

Linux & Web Fundamentals

Learn the terminal, safe file handling, permissions, DNS, and the basics of web connections.

WHAT YOU WILL LEARN

- Navigate the Linux filesystem safely
- Recognize basic Linux file permissions
- Explain how DNS and HTTP help a browser open a website

4 lessons | 50-75 minutes | Free | Beginner

Course links and printable PDF: <https://blackcloudsecurity.org/learn/>

Important: conduct security tests only on your own systems or systems where you have explicit authorization. Use official training labs for guided practice.

LESSON 1 OF 4

Explore Linux without risk

The terminal lets you interact with your own operating system. Start by working in your home directory rather than changing system files.

STEP-BY-STEP PRACTICE

1. Open a terminal on your own Linux machine or Kali VM.
2. Run `pwd` to show your current directory and `ls` to list its contents.
3. Run `mkdir -p ~/bcs-practice` and then `cd ~/bcs-practice` to create and enter a safe practice folder.
4. Run `printf "Hello, security learner!\n" > notes.txt`, then `cat notes.txt` to view the file.

COMMANDS TO TRY

```
pwd
ls
mkdir -p ~/bcs-practice
cd ~/bcs-practice
printf "Hello, security learner!\n" > notes.txt
cat notes.txt
```

KEY TAKEAWAY

Practice inside `~/bcs-practice`. Avoid copying commands that delete or overwrite files you do not understand.

CHECK YOUR KNOWLEDGE

What command prints your current working directory?

Answer: `pwd` (print working directory).

Your notes: _____

LESSON 2 OF 4

Understand ownership and permissions

Linux separates users and groups and controls access using file permissions. Common letters are r (read), w (write), and x (execute).

STEP-BY-STEP PRACTICE

1. In your practice folder, run `ls -l notes.txt` to see the current permission string.
2. Run `chmod 600 notes.txt` to allow the file owner to read and write while removing permissions for group and others.
3. Run `ls -l notes.txt` again and compare the permission string.
4. Write down why sensitive files should not be world-readable.

COMMANDS TO TRY

```
cd ~/bcs-practice
ls -l notes.txt
chmod 600 notes.txt
ls -l notes.txt
```

KEY TAKEAWAY

Only change permissions on files you own; do not use `sudo` for this practice.

CHECK YOUR KNOWLEDGE

What does `chmod 600` generally permit?

Answer: Read and write access for the owner, with no permission for group or others.

Your notes: _____

LESSON 3 OF 4

Learn how a domain resolves

DNS translates domain names into records browsers and other tools can use. A and AAAA records point to IP addresses; CNAME records alias hostnames.

STEP-BY-STEP PRACTICE

1. Write down a domain you control or use example.com for demonstration.
2. Run `nslookup example.com` in a terminal, if installed.
3. Identify at least one returned IP address and explain that DNS resolution is different from website hosting.
4. For your own Cloudflare-hosted domain, compare what Cloudflare DNS lists with what you expected to configure.

COMMANDS TO TRY

```
nslookup example.com
```

KEY TAKEAWAY

Changing nameservers changes who answers DNS. The DNS records must then exist at that provider.

CHECK YOUR KNOWLEDGE

Which DNS record type generally maps a hostname to an IPv4 address?

Answer: An A record.

Your notes: _____

Read website headers and status codes

HTTP runs on top of the network path. An HTTPS connection adds transport encryption; website security also depends on application code and configuration.

STEP-BY-STEP PRACTICE

1. In a terminal, run `curl -I https://example.com` to request response headers without the page body.
2. Identify the HTTP status line and one response header.
3. Read about request methods in MDN and compare GET with POST.
4. In your notes, explain why HTTPS alone does not mean a website is free of vulnerabilities.

COMMANDS TO TRY

```
curl -I https://example.com
```

KEY TAKEAWAY

Headers and status codes help debugging, but they cannot prove a site is safe by themselves.

CHECK YOUR KNOWLEDGE

Does the padlock/HTTPS symbol prove a site is trustworthy?

Answer: No. It shows an encrypted connection, not the honesty or security of the organization behind the site.

Your notes: _____

PRACTICE CHECKLIST

- [] Lesson 1: Explore Linux without risk
- [] Lesson 2: Understand ownership and permissions
- [] Lesson 3: Learn how a domain resolves
- [] Lesson 4: Read website headers and status codes

TRUSTED FURTHER READING

Ubuntu: documentation

<https://documentation.ubuntu.com/>

MDN: Overview of HTTP

<https://developer.mozilla.org/en-US/docs/Web/HTTP/Guides/Overview>

MDN: HTTP request methods

<https://developer.mozilla.org/en-US/docs/Web/HTTP/Reference/Methods>

Copyright © 2026 Black Cloud Security. Free for personal study and classroom sharing with credit. This material is educational and does not provide authorization to test any third-party systems.