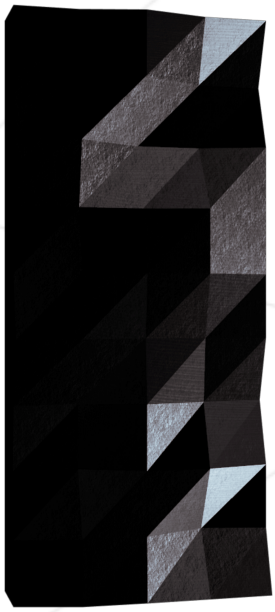


NetPractice

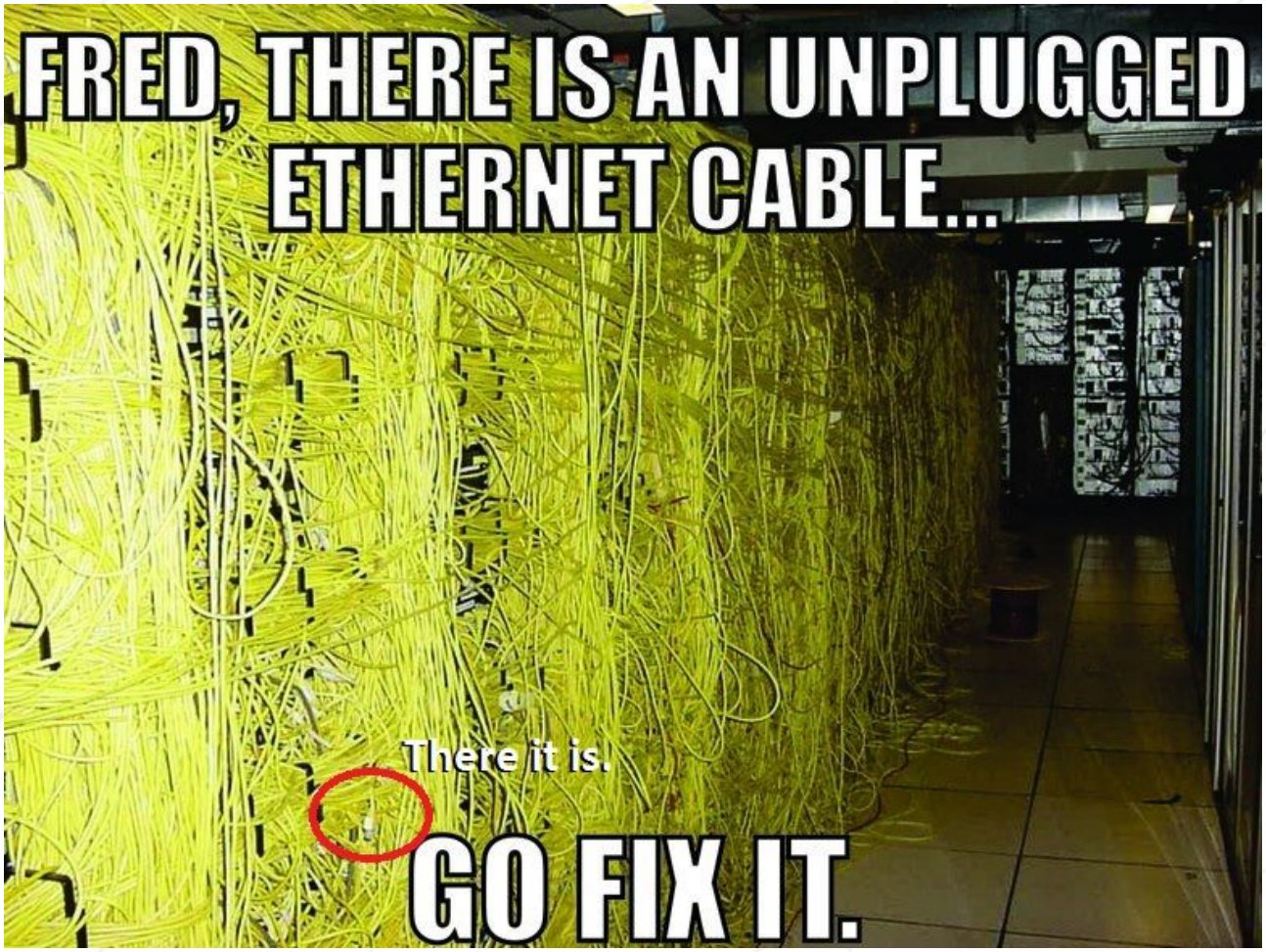
Summary: Discover the basics of networking.

Version: 6.2

Contents

Chapter I

Preamble



Chapter II

Introduction

This activity is a general practical exercise designed to introduce you to the basics of **computer networking**. You will learn how to configure **IP addresses**, connect devices through a **router**, and understand the role of a **gateway** within a network.

Chapter III

AI Instructions

Context

During your learning journey, AI can assist with many different tasks. Take the time to explore the various capabilities of AI tools and how they can support your work. However, always approach them with caution and critically assess the results. Whether it's code, documentation, ideas, or technical explanations, you can never be completely sure that your question was well-formed or that the generated content is accurate. Your peers are a valuable resource to help you avoid mistakes and blind spots.

Main message

- Use AI to reduce repetitive or tedious tasks.
- Develop prompting skills — both coding and non-coding — that will benefit your future career.
- Learn how AI systems work to better anticipate and avoid common risks, biases, and ethical issues.
- Continue building both technical and power skills by working with your peers.
- Only use AI-generated content that you fully understand and can take responsibility for.

Learner rules:

- You should take the time to explore AI tools and understand how they work, so you can use them ethically and reduce potential biases.
- You should reflect on your problem before prompting — this helps you write clearer, more detailed, and more relevant prompts using accurate vocabulary.
- You should develop the habit of systematically checking, reviewing, questioning, and testing anything generated by AI.
- You should always seek peer review — don't rely solely on your own validation.

Phase outcomes:

- Develop both general-purpose and domain-specific prompting skills.
- Boost your productivity with effective use of AI tools.
- Continue strengthening computational thinking, problem-solving, adaptability, and collaboration.

Comments and examples:

- You'll regularly encounter situations — exams, evaluations, and more — where you must demonstrate real understanding. Be prepared, keep building both your technical and interpersonal skills.
- Explaining your reasoning and debating with peers often reveals gaps in your understanding. Make peer learning a priority.
- AI tools often lack your specific context and tend to provide generic responses. Your peers, who share your environment, can offer more relevant and accurate insights.
- Where AI tends to generate the most likely answer, your peers can provide alternative perspectives and valuable nuance. Rely on them as a quality checkpoint.

✓ Good practice:

> I ask AI: "How do I test a sorting function?" It gives me a few ideas. I try them out and review the results with a peer. We refine the approach together.

✗ Bad practice:

> I ask AI to write a whole function, copy-paste it into my project. During peer-evaluation, I can't explain what it does or why. I lose credibility — and I fail my project.

✓ Good practice:

> I use AI to help design a parser. Then I walk through the logic with a peer. We catch two bugs and rewrite it together — better, cleaner, and fully understood.

✗ Bad practice:

> I let Copilot generate my code for a key part of my project. It compiles, but I can't explain how it handles pipes. During the evaluation, I fail to justify and I fail my project.

Chapter IV

General guidelines

You will configure small-scale networks. To do so, it is necessary to understand how **TCP/IP addressing** works, including concepts such as the **subnet mask** and the **default gateway**.

You must complete 10 levels (i.e., 10 exercises) and submit them to your `Git` repository.

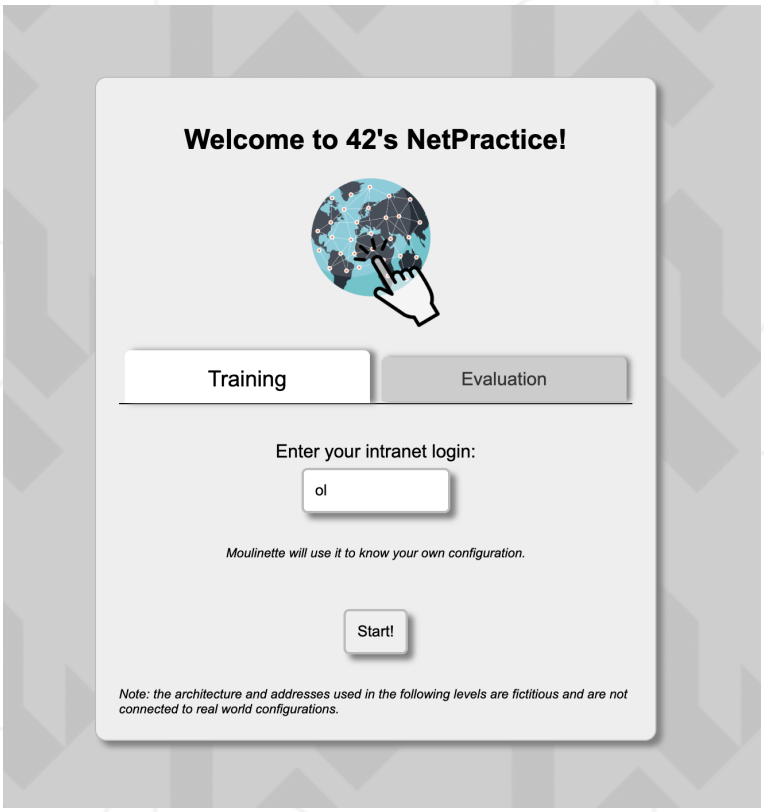
`In this activity, the networks you will work with are simulated and are not real networks. They will be available via a training interface that you will open in your web browser.`

Chapter V

Mandatory part

This project involves solving **networking problems** to make a network function properly.

- First, download the file attached to the project's page.
- Then, extract the files into any folder of your choice.
- In this folder, run the `run.sh` file. This shell script will launch a web server and open your preferred web browser to the dedicated page.
- This interface should open in your web browser:



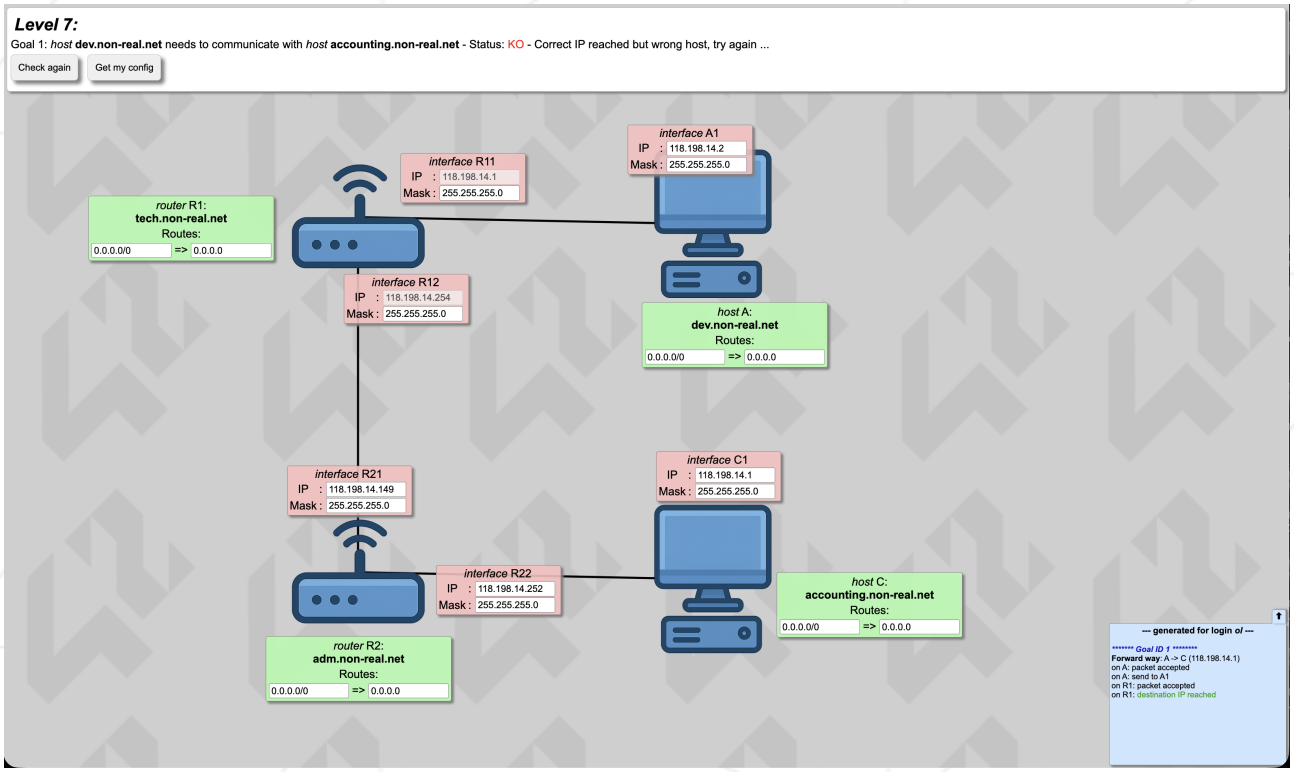
Welcome to NetPractice! :)

Due to technical design and security constraints on various web browsers, it is required to use a local web server to deliver NetPractice's web pages. If the "run.sh" script does not function properly, you can access the project manually: first run "python3 -m http.server 49242" (you may change the port number), then in your web browser navigate to the URL "http://localhost:49242" (or any other port you may have chosen).

As mentioned on the page:

- You can practice by entering your login in the field to use your personal configuration.
- Alternatively, you can use the "evaluation" tab to generate a random configuration, also suitable for evaluations.

There are 10 levels available for training. Below is an example:

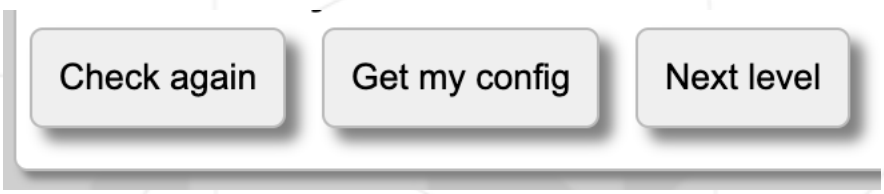


For each level, a non-functioning **network diagram** is displayed.

At the top of your window, you will see one or more objectives that you must achieve by adjusting the available configuration so that the network functions properly. There are two buttons you can use:

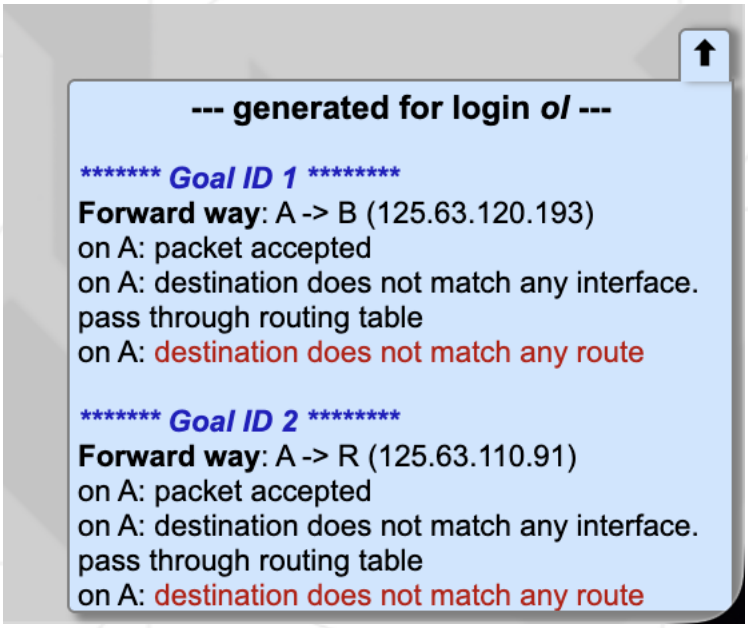
- **`[Check again]`** to verify whether your configuration is correct.
- **`[Get my config]`** to download your configuration whenever you need to; you will need it when submitting your assignment.

When you have successfully completed a level, a new button will appear. Click this button to proceed to the next level.

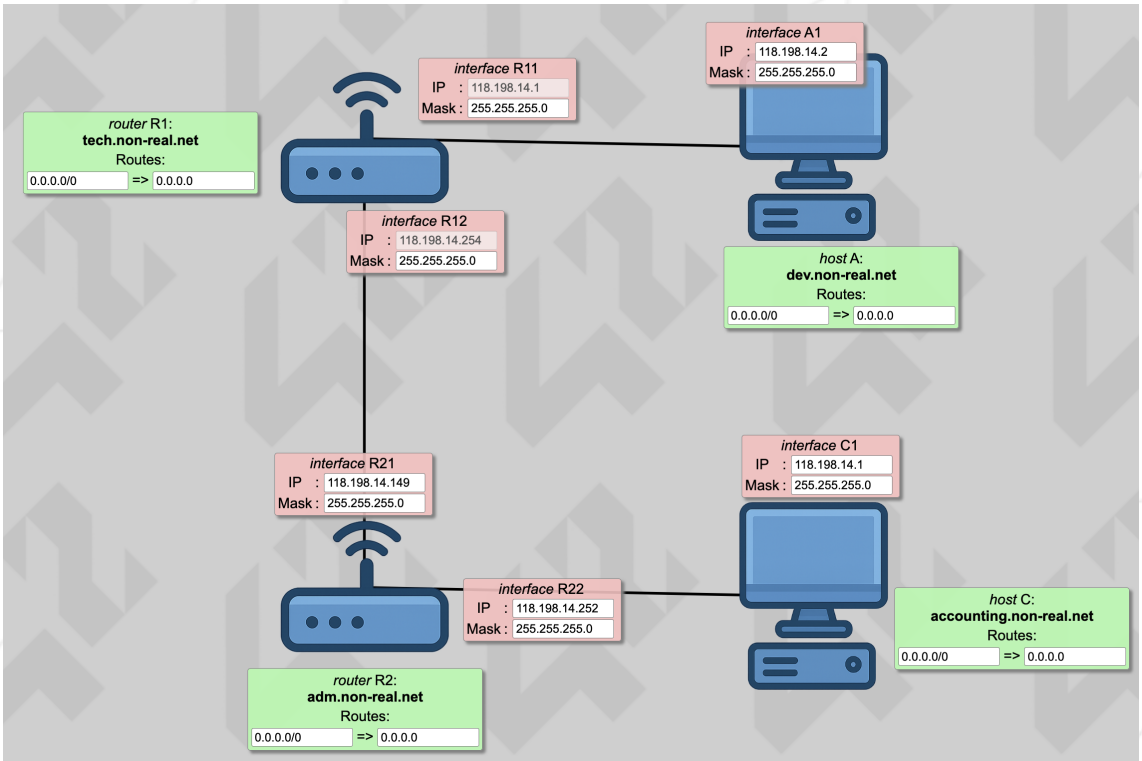


Before moving to the next level, don't forget to export your configuration using the Get my config button so you can add it to your Git repository.

At the bottom of the page, you will see logs. They can help you understand why your configuration is incorrect, for example, if a **gateway** is missing or an **IP address** is invalid.



Here is an example of the type of exercise you will work on:



To succeed, modify the unshaded fields until your **network configuration** is correct.

To complete this assignment, it is strongly recommended that you understand how **addressing** works in a network that includes devices such as **routers** and **switches**. Read about **TCP/IP addressing** to strengthen your understanding of these concepts.

Chapter VI

Readme Requirements

A `README.md` file must be provided at the root of your Git repository. Its purpose is to allow anyone unfamiliar with the project (peers, staff, recruiters, etc.) to quickly understand what the project is about, how to run it, and where to find more information on the topic.
The `README.md` must include at least:

- The very first line must be italicized and read: *This project has been created as part of the 42 curriculum by <login1>[, <login2>[, <login3>[...]]].*
- A "**Description**" section that clearly presents the project, including its goal and a brief overview.
- An "**Instructions**" section containing any relevant information about compilation, installation, and/or execution.
- A "**Resources**" section listing classic references related to the topic (documentation, articles, tutorials, etc.), as well as a description of how AI was used — specifying for which tasks and which parts of the project.

➠ **Additional sections may be required depending on the project** (e.g., usage examples, feature list, technical choices, etc.).

Any required additions will be explicitly listed below.

- The **Resources** section must explicitly mention the networking concepts studied, such as **TCP/IP addressing**, **subnet masks**, **default gateways**, **routers and switches**, **OSI layers**, etc.
- The **Instructions** section must explain how to run the training interface (e.g., using `run.sh`), how to export configurations, and submission requirements.
- **Submission details** must state that 10 exported configuration files (one per level) must be placed at the repository root.

Your README must be written in English.

Chapter VII

Submission and peer-evaluation

Submit your assignment in your `Git` repository as usual. Only the work within your repository will be evaluated during the defense. Do not hesitate to double-check the names of your files to ensure they are correct.

Because there are 10 levels available in the training interface, you will have to submit 10 files in your repository (one file per level). Place them at the root of your repository. Don't forget to enter your login in the training interface. Export a file per level using the `Get my config` button.

`It is very important that you enter your login in the interface.`

During the defense, you will have to successfully complete three random levels, as mentioned on the training platform. You will have a limited amount of time to do so.

`You are not allowed to use external tools during your evaluation. The use of a simple calculator such as bc is tolerated, but it will be the limit.`