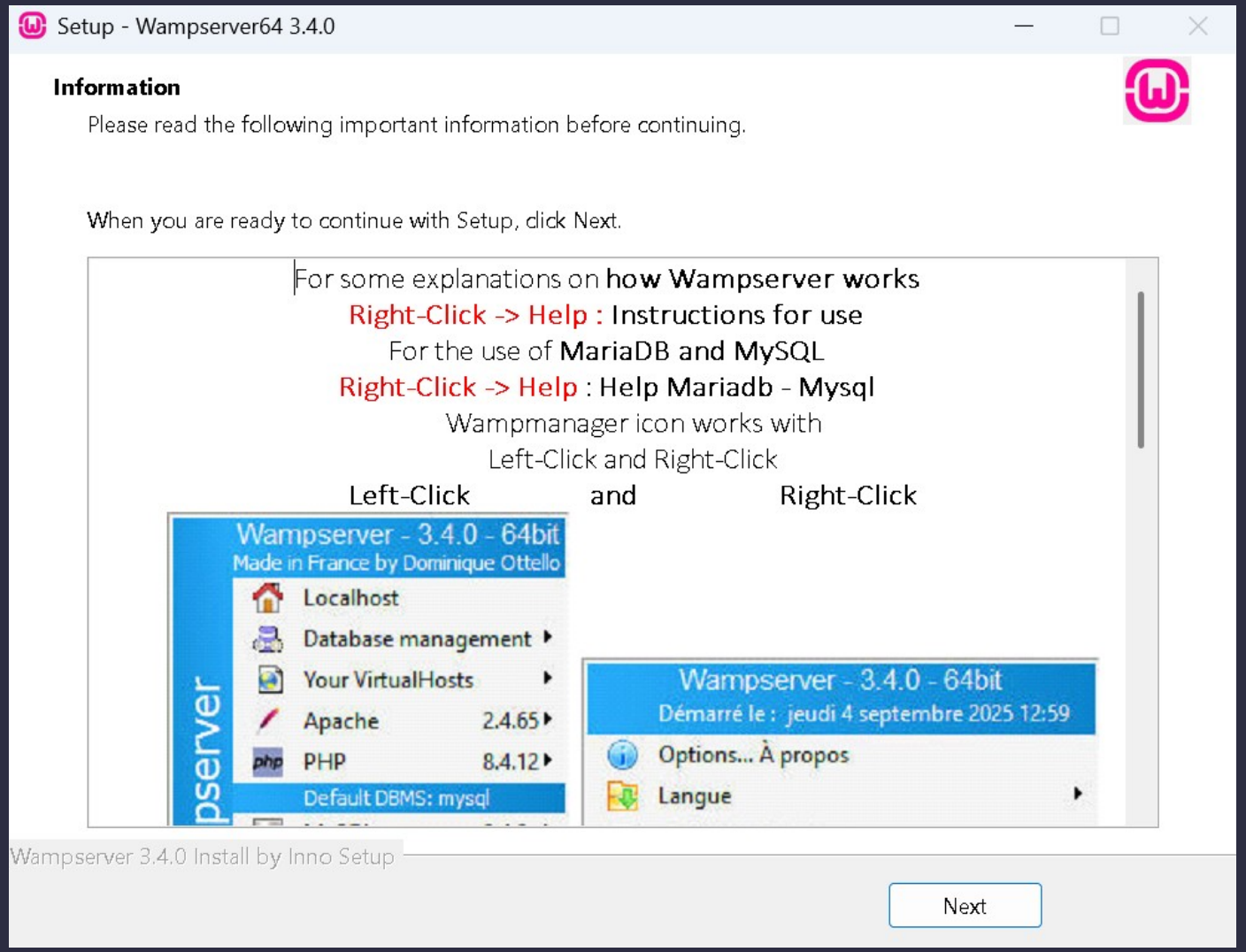
Installation



Web Design

WampServer

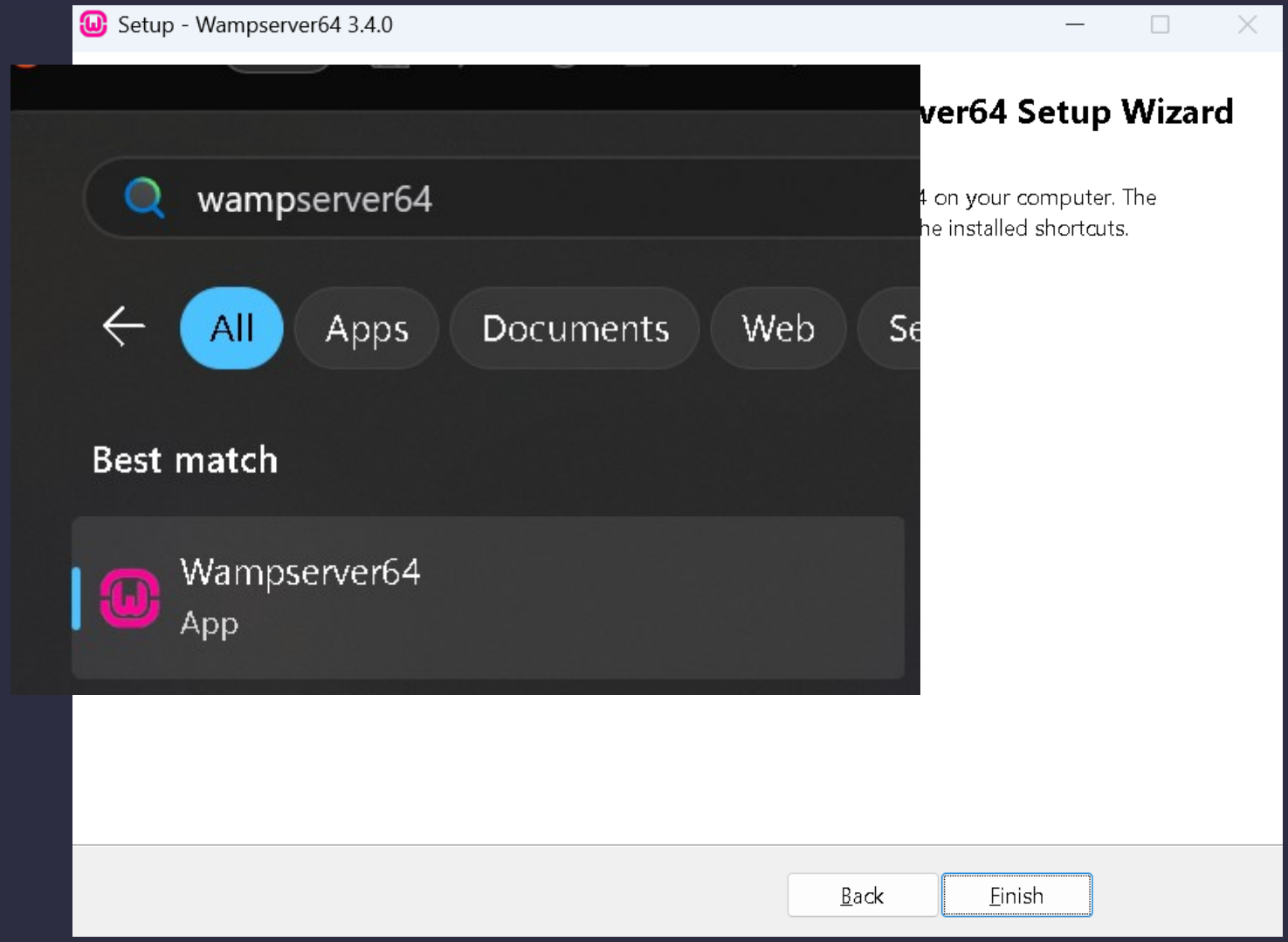
Installation



Web Design

WampServer

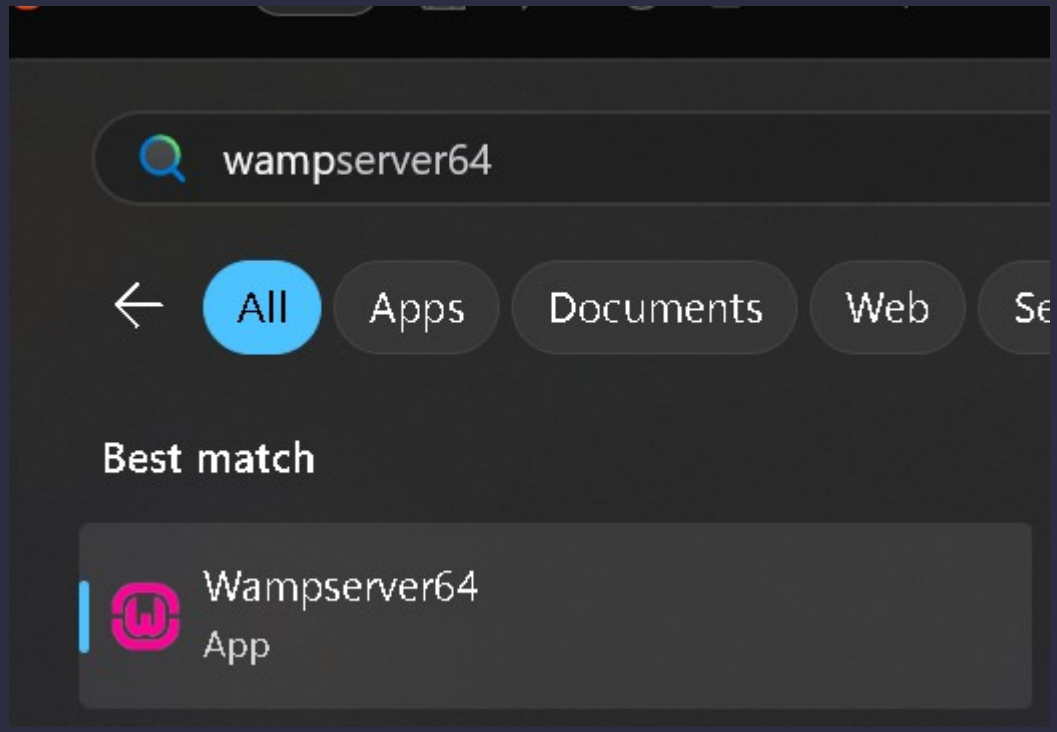
Installation



Web Design

WampServer

Run WAMP Server



Web Design

WampServer

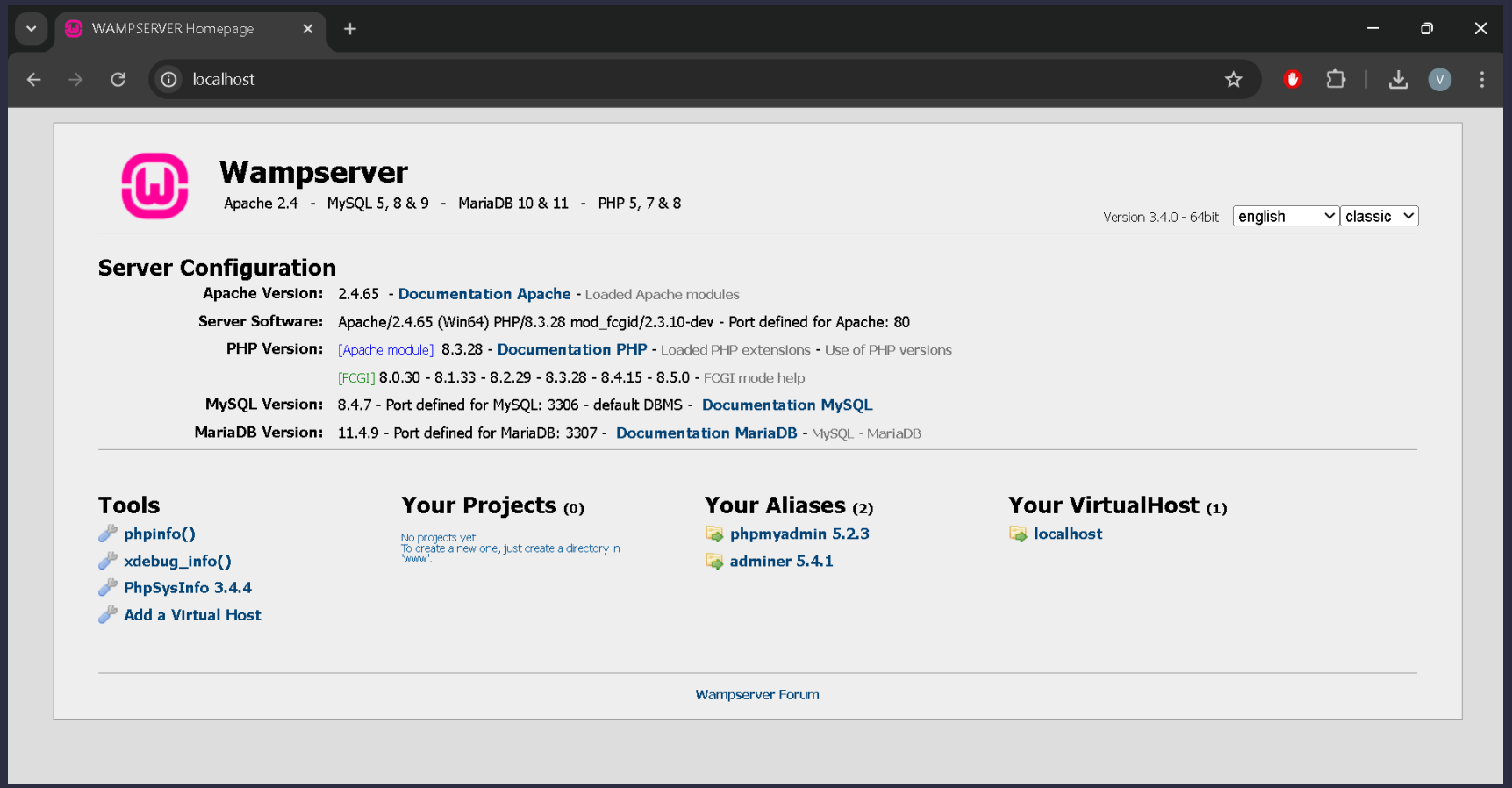
Run WAMP Server

Check Toolbar Icon

Web Design

WampServer

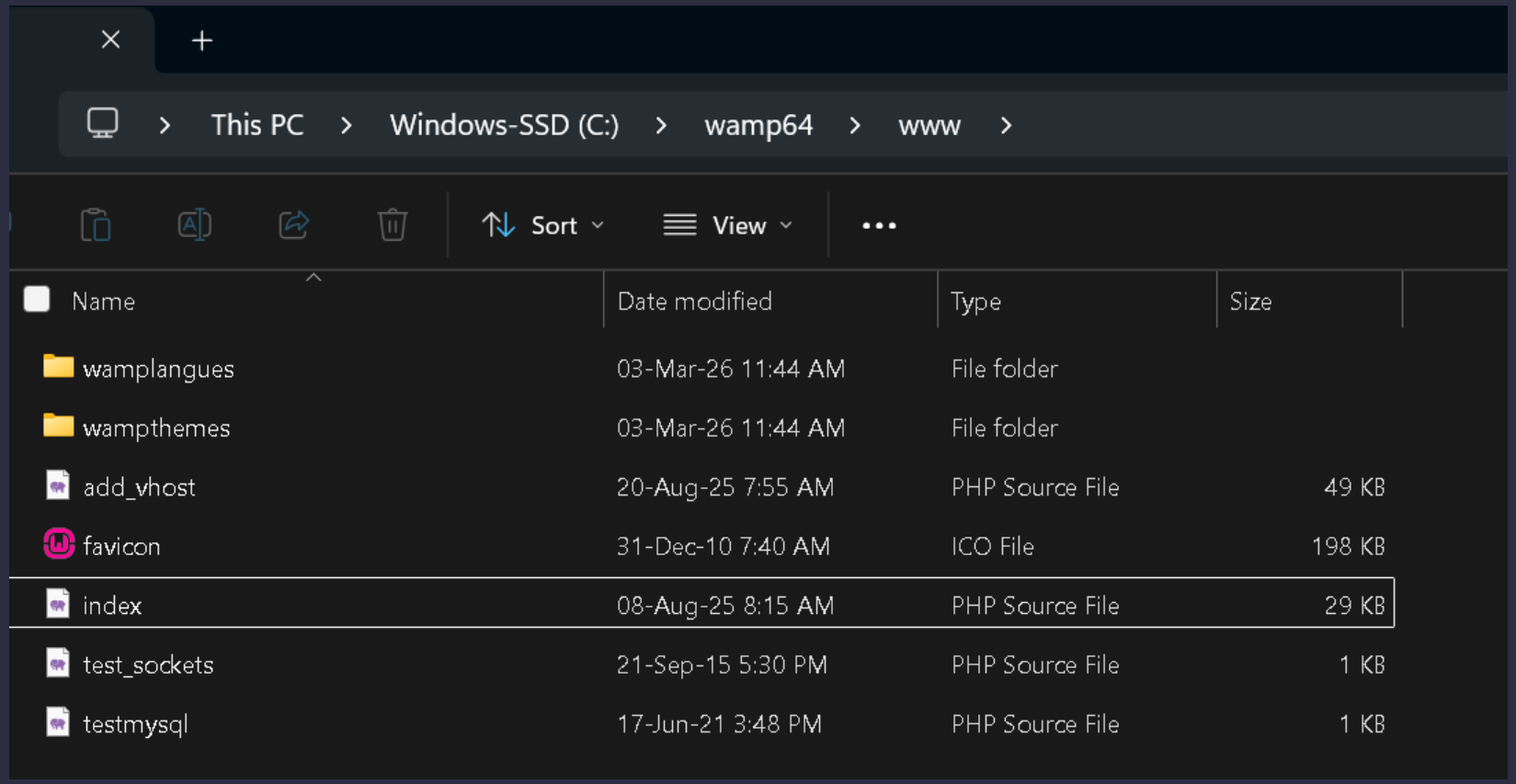
Goto localhost from your browser



Web Design

WampServer

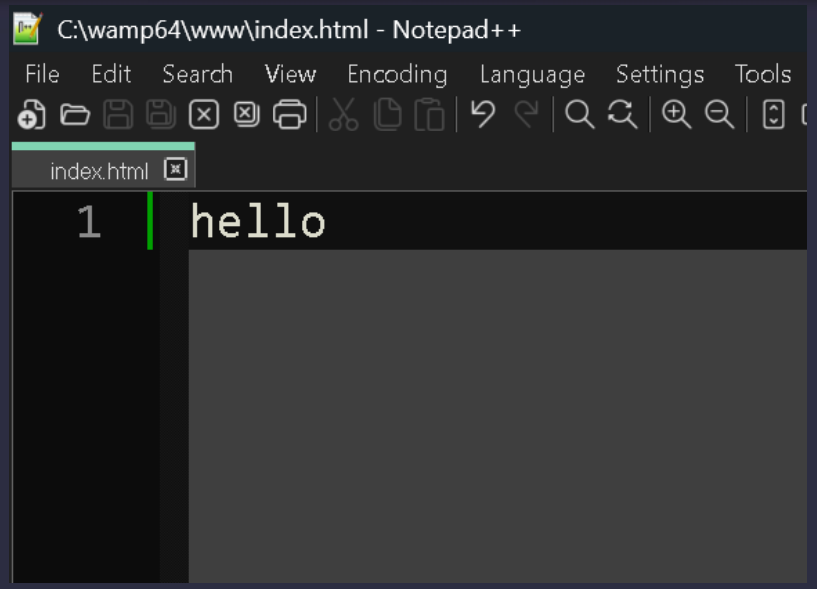
Goto WAMP Install Directory -> www folder

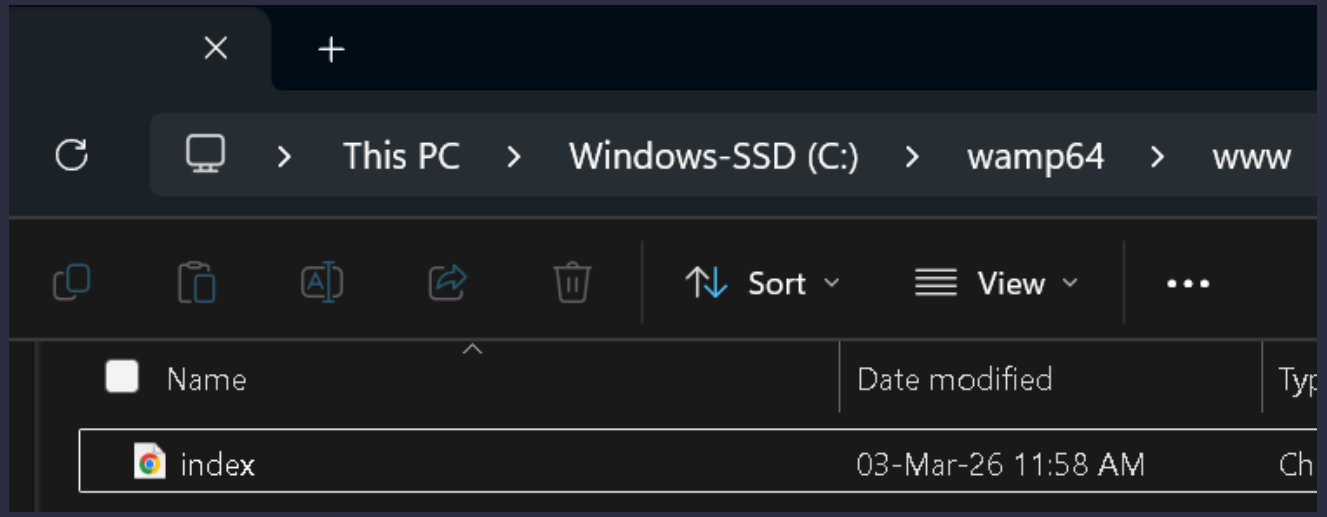


Web Design

WampServer

Remove all files and put index.html

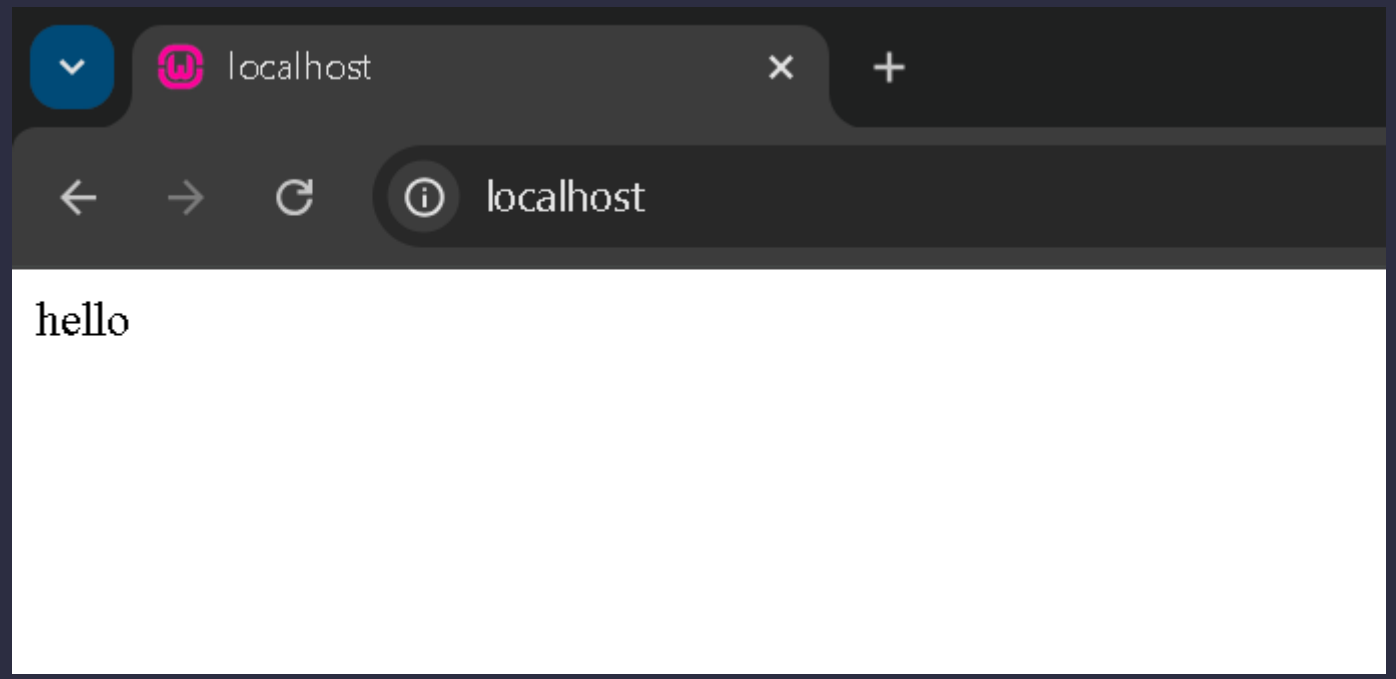




Web Design

WampServer

Refresh localhost page



Web Design

AI Tools to Generate Web Sites

- ChatGPT
- Google Gemini
- Claude.ai
- Readdy

Use any of the and generate a single page web site

Web Design

AI Tools to Generate Web Sites

Sample prompt

Create a modern, responsive single-page bakery shop website using only HTML5 and CSS3.
The design should be warm and cozy with pastel colors.
Include the following sections:

Hero section with background image and call-to-action button

About Us section

Product showcase (at least 6 bakery items with images, name and price)

Customer testimonials

Contact section with a styled form

Footer with social media icons

Use semantic HTML tags, Flexbox or Grid for layout, smooth hover effects, and clean, well-commented code.

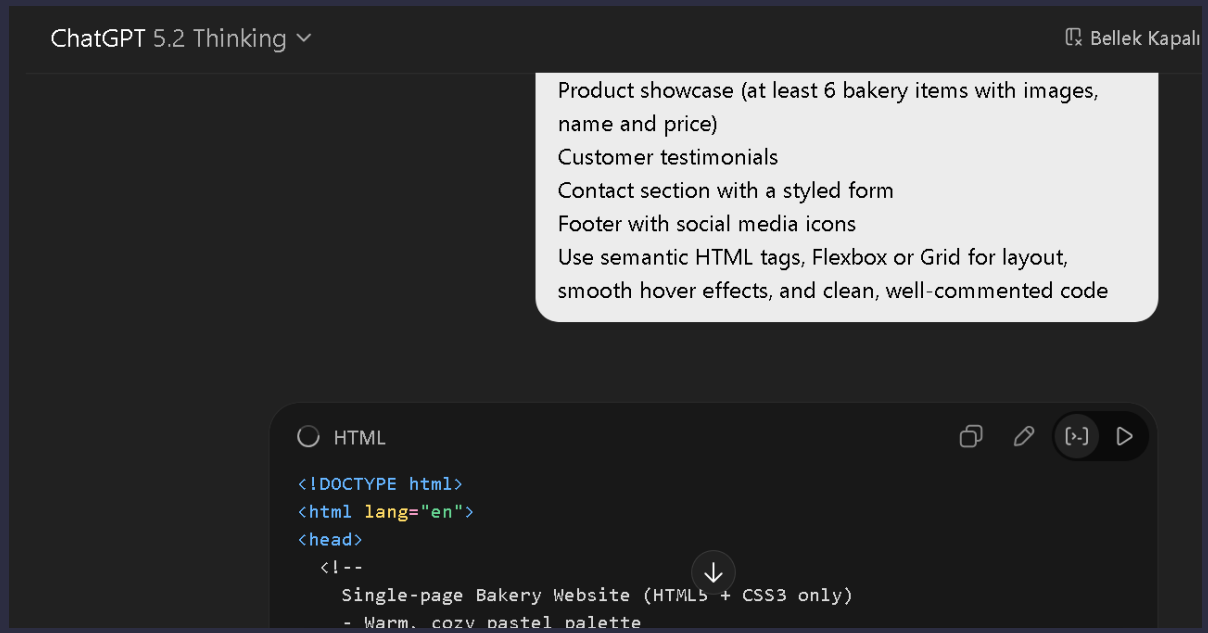
Web Design

AI Tools to Generate Web Sites

Sample prompt

ChatGPT 5.2 Thinking Model

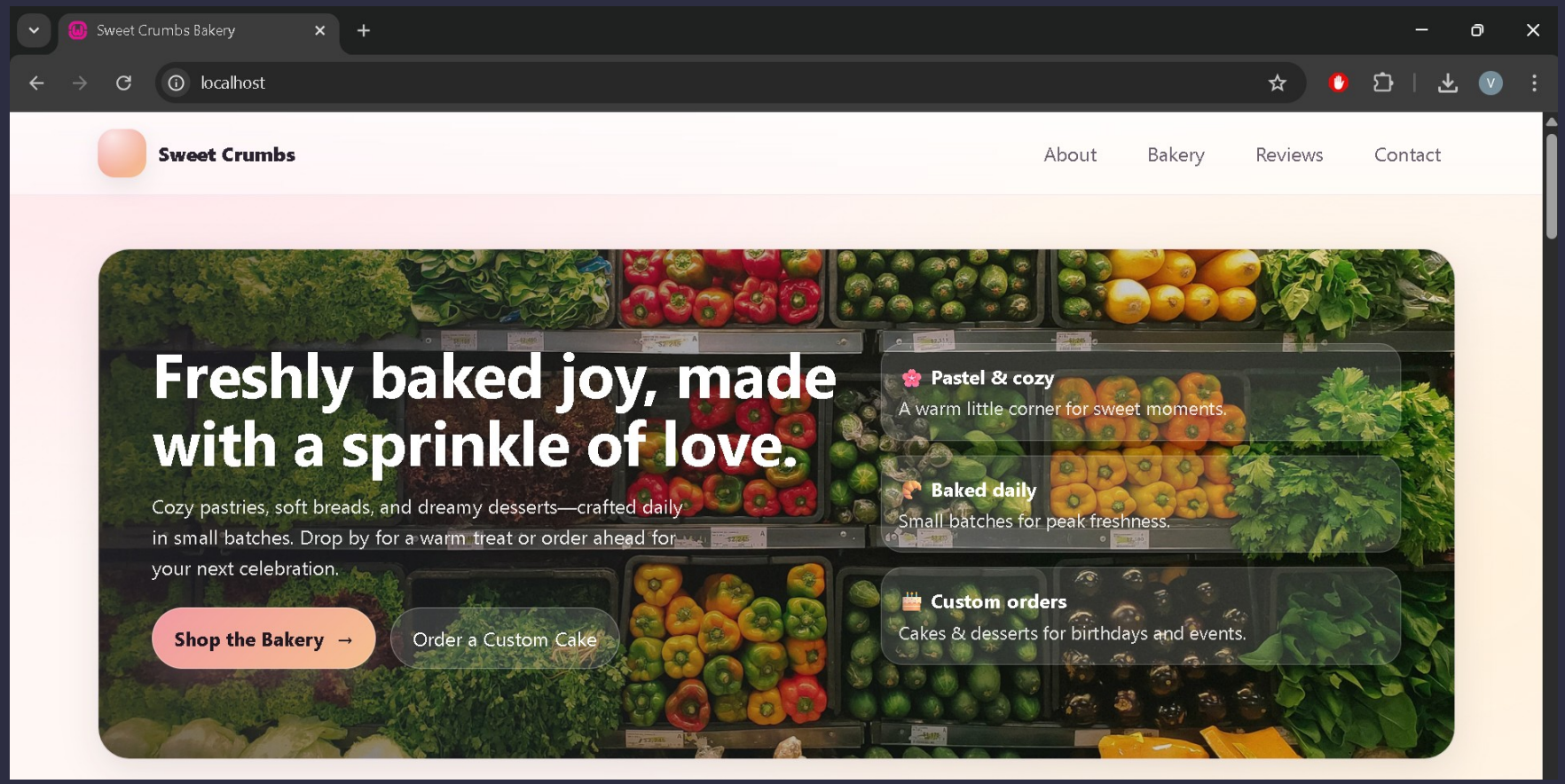
Copy given code to index.html



Web Design

WampServer

Refresh localhost page



Web Design

AI Tools to Generate Web Sites

Sample prompt

- Create a fully responsive one-page personal portfolio using HTML5 and CSS3 only (no JavaScript). Use CSS Grid/Flexbox with a modern minimalist style. Include: sticky navbar, hero (name/title + CTA), about, skills, projects (card grid), experience, testimonials, contact form, and footer. Add smooth hover effects, transitions, and clean commented code

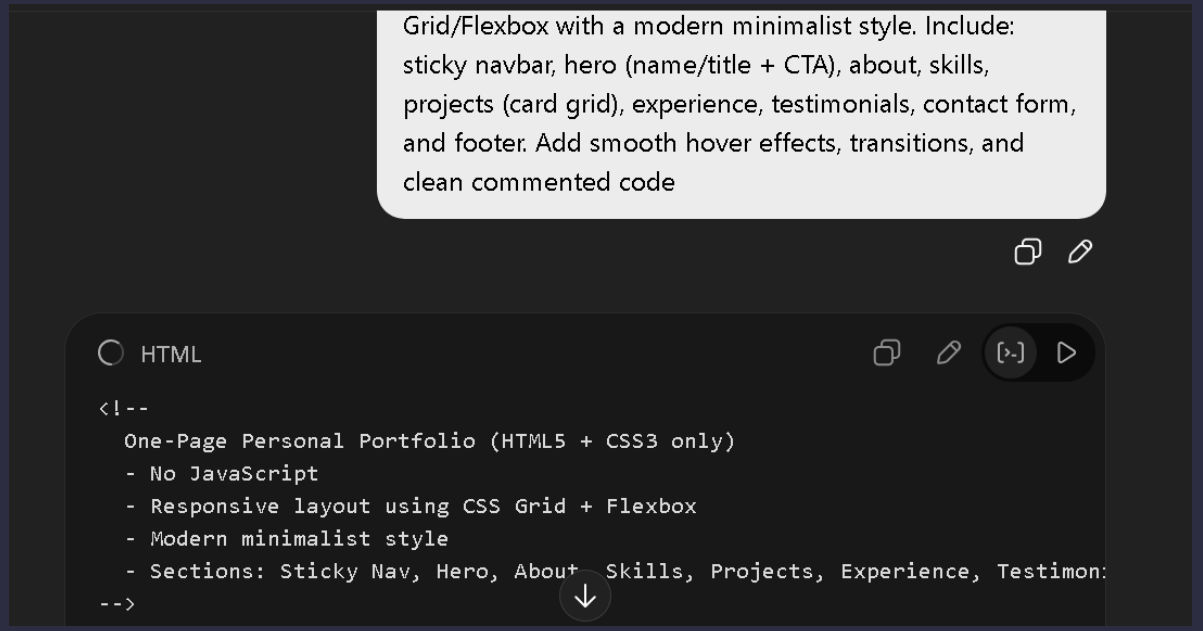
Web Design

AI Tools to Generate Web Sites

Sample prompt

ChatGPT 5.2 Thinking Model

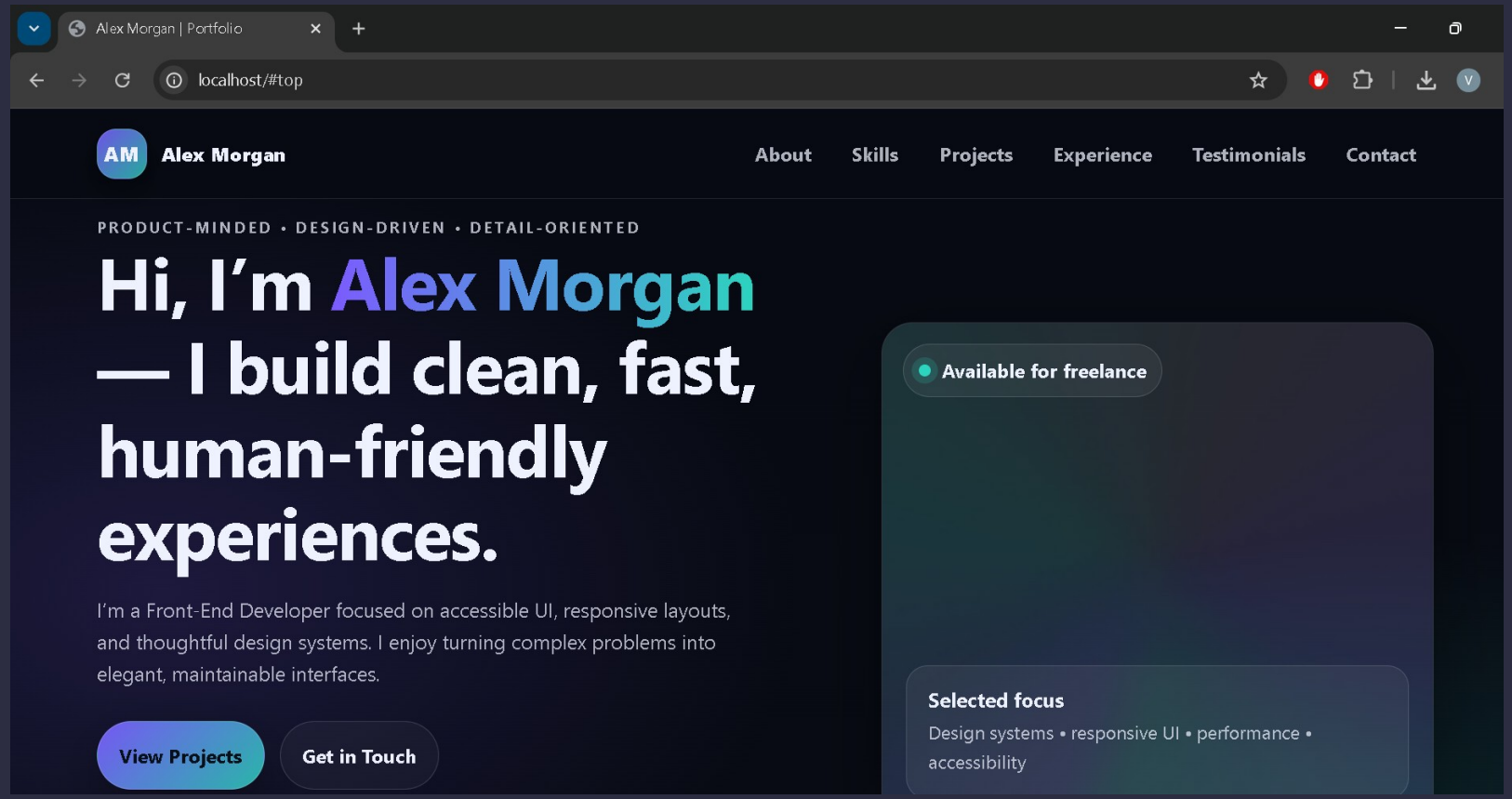
Copy given code to index.html



Web Design

WampServer

Refresh localhost page



Web Design

How to publish a website online?

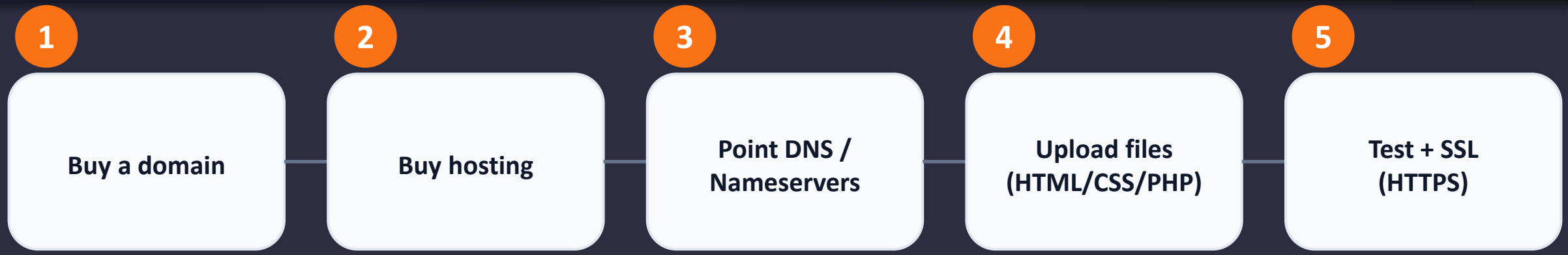
- Rent VPS (Virtual Private Server)
  - Install similar web server tools
  - Connect with static WAN IP
  - More advanced solution
- Buy hosting services
  - Easy solution
  - Some Turkish Service Provides
    - Isimtescil.net
    - Doruk.net.tr
    - Natro
    - …

Web Design

How to publish a website online?

End-to-end flow

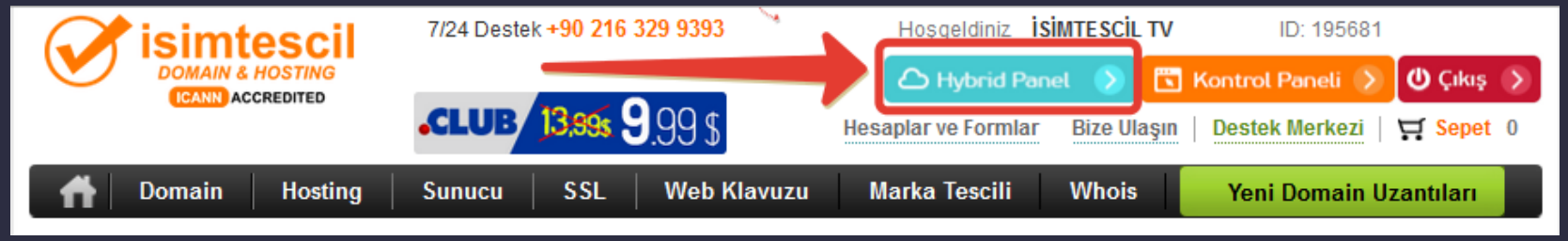
Same logic for both Isimtescil.net and GoDaddy



Key idea: Your domain must point to your hosting server before your uploaded files become visible.

- DNS changes can take up to 48 hours worldwide (often much faster).
- Your website root folder is usually public_html on Linux/cPanel hosting.
- For many files, upload a ZIP and extract it on the server.

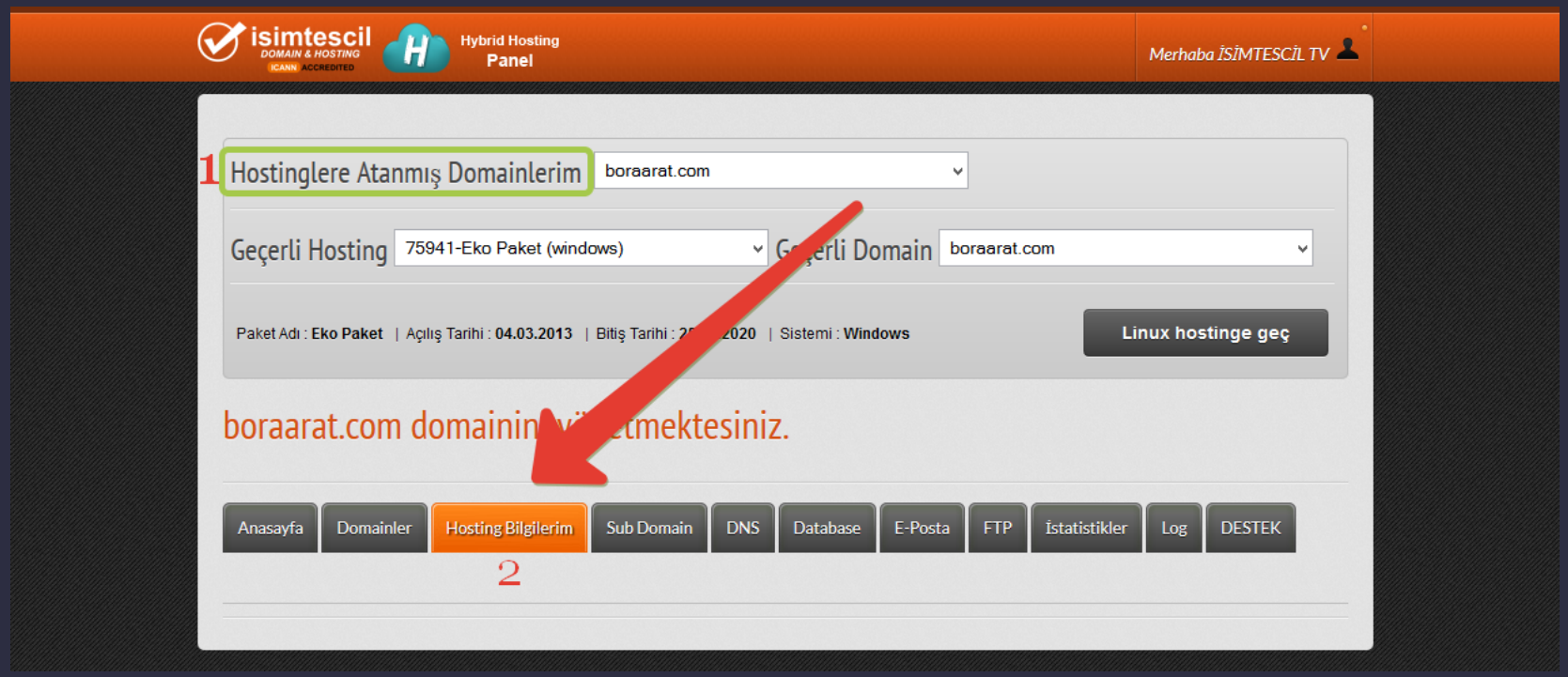
Isimtescil Step 1 — Open Hybrid Panel



Do this

- Log in to your Isimtescil account.
- From the top menu, click Hybrid Panel.
- This is where you manage hosting, DNS, FTP and panel credentials.

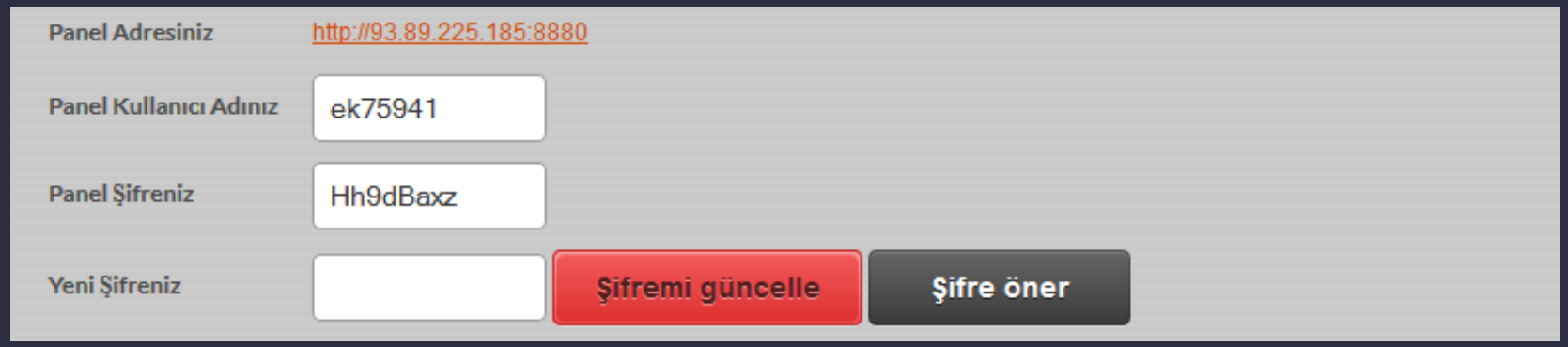
Isimtescil Step 2 — Go to “Hosting Bilgilerim” (Hosting Details)



Do this

- In Hybrid Hosting Panel, select the domain/hosting you want to manage.
- Click Hosting Bilgilerim to see your hosting credentials and services.

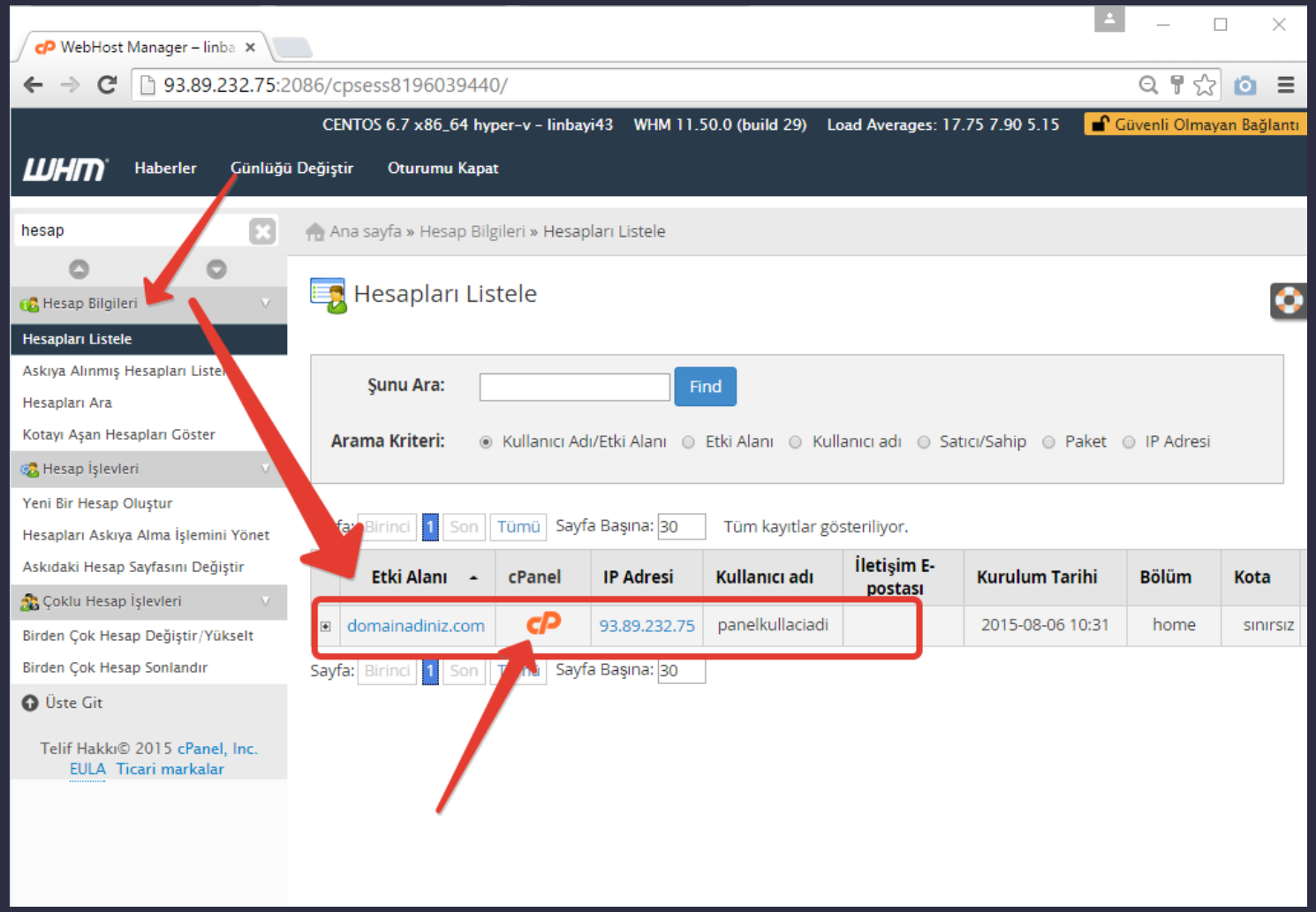
Isimtescil Step 3 — Find your panel address + username/password



What to capture

- Copy the Panel Address (control panel URL).
- Copy the Panel Username and Password.
- You will use these to log in to cPanel (Linux) or Plesk (Windows), depending on your plan.

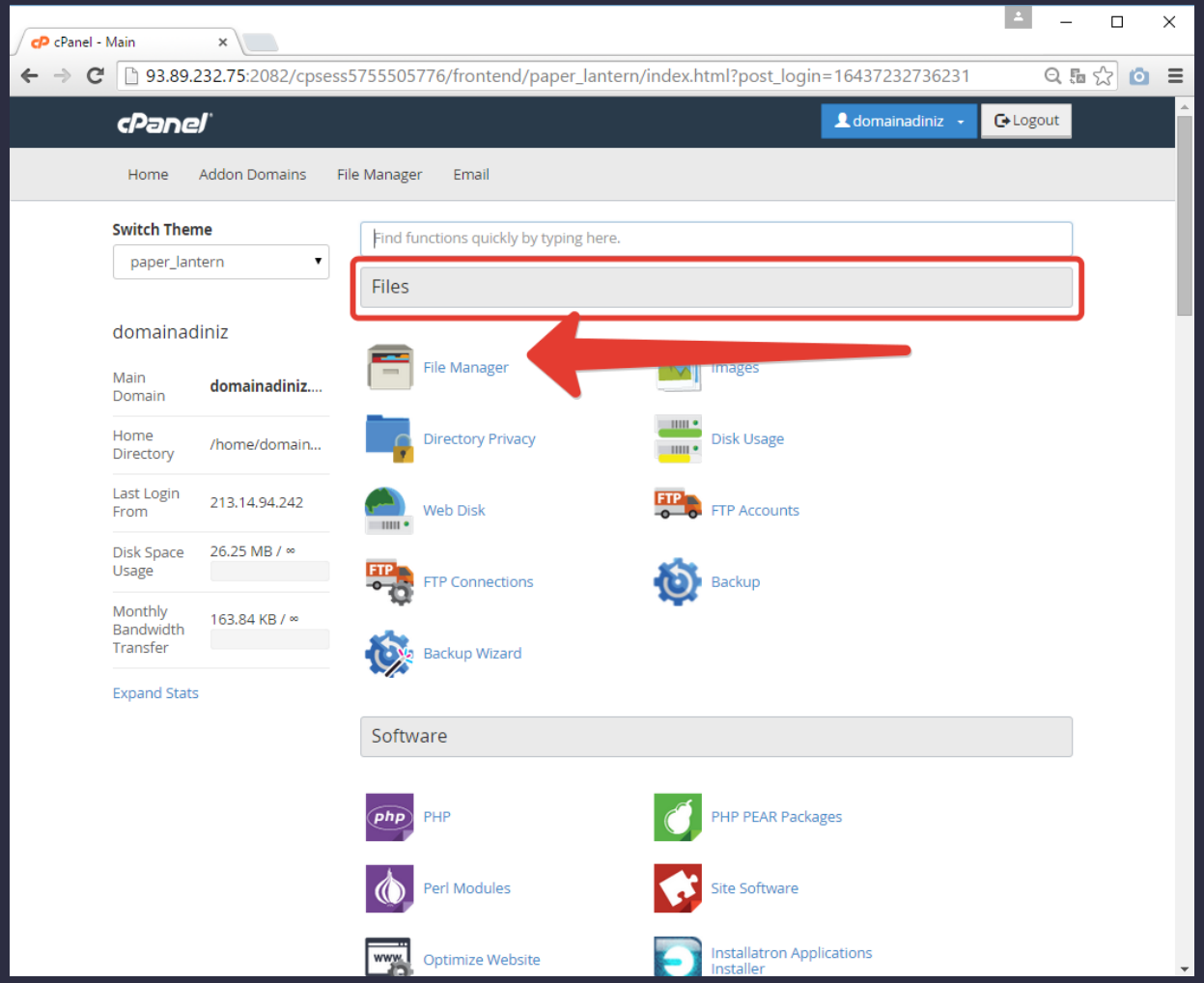
Isimtescil Step 4 — Access your cPanel account



Do this

- In the hosting panel/WHM screen, locate your domain.
- Click the cPanel icon or link for your domain.
- This opens the cPanel dashboard where you upload website files.

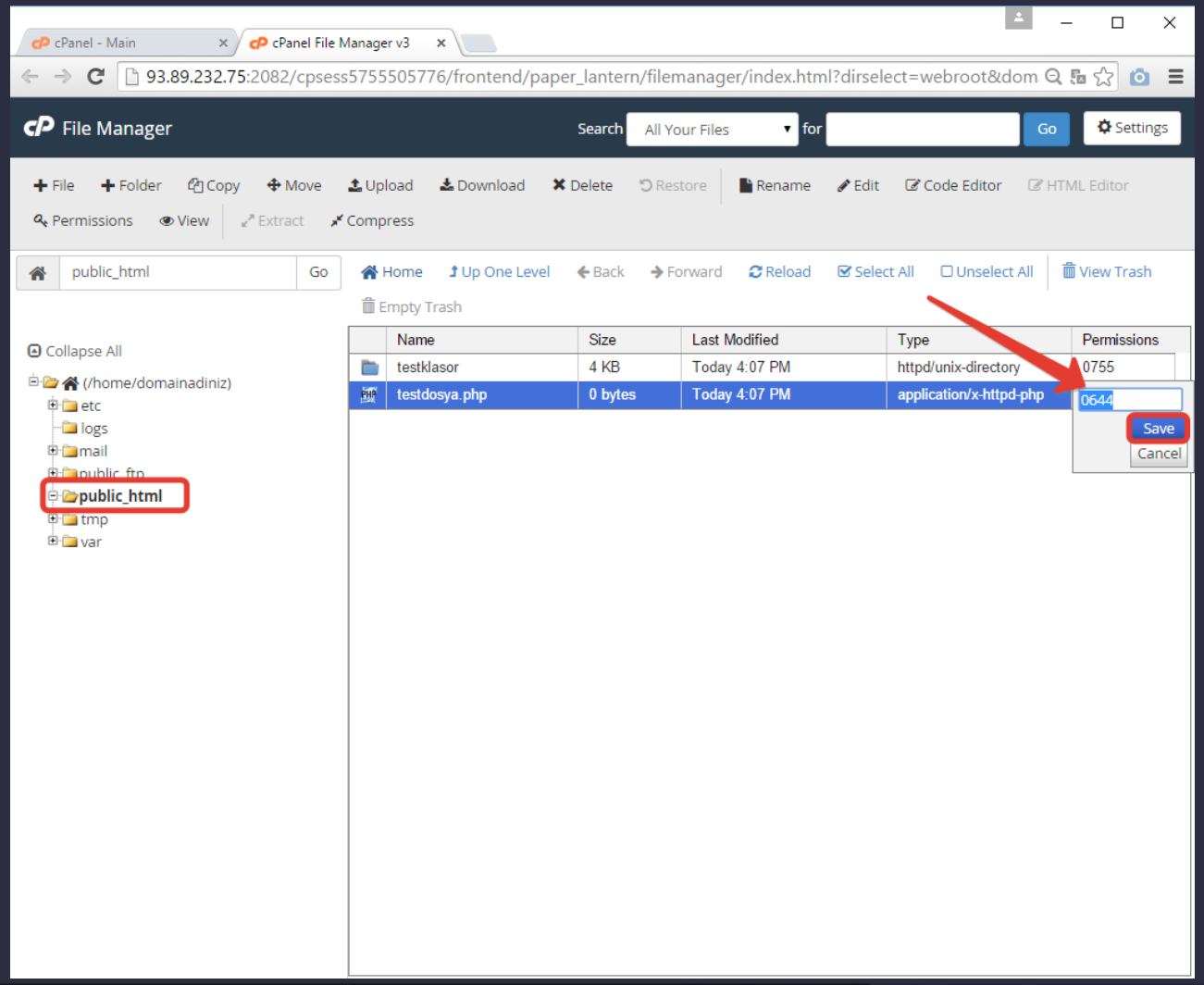
Isimtescil Step 5 — cPanel Home → File Manager



Do this

- In cPanel, open the Files section.
- Click File Manager.
- This is the simplest way to upload a few files (HTML/CSS/PHP).

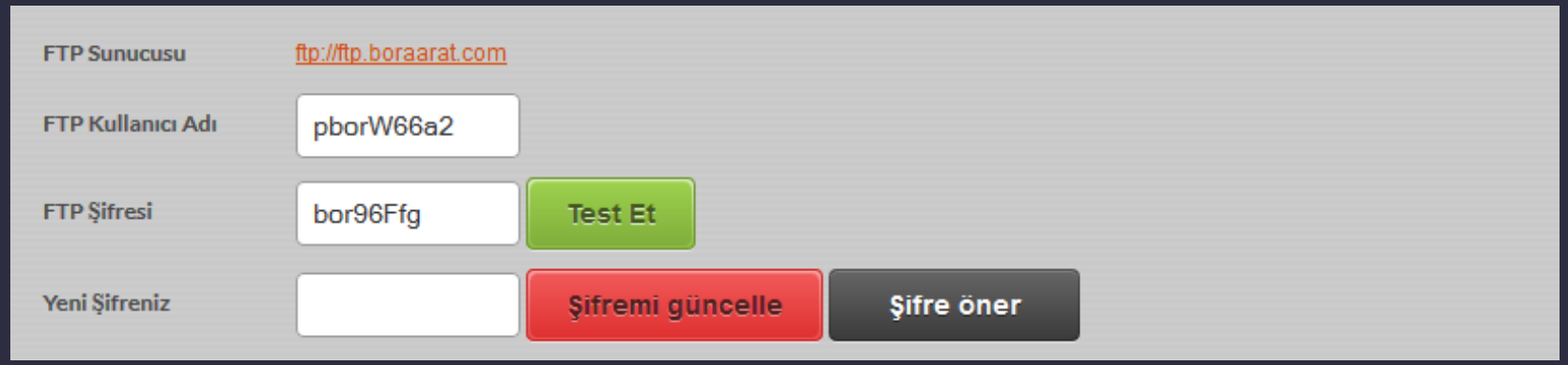
Isimtescil Step 6 — Upload to public_html (your website root)



Important

- Open public_html/ (this is your site root).
- Use Upload to send files from your computer.
- Make sure your homepage is named index.html or index.php.

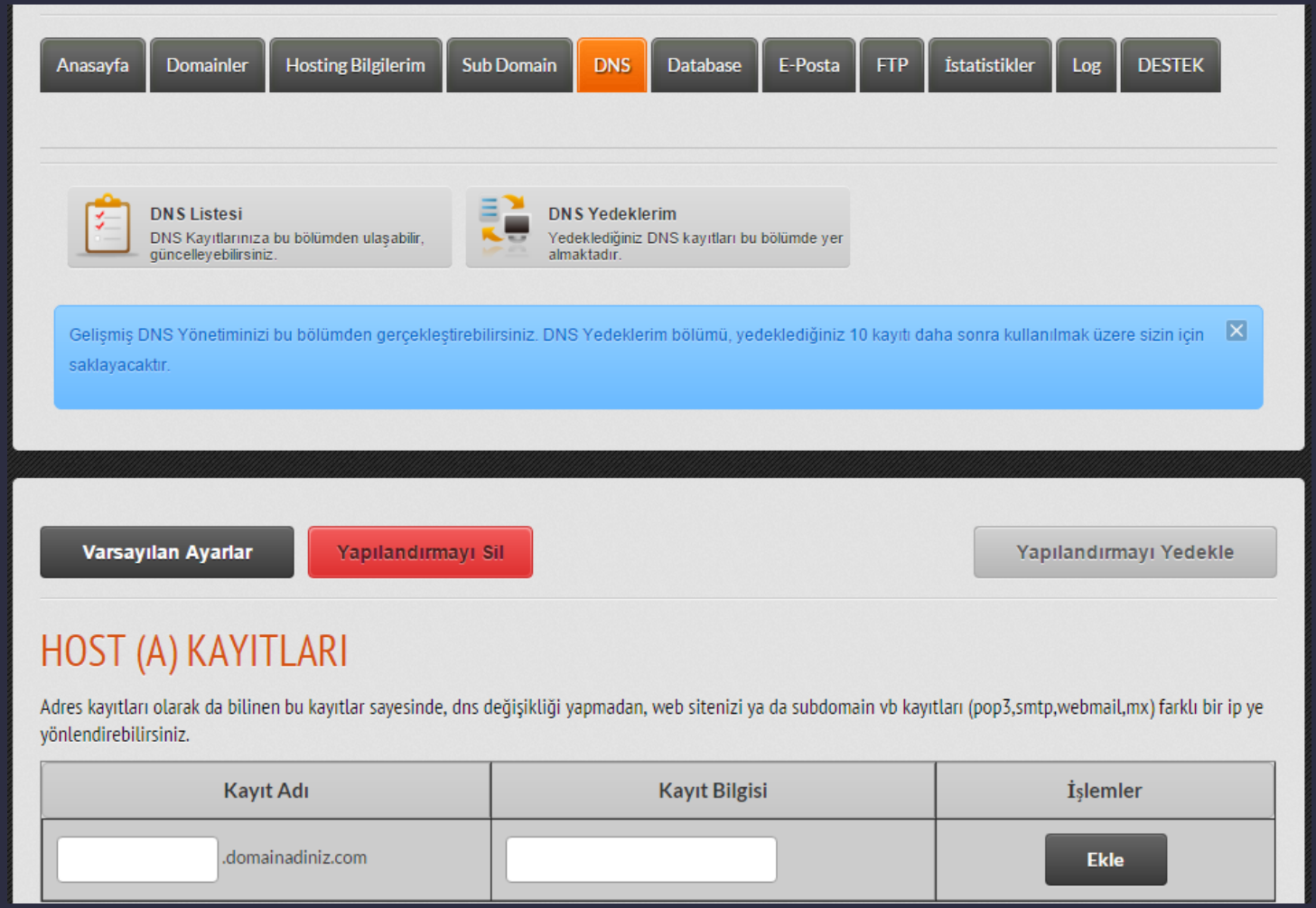
Isimtescil Step 7 — Get FTP credentials (optional upload method)



FTP

- FTP is useful for uploading many files.
- Use the FTP Server, FTP Username and FTP Password in FileZilla.
- Remote folder is usually /public_html/.

Isimtescil Step 8 — Hybrid Panel → DNS



DNS

- Use DNS management when you need to point your domain to your hosting.
- Typical records: A record (root) and CNAME for www.
- Changes can take time to propagate (up to 48 hours).

Isimtescil Step 9 — View/edit existing DNS records

HOST (A) KAYITLARI

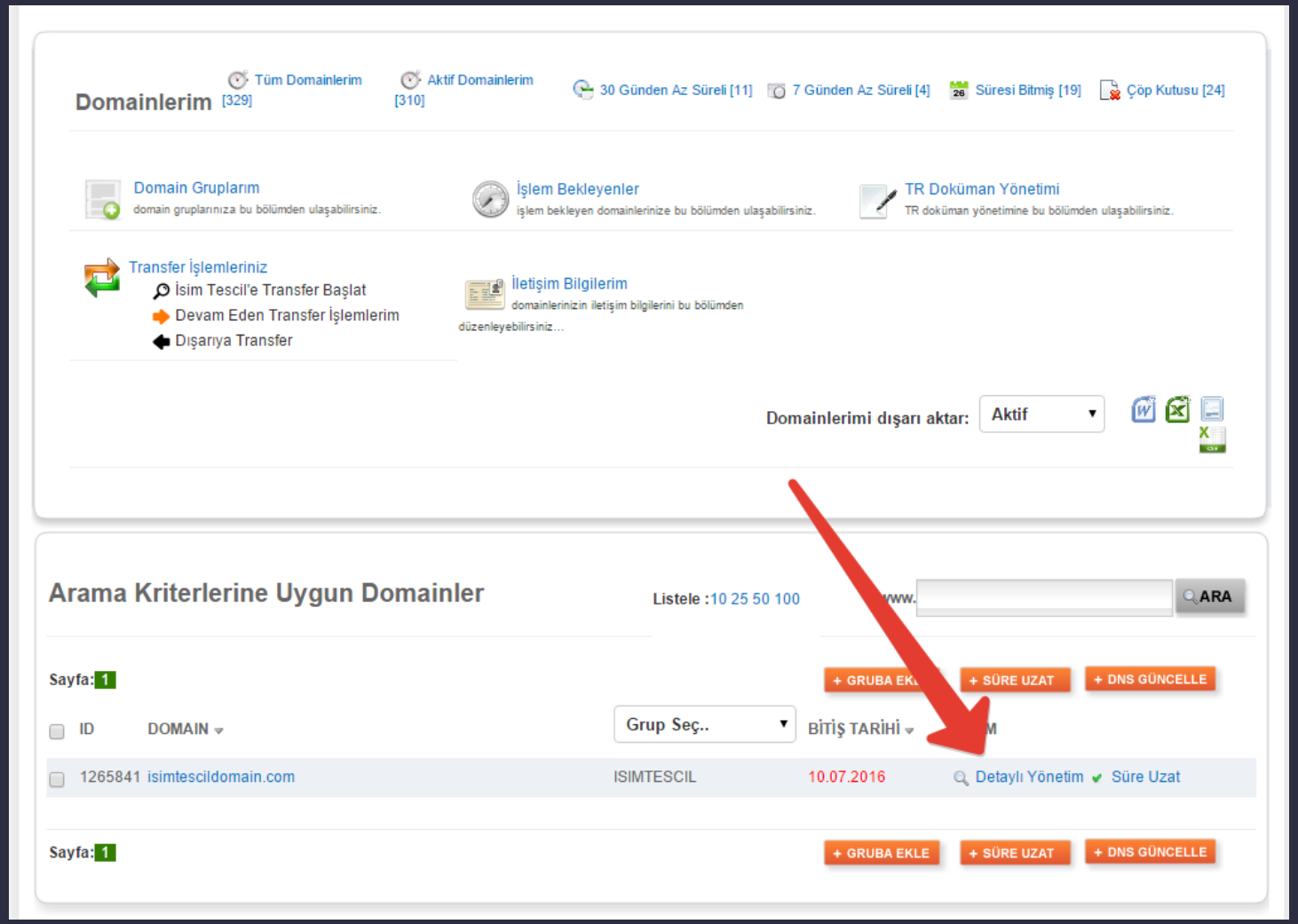
Adres kayıtları olarak da bilinen bu kayıtlar sayesinde, dns değişikliği yapmadan, web sitenizi ya da subdomain vb kayıtları (pop3,smtp,webmail,mx) farklı bir ip ye yönlendirebilirsiniz.

Kayıt Adı	Kayıt Bilgisi	İşlemler
domainadiniz.com	93.89.224.200	Güncelle Sil
*.domainadiniz.com	93.89.224.200	Güncelle Sil
ftp.domainadiniz.com	93.89.225.200	Güncelle Sil
mail.domainadiniz.com	93.89.226.88	Güncelle Sil
mobil.domainadiniz.com	93.89.226.89	Güncelle Sil

DNS tips

- Check if @ (root) points to your hosting IP.
- Check if www points to @ (root) or to the correct host.
- Avoid deleting mail records (MX) if you use email on the domain.

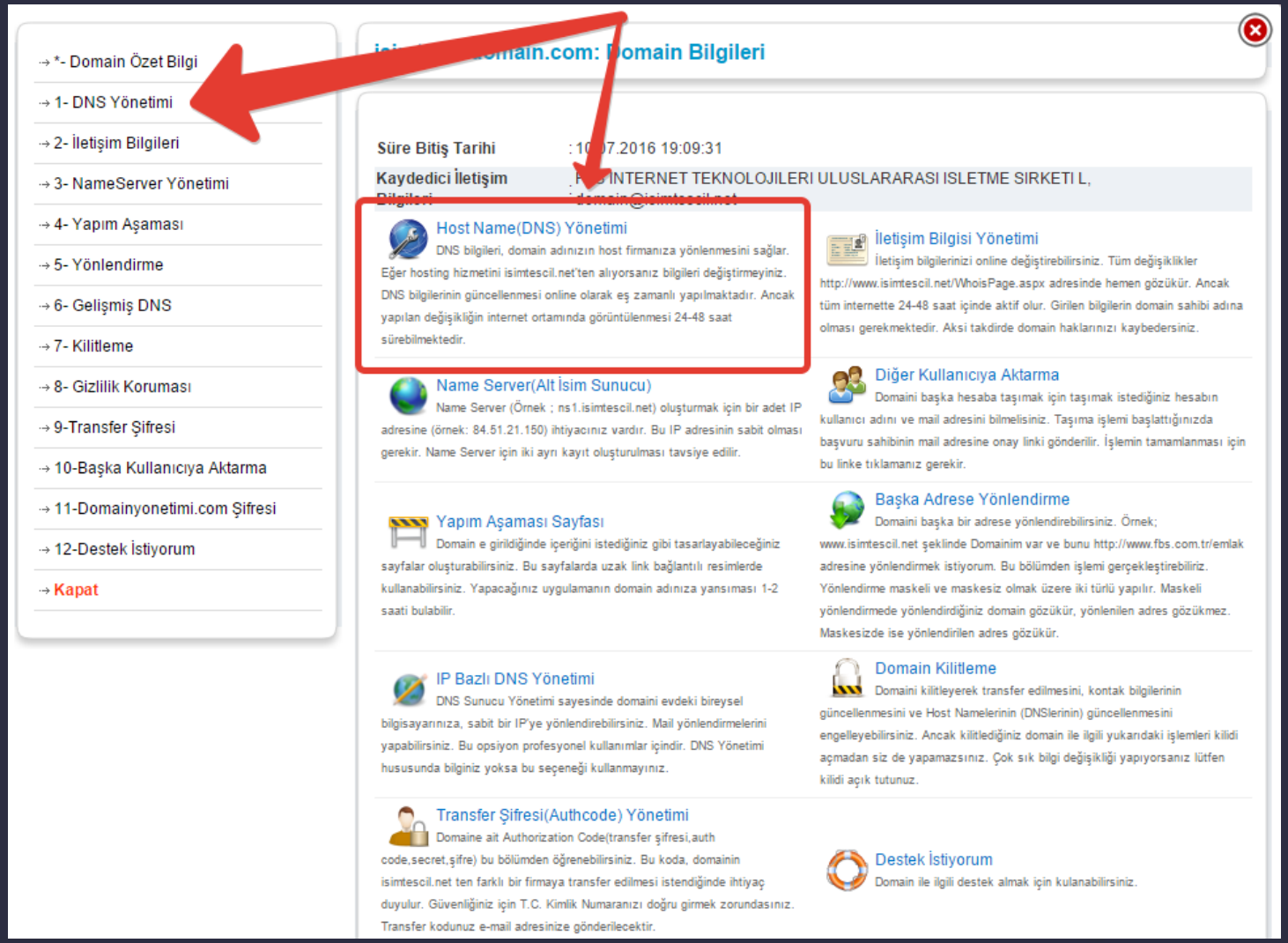
Isimtescil Step 10 — Domain panel → Detailed Management



Do this

- Go to Domains list.
- Click Detailed Management for the domain you want to change.
- This opens the domain settings menu (DNS, nameservers, contact info…).

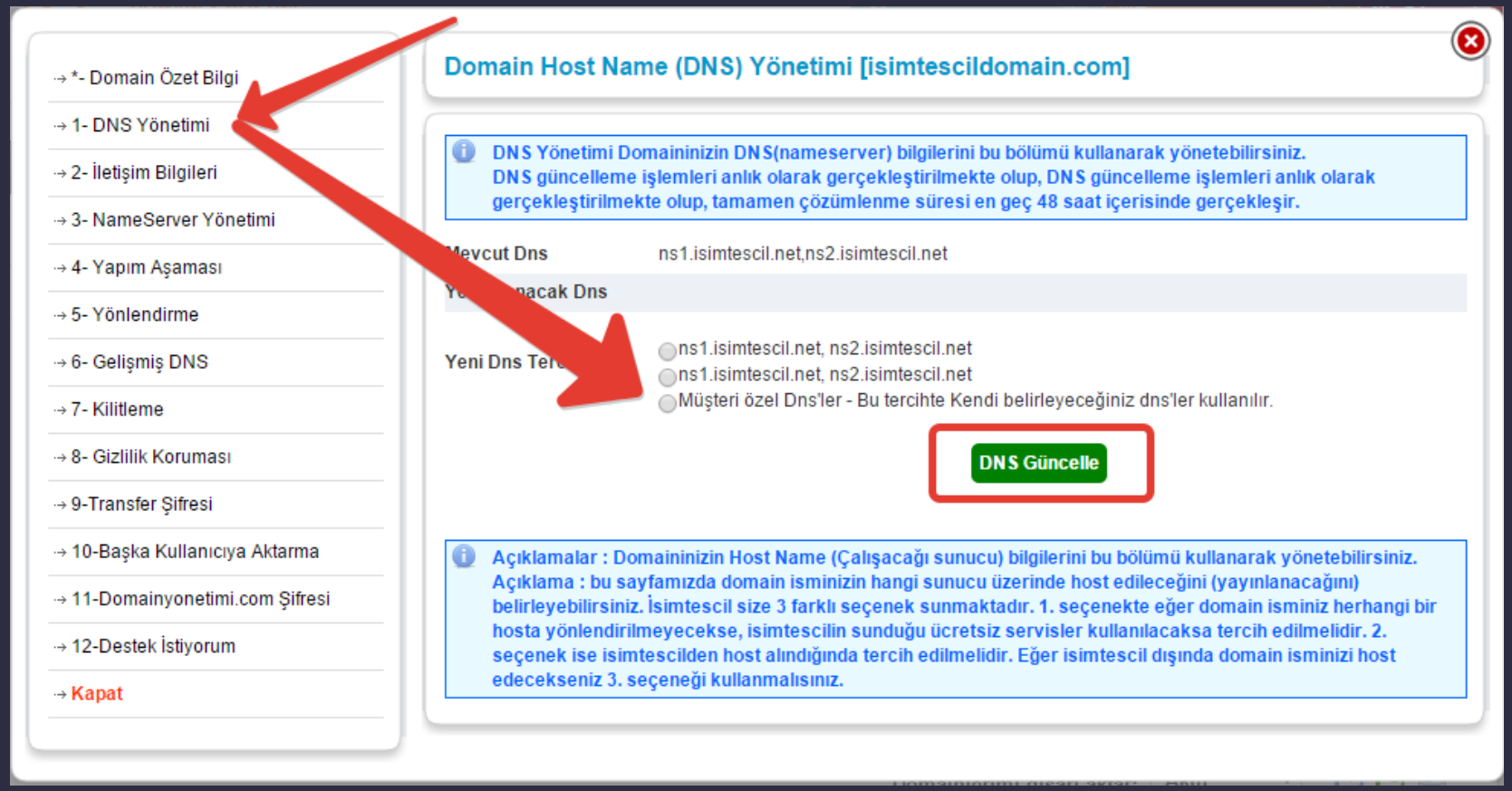
Isimtescil Step 11 — Host Name (DNS) Management



Do this

- Choose Host Name (DNS) Management.
- This is where you point your domain to the correct DNS/nameserver setup.

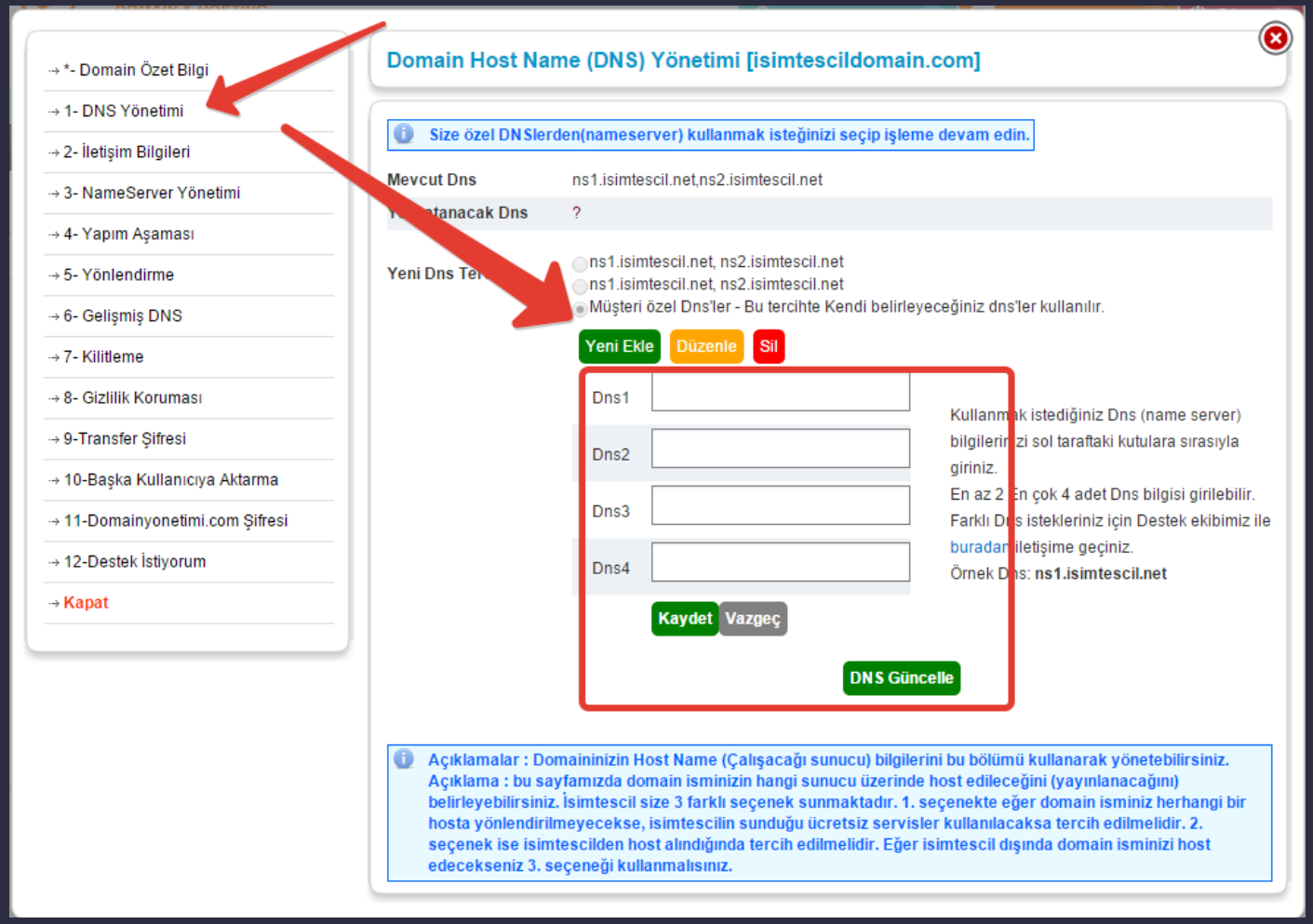
Isimtescil Step 12 — Select the nameserver option



Nameservers

- Option 1: Use Isimtescil nameservers (if hosting is on Isimtescil).
- Option 3: Use custom nameservers (if hosting is elsewhere).
- Click DNS Güncelle (Update DNS) to apply.

Isimtescil Step 13 — Enter custom nameservers



Custom NS

- Fill in NS1 / NS2 (and NS3/NS4 if your host provides them).
- Click Kaydet (Save), then DNS Güncelle (Update DNS).
- Wait for propagation before testing the website.

Isimtescil Step 14 — Upload HTML/CSS/JS/PHP (recommended structure)

Example website folder structure (upload to public_html)

```
public_html/
├─ index.html            # home page (static)
├─ index.php             # home page (dynamic) – optional
├─ css/
│  └─ style.css
├─ js/
│  └─ main.js
├─ images/
│  ├─ logo.png
│  └─ hero.jpg
└─ .htaccess             # optional (redirects, caching, PHP settings)
```

- Put your landing page in the ROOT: index.html OR index.php (one of them).
- Linux hosting is case-sensitive: /Images ≠ /images.
- If you upload a ZIP: Upload → Select ZIP → Extract in File Manager.

Checklist

- Upload everything inside /public_html/.
- Keep file paths consistent (Linux is case-sensitive).
- For PHP: upload .php files the same way as .html.
- If you use a database later: create a MySQL DB + user in cPanel.

FTP / SFTP quick settings (for FileZilla)

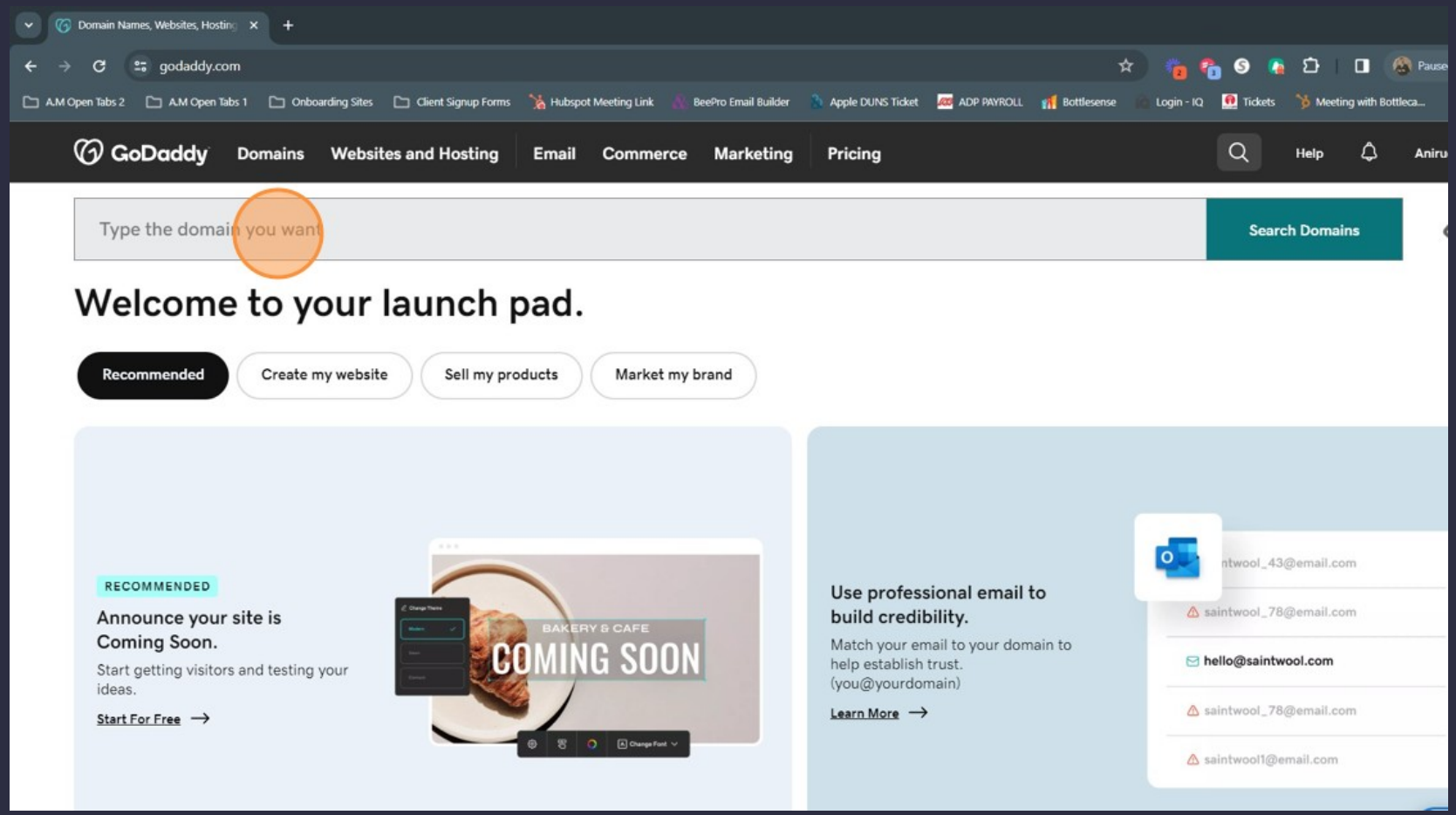
Host	`ftp.yourdomain.com` or `your-server-IP`
Username	`cpanelUser` or `ftpuser@yourdomain.com`
Password	`••••••••••` (same as cPanel password unless you create a new
Port	`21 (FTP)` | `22 (SFTP/SSH)`
Remote folder	`/public_html/` (this is your website root)

- Tip: If you have only a few files, using cPanel File Manager is usually faster.
- Tip: Upload a ZIP for many files → extract it on the server to save time.

When to use FTP

- Use this if you upload many files or want a faster workflow.
- Prefer SFTP (port 22) if your hosting supports it.
- Always upload to /public_html/ for the main website.

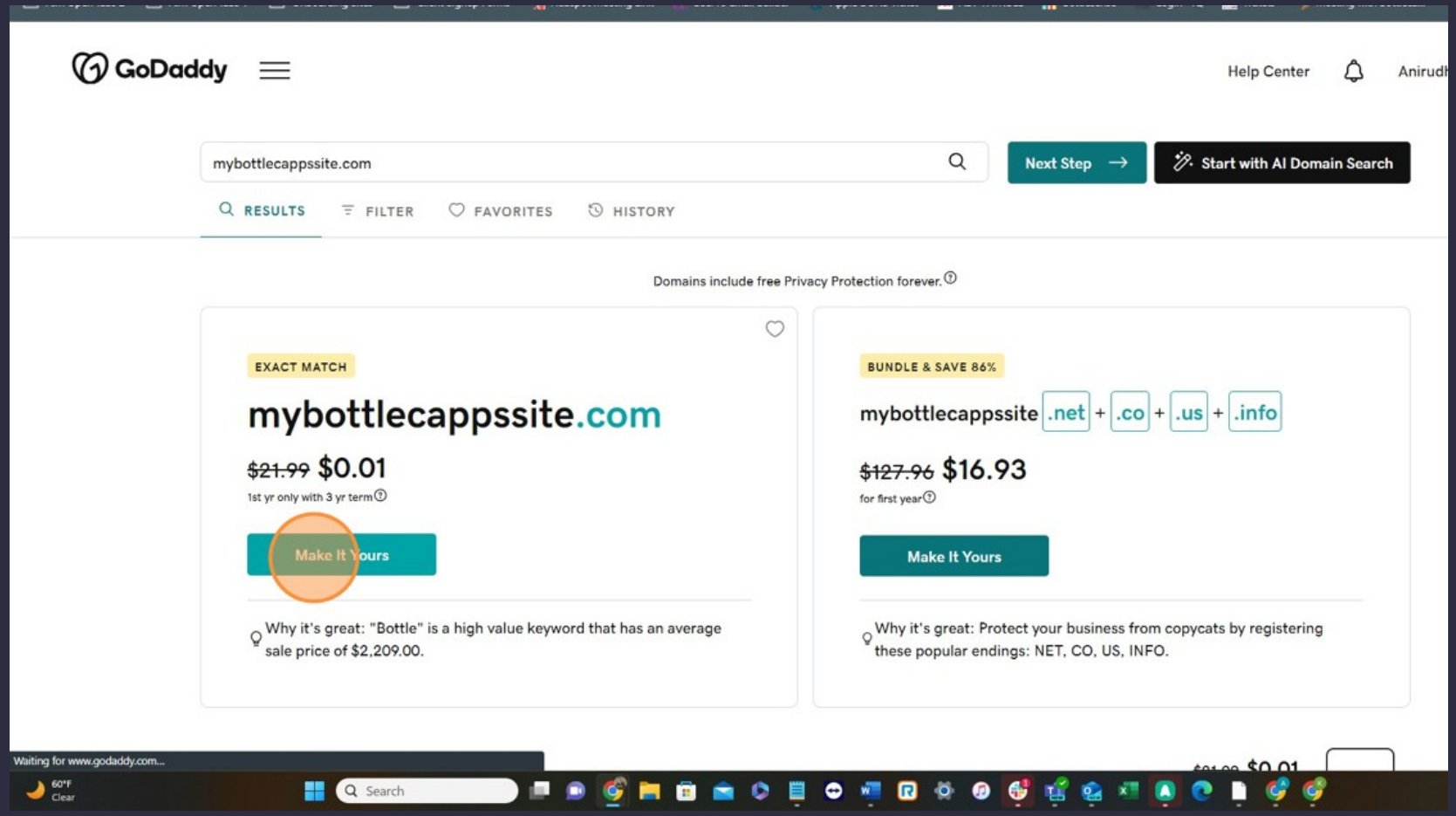
GoDaddy Step 1 — Search for a domain



Do this

- Go to GoDaddy and use the search bar to check domain availability.
- Pick a short, brandable name (prefer .com if possible).

GoDaddy Step 2 — Select your domain and add to cart

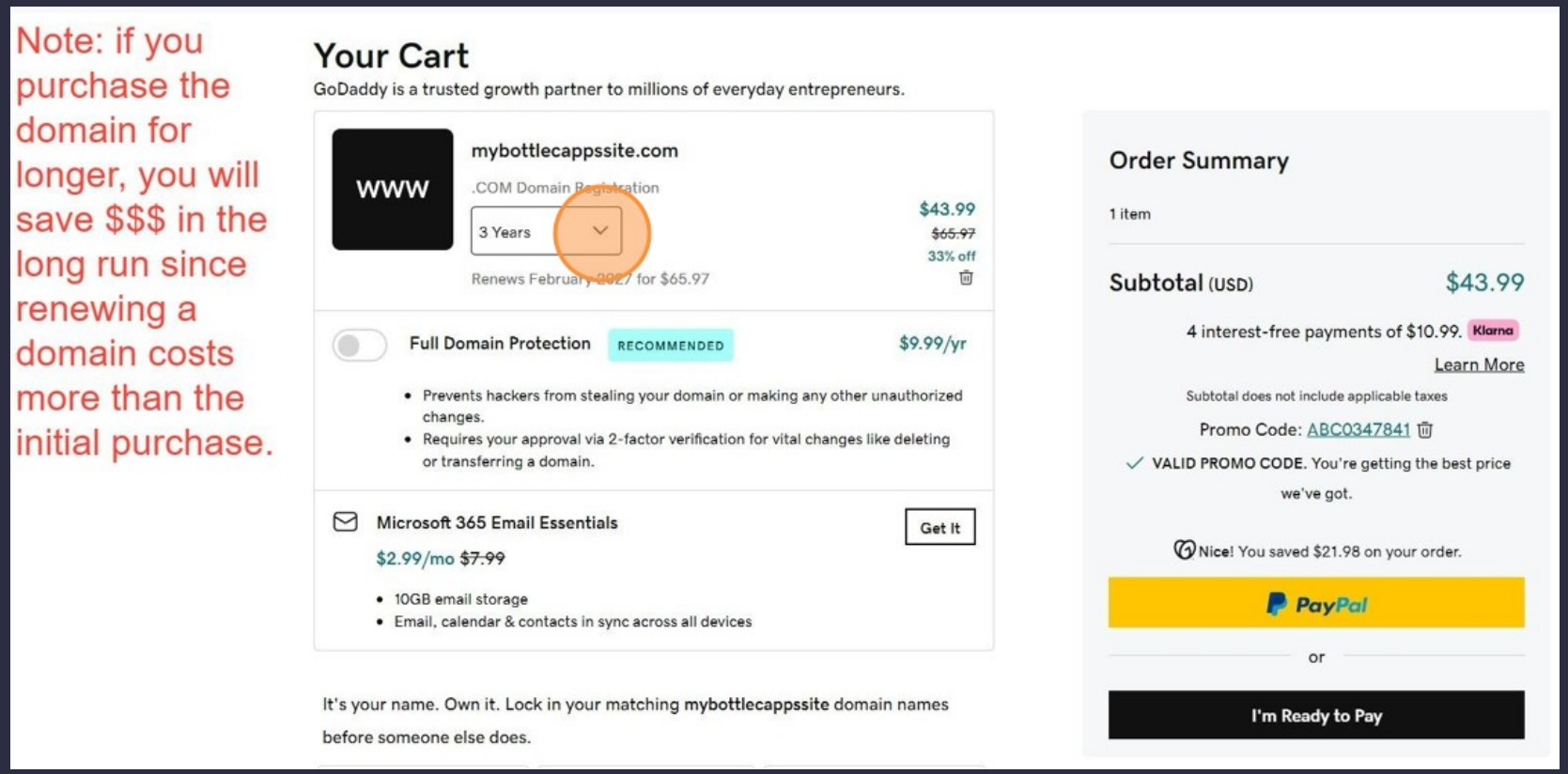


Do this

- Click Make it yours (or similar button) to add the domain.
- Review optional add-ons (privacy, email) — choose what you need.

GoDaddy Step 3 — Checkout (cart)

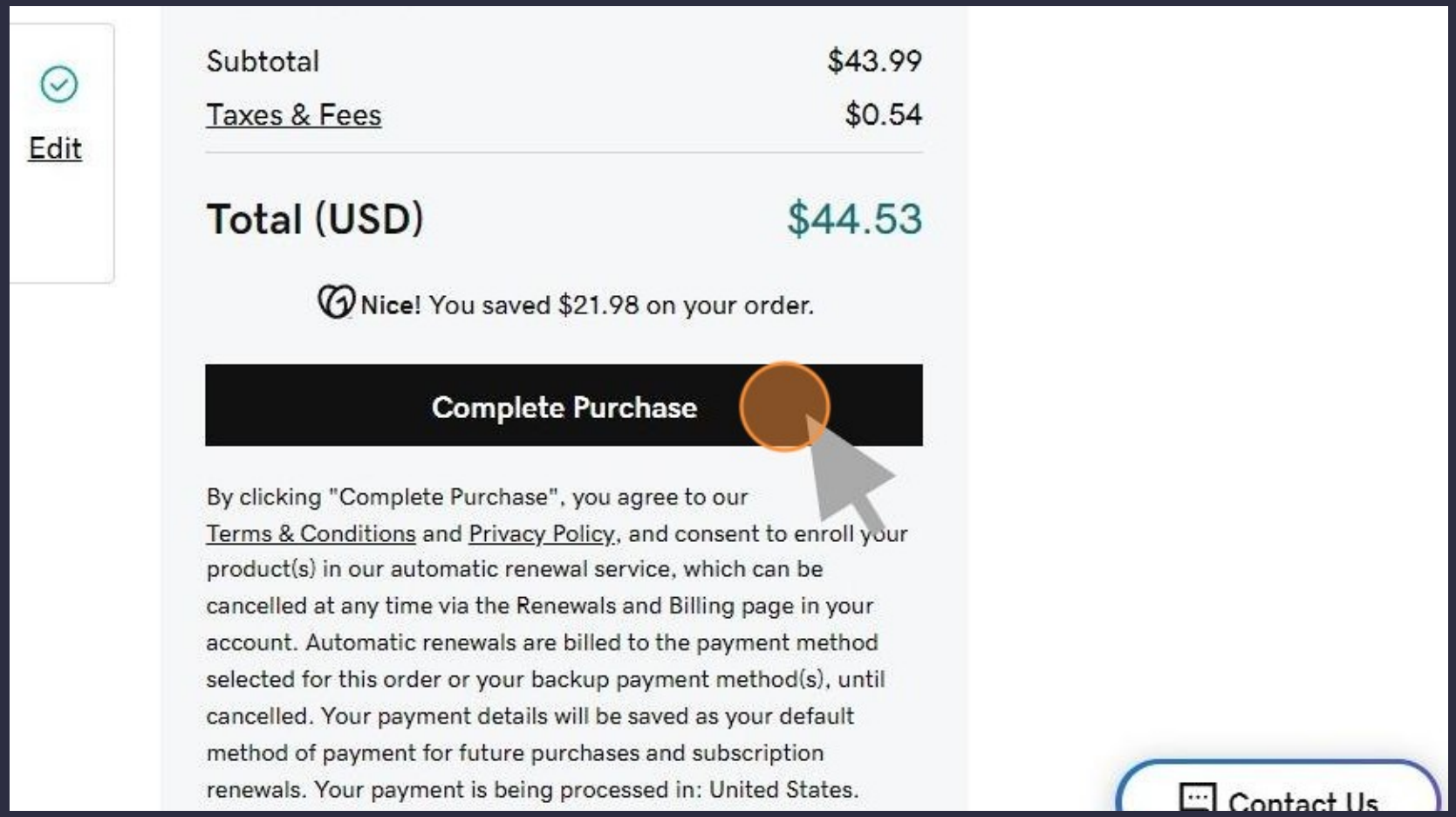
Note: if you purchase the domain for longer, you will save $$$ in the long run since renewing a domain costs more than the initial purchase.



Do this

- Review the domain term (1 year, 2 years, etc.).
- Confirm price and add-ons.
- Continue to payment.

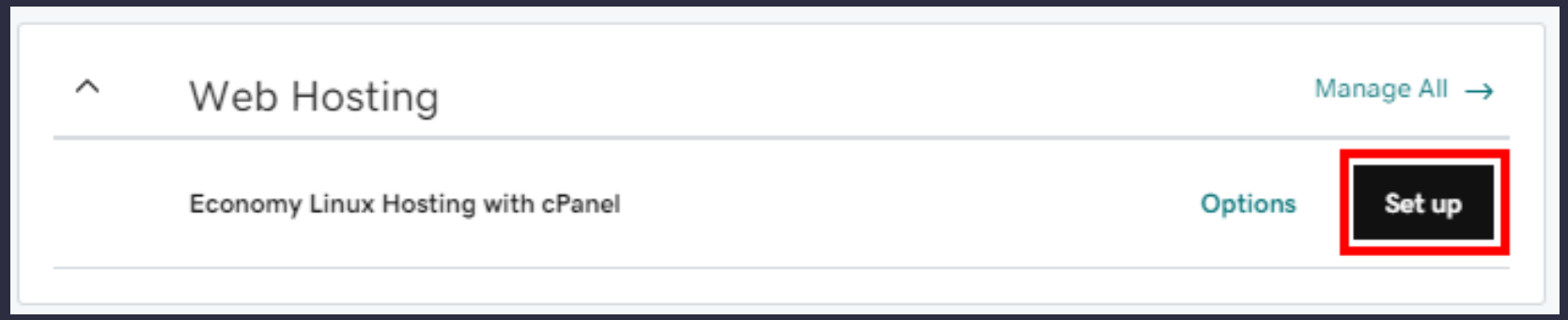
GoDaddy Step 4 — Complete your purchase



Result

- Click Complete Purchase to finalize.
- After purchase: domain appears under My Products → Domains.

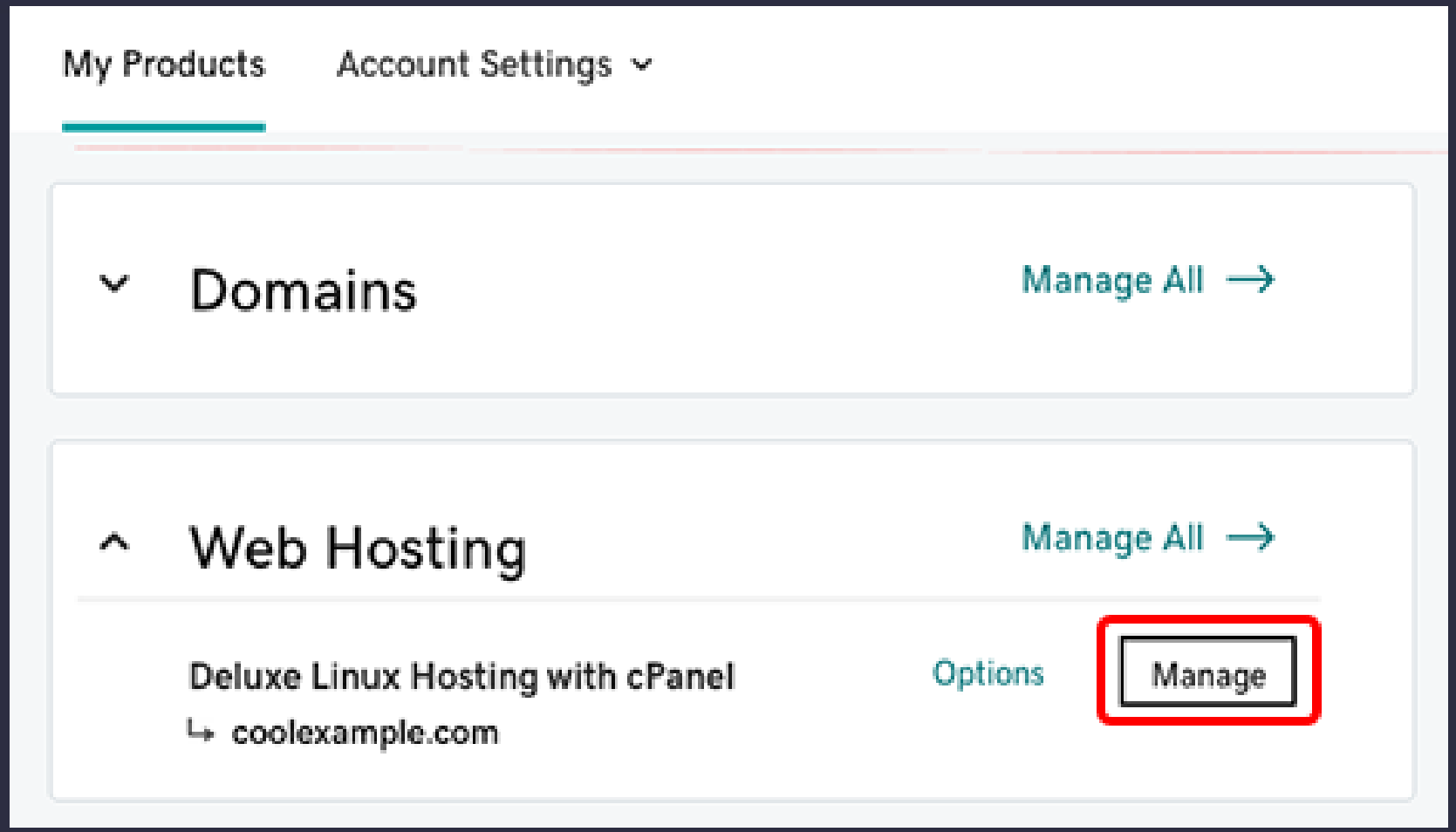
GoDaddy Step 5 — Set up Web Hosting (cPanel)



Hosting

- Buy a Web Hosting (cPanel) plan (Linux hosting).
- Click Set up to provision the hosting account.
- Assign a domain during setup if prompted.

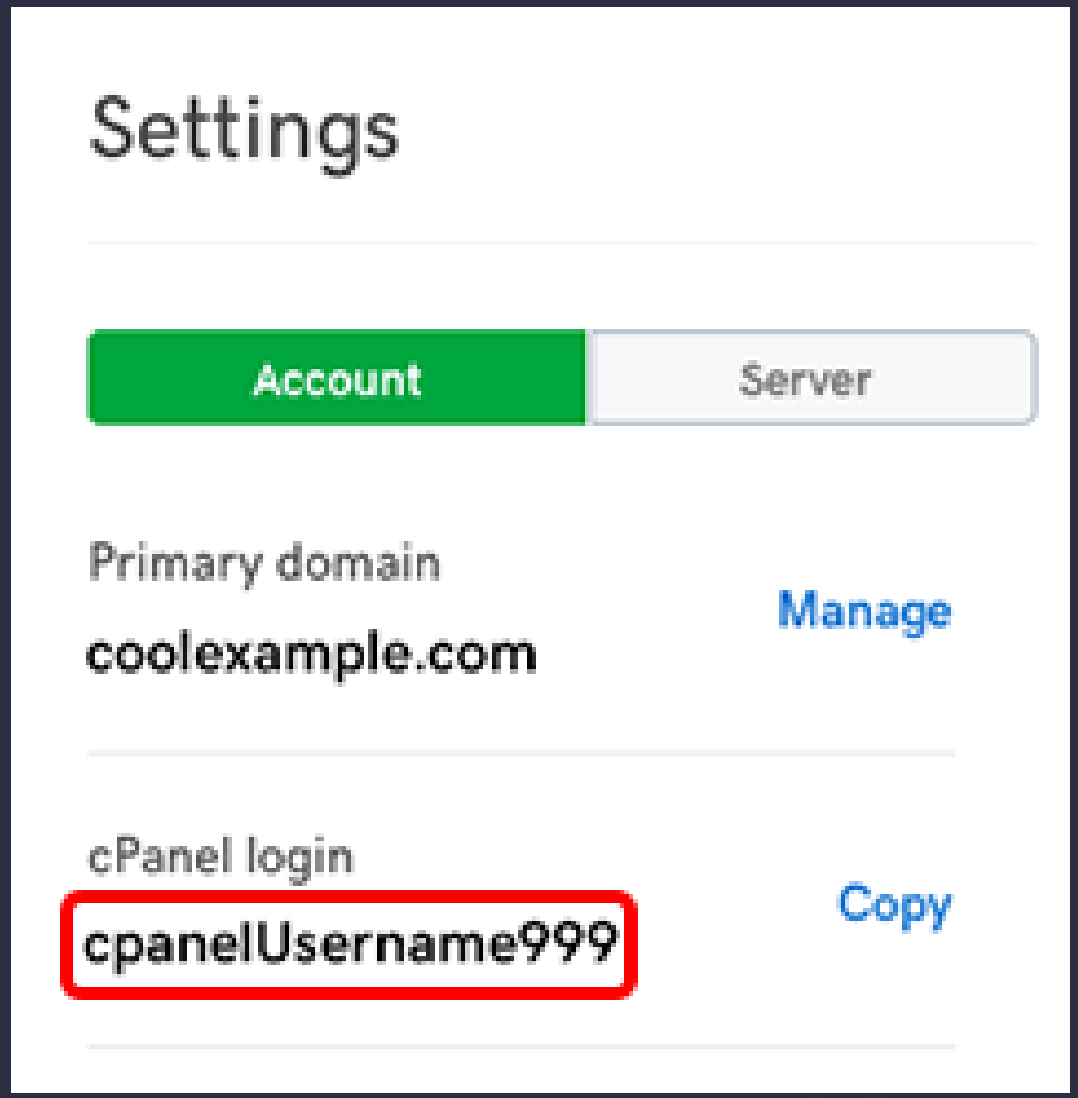
GoDaddy Step 6 — My Products → Web Hosting → Manage



Do this

- Open My Products.
- Under Web Hosting, click Manage for the hosting plan.
- This opens the hosting Dashboard (settings, tools, file manager).

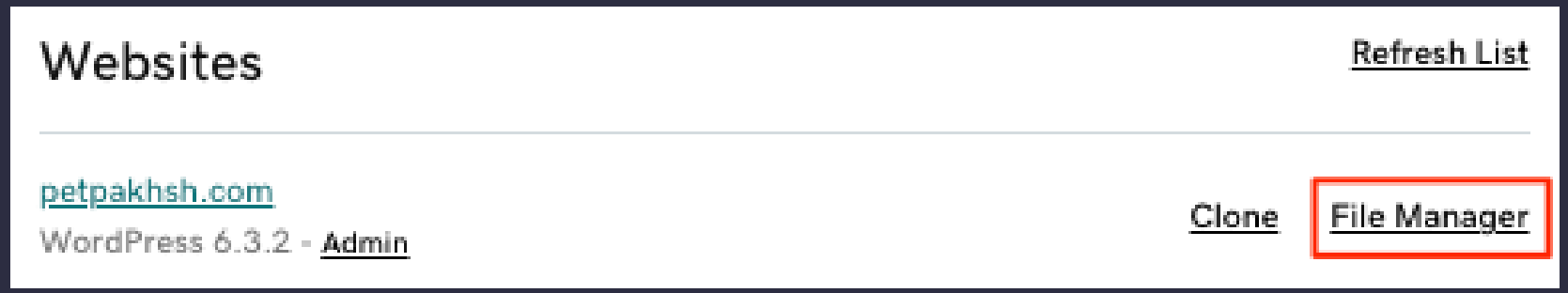
GoDaddy Step 7 — Find cPanel Login (also FTP username)



Important

- In the hosting Dashboard, open Settings.
- Copy cPanel login — it's your primary FTP username too.
- To reset the password: use the Change password option in Dashboard.

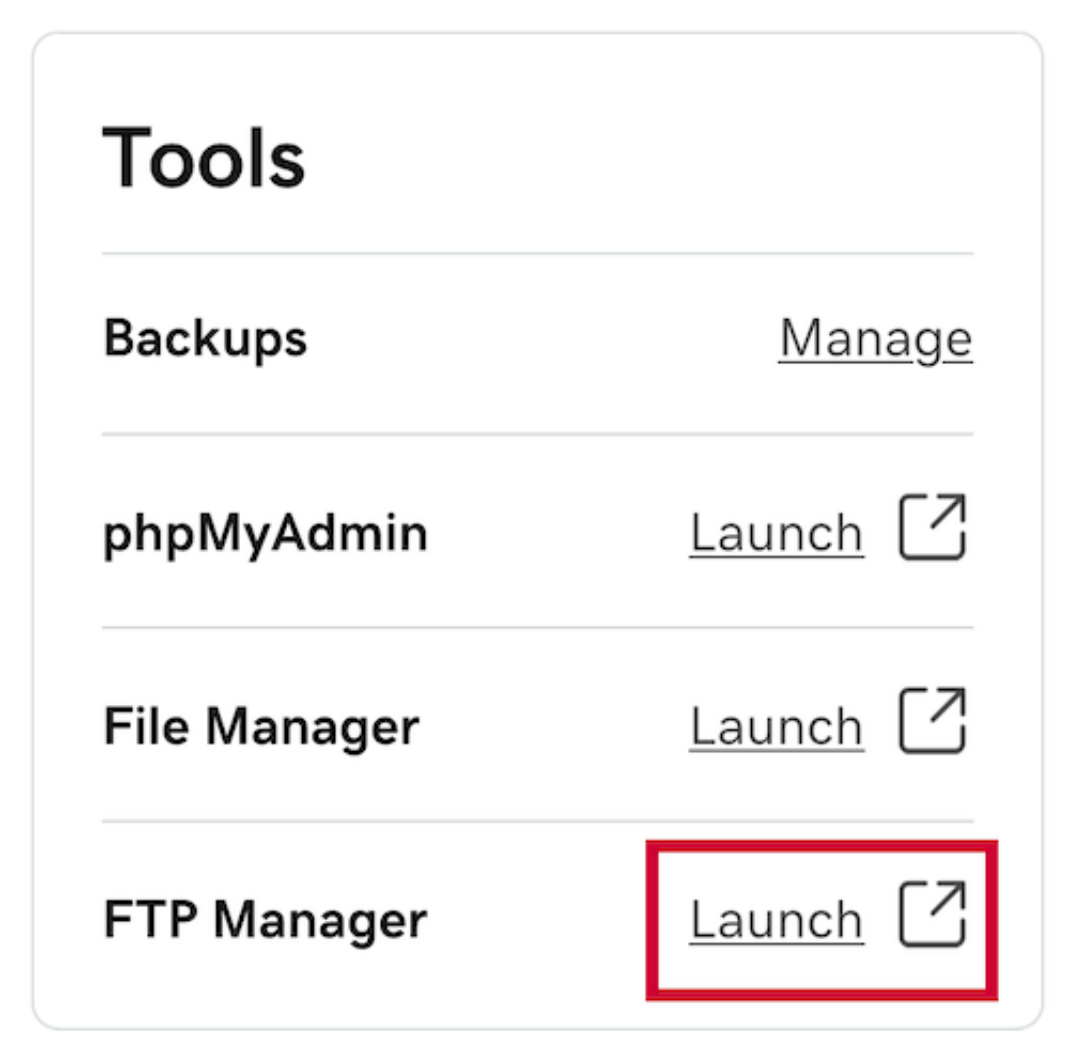
GoDaddy Step 8 — Open File Manager



Upload

- In Dashboard → Websites, click File Manager for your domain.
- Upload files to the site root (usually /public_html/).
- Make sure you have an index.html or index.php.

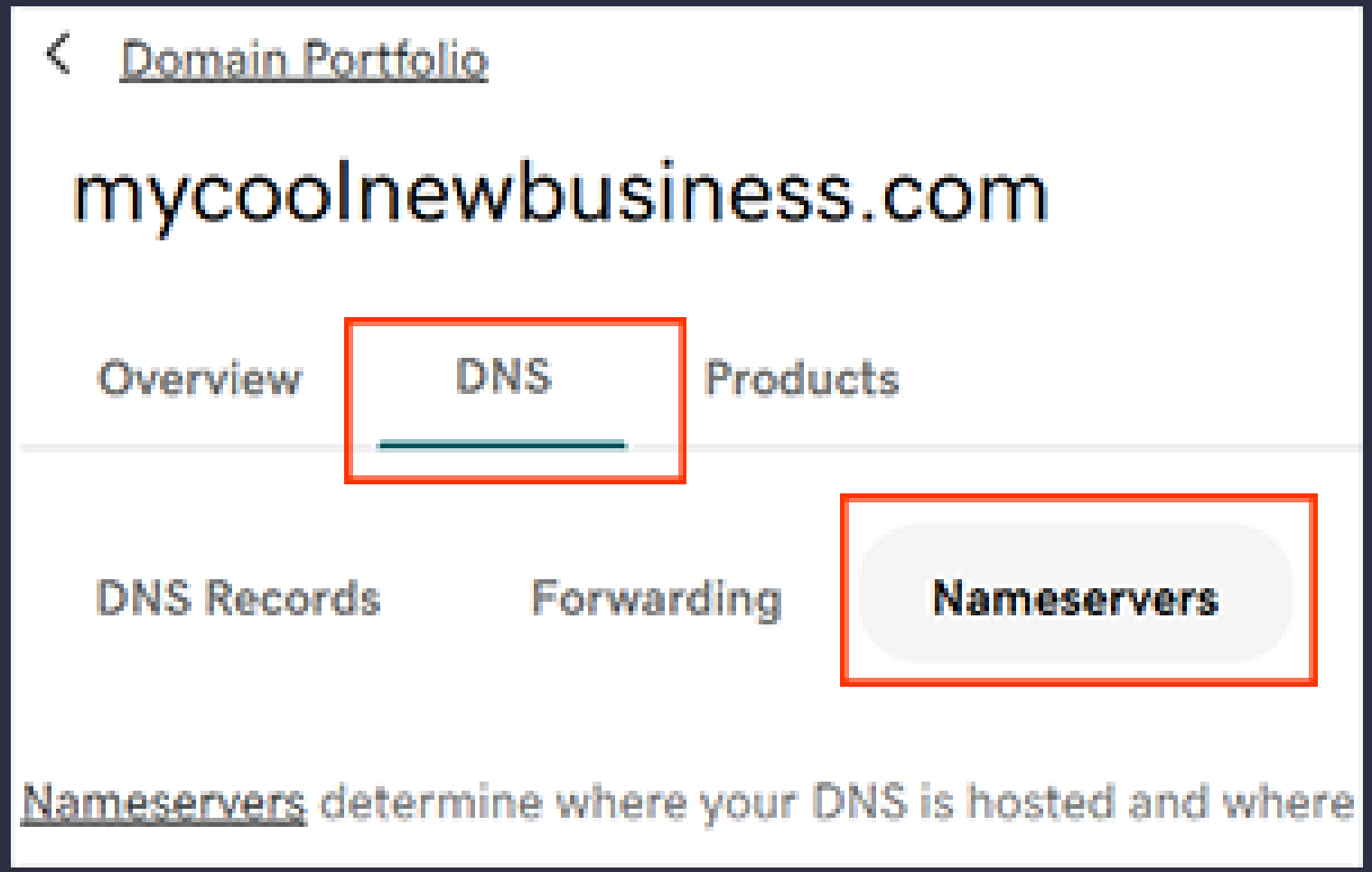
GoDaddy Step 9 — FTP Manager (create additional FTP users)



FTP

- Use FTP Manager to create extra FTP users (recommended if you share access).
- Limit each user's directory if needed (security).

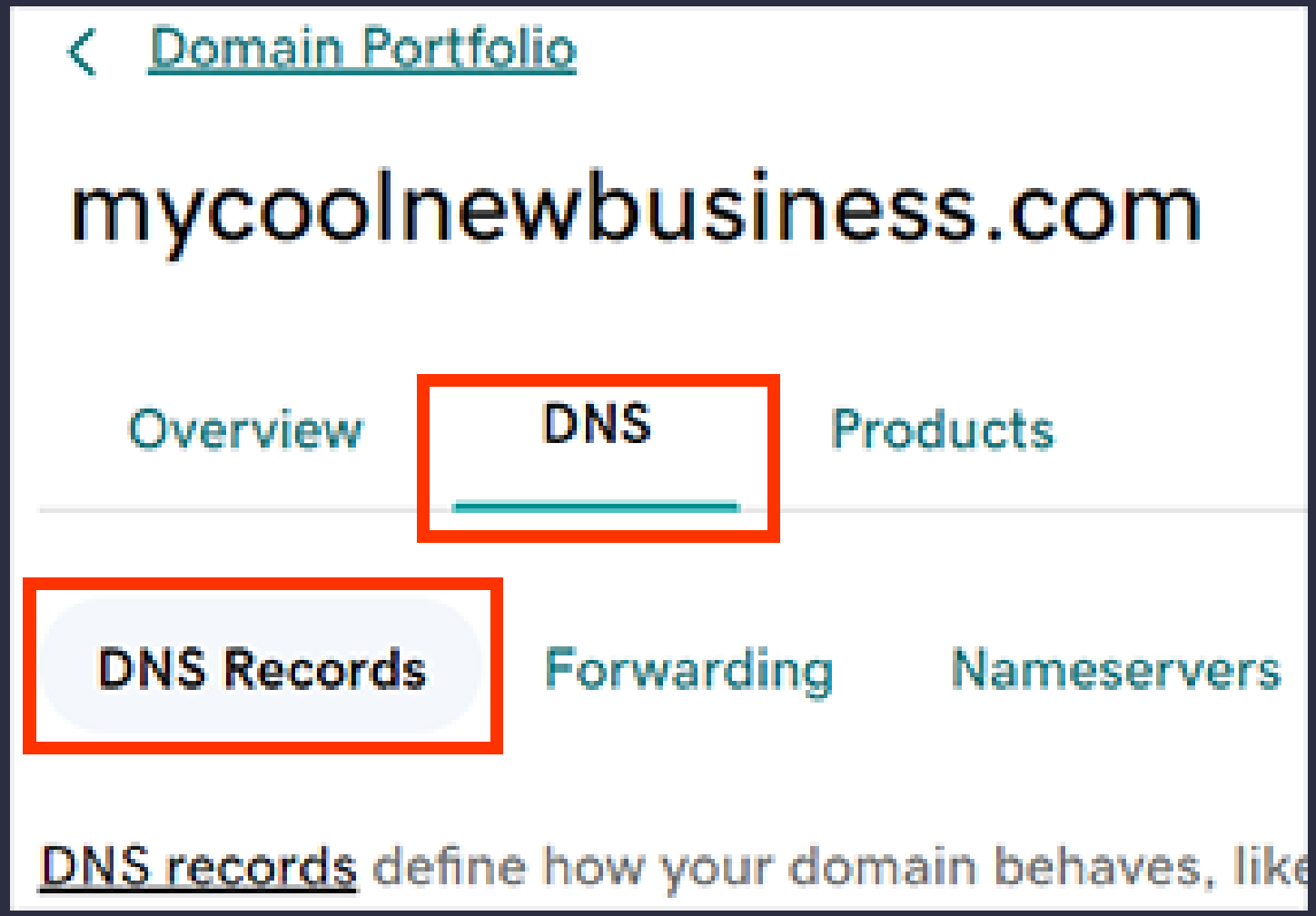
GoDaddy Step 10 — Domain Settings → DNS / Nameservers



Connect domain

- Open your domain in GoDaddy.
- Go to the DNS tab.
- Use Nameservers if you want to delegate DNS to your hosting provider.

GoDaddy Step 11 — DNS Records tab



DNS records

- Use DNS Records to edit A records and CNAME records.
- Typical setup:
- A record for @ → hosting IP
- CNAME for www → @

Go live checklist (both providers)

Before you announce your website:

- Domain points to the correct hosting (Nameservers or A record).
- Files are in the correct folder (usually /public_html/).
- Homepage exists: index.html or index.php.
- HTTPS/SSL is enabled (AutoSSL / Let’s Encrypt) and your site loads with https://.
- No broken paths (check /css/style.css, /images/…) and case matches exactly.

AI Tools: Build a CV Site

- Prompting, iteration, and checking the output

Homework / Submission

- Deliverables:
- 1) A working CV site (HTML + CSS)
- 2) Runs locally in WAMP (http://localhost/...)
- 3) Optionally buy a domain and hosting service, publish your website