

# 42 Cursus

1. Ring 1

2. Ring 2

3. Ring 3

4. Ring 4

5. Ring 5

6. Ring 6 (Specialisations)

- Professional Experience

- Development

- Cryptography & Maths

- Web & Mobile

- System & Kernel

- Graphics & Gaming

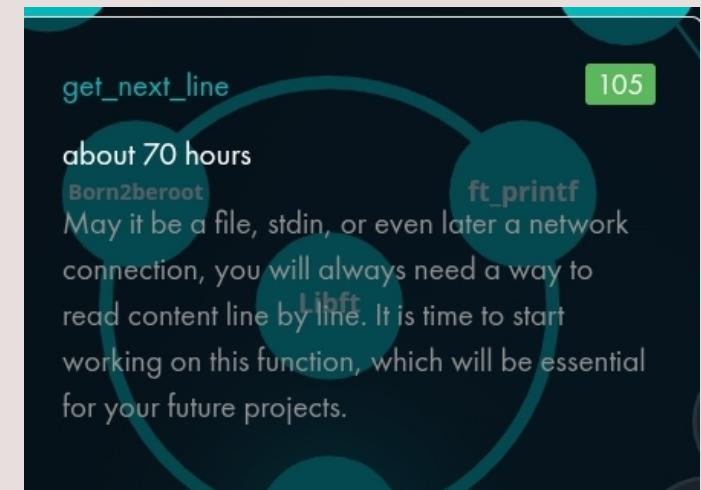
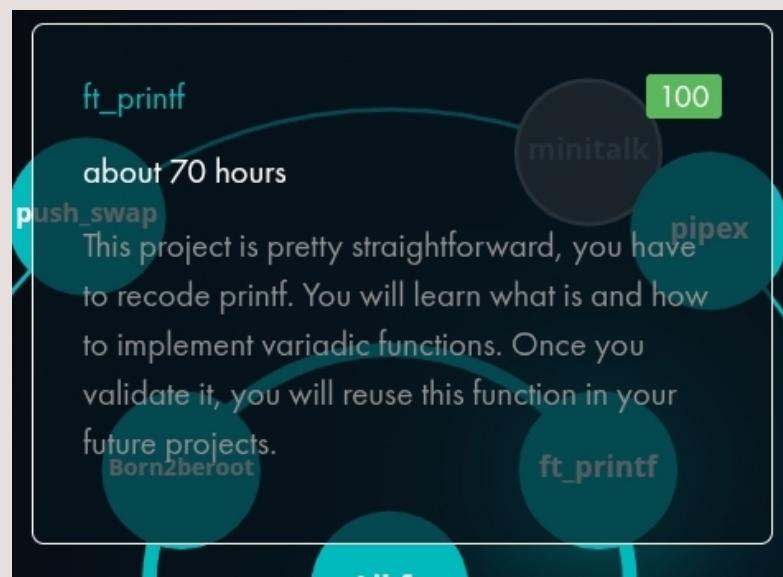
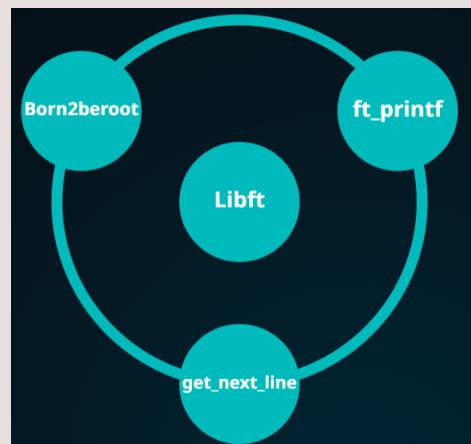
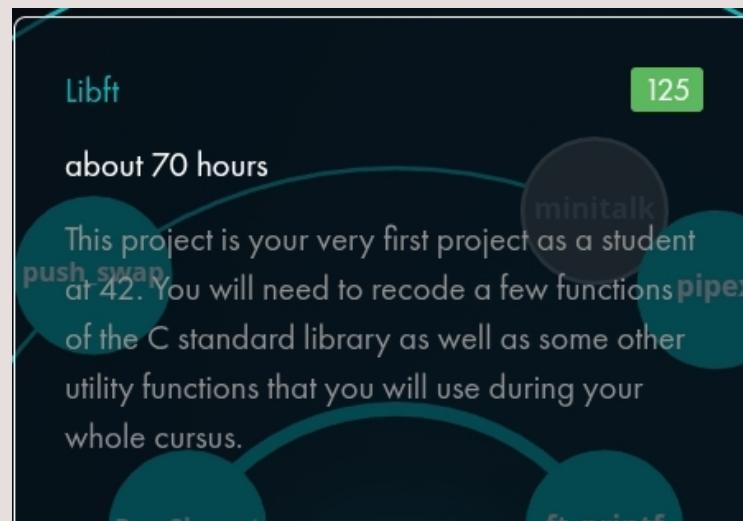
- Algo & AI & Data

- Security

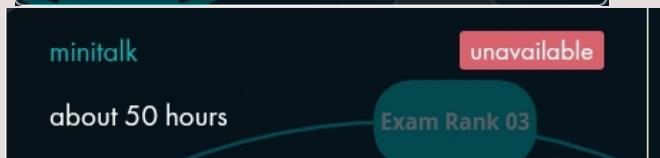
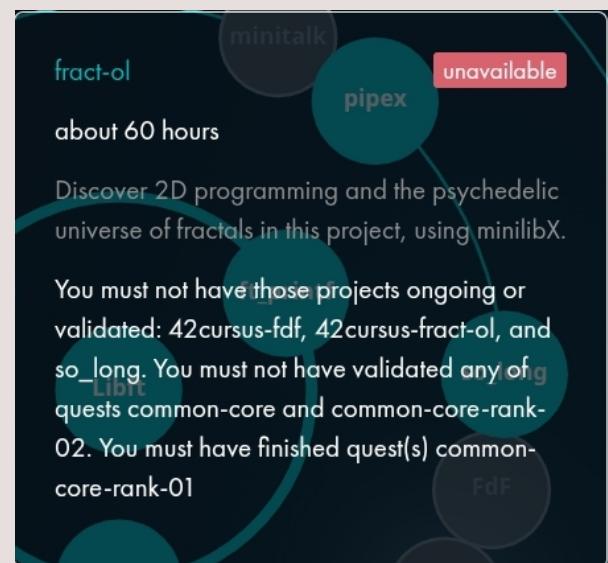
- DevOps

- Others

# Ring 1 : Common Core



# Ring 2



Exam Rank 02

about 0 days  
push\_swap

This project will evaluate your abilities and knowledge about programming.

100

minitalk

push\_swap

about 60 hours

Exam Rank 03

86

This project involves sorting data on a stack, with a limited set of instructions, and the smallest number of moves. To make this happen, you will have to manipulate various sorting algorithms and choose the most appropriate solution(s) for optimized data sorting.

push\_swap

Exam Rank 03

100

pipex

about 50 hours

This project aims to deepen your understanding of the two concepts that you already know: Redirections and Pipes. It is an introductory project for the bigger UNIX projects that will appear later on in the cursus.

push\_swap

so\_long

about 60 hours

pipex

110

This project is a small 2D game with minilibx. You'll learn about textures, sprites and tiles.

ft\_printf

FdF

unavailable

about 60 hours

pipex

All programs that you wrote until now were executed in text mode on your terminal. Now, let's discover something more exciting: how to open a graphics window and draw inside? To start your journey in graphic programming, FdF offers so\_long to represent "iron wire" meshing in 3D.

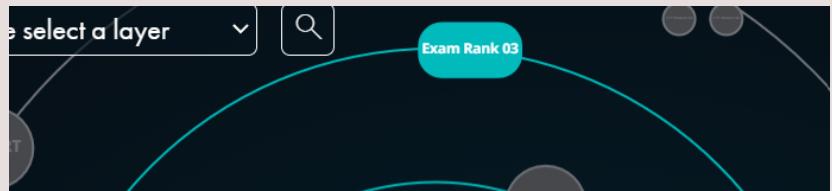
## Ring 3

The purpose of this project is to code a small data exchange program using UNIX signals. It is an introductory project for the bigger UNIX projects that will appear later on in the cursus.

You must not have validated any of quests common-core and common-core-rank-02. You must not have those projects ongoing or validated: minitalk and pipex. You must have finished quest(s) common-core-rank-01

Born2beroot

ft\_printf



Exam Rank 03

about 0 days

100



This project will evaluate your abilities and knowledge about programming.

minishell

about 210 hours

The objective of this project is for you to create a simple shell.

Philosophers

about 70 hours

This project aims to teach concurrent programming, focusing on multithreading and multiprocessing.

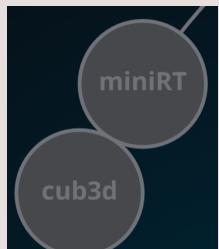
## Ring 4

cub3d

about 280 hours

This project is inspired by the world-famous eponymous 90's game, which was the first FPS ever. It will enable you to explore ray-casting. Your goal will be to make a dynamic view inside a maze, in which you'll have to find your way.

You must not have validated any of quests common-core and common-core-rank-04. You must have finished quest(s) common-core-rank-03. You must not have those projects ongoing or validated: minirt and cub3d



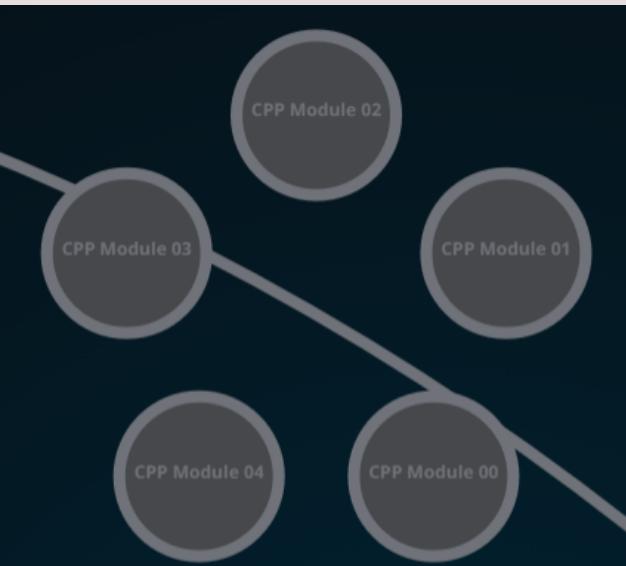
miniRT

about 280 hours

This project is an introduction to the beautiful world of Raytracing.

unavailable

You must not have those projects ongoing or validated: minirt and cub3d. You must not have validated any of quests common-core and common-core-rank-04. You must have finished quest(s) common-core-rank-03



## CPP Module 00

unavailable

about 22 hours

This first module of C++ is designed to help you understand the specificities of the language when compared to C. Time to dive into Object Oriented Programming!

You must not have validated any of quests common-core and common-core-rank-04. You must not have those projects ongoing or validated: cpp-module-00. You must have finished quest(s) common-core-rank-03

## CPP Module 01

unavailable

about 12 hours

This module is designed to help you understand the memory allocation, reference, pointers to members and the usage of the switch in CPP.

You must not have validated any of quests common-core and common-core-rank-04. You must have validated cpp-module-00. You must not have those projects ongoing or validated: cpp-module-01. You must have finished quest(s) common-core-rank-03

## CPP Module 02

unavailable

about 12 hours

This module is designed to help you understand Ad-hoc polymorphism, overloads and orthodox canonical classes in CPP.

You must not have validated any of quests common-core and common-core-rank-04. You must not have those projects ongoing or validated: cpp-module-02. You must have finished quest(s) common-core-rank-03. You must have validated cpp-module-01

## CPP Module 03

unavailable

about 12 hours

This module is designed to help you understand Inheritance in CPP.

You must not have validated any of quests common-core and common-core-rank-04. You must not have those projects ongoing or validated: cpp-module-03. You must have finished quest(s) common-core-rank-03. You must have validated cpp-module-02

## CPP Module 04

unavailable

about 12 hours

This module is designed to help you understand Subtype polymorphism, abstract classes and interfaces in CPP.

You must not have validated any of quests common-core and common-core-rank-04. You must not have those projects ongoing or validated: cpp-module-04. You must have finished quest(s) common-core-rank-03. You must have validated cpp-module-03

about 50 hours

NetPractice is a general practical exercise to let you discover networking.

You must not have validated any of quests common-core and common-core-rank-04. You must have finished quest(s) common-core-rank-03. You must not have those projects ongoing or validated: netpractice

about 0 days

This project will evaluate your abilities and knowledge about programming.

You must not have validated any of quests common-core and common-core-rank-04. You must have validated at least one of quests: common-core-rank-03. You must not have those projects ongoing or validated: exam-rank-04

## Ring 5

Inception

unavailable

about 210 hours

This project aims to broaden your knowledge of system administration by using Docker. You will virtualize several Docker images, creating them in your new personal virtual machine.

You must not have validated any of quests common-core and common-core-rank-05. You must not have those projects ongoing or validated: inception. You must have finished quest(s) common-core-rank-04

ft\_irc

webserv

ft\_irc

unavailable

about 175 hours

Create your own IRC server in C++, fully compatible with an official client.

You must not have those projects ongoing or validated: ft\_irc and webserv. You must not have validated any of quests common-core and common-core-rank-05. You must have finished quest(s) common-core-rank-04. You should have validated 1 of cpp-module-09 and ft\_containers

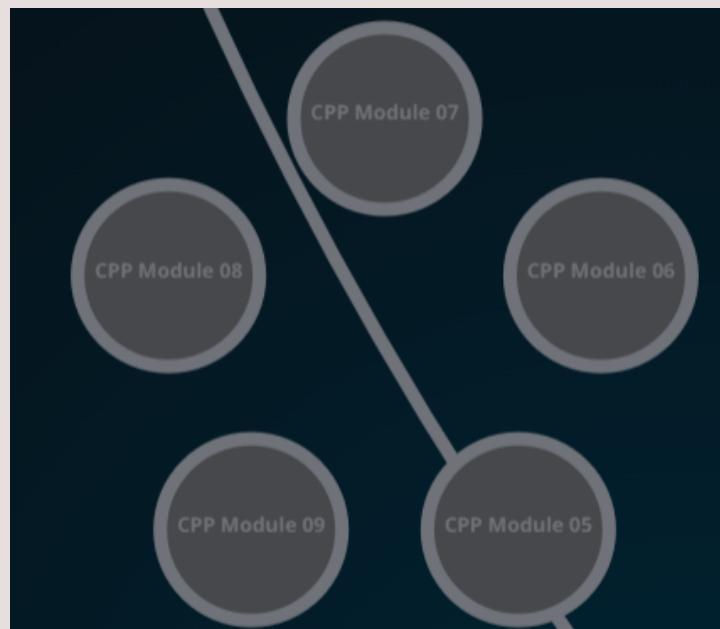
webserv

unavailable

about 175 hours

This project is here to help you write your own HTTP server. You will be able to test it with a real browser. HTTP is one of the most used protocols on the internet. Knowing its intricacies will be useful, even if you won't be working on a website.

You must not have those projects ongoing or validated: ft\_irc and webserv. You must not have validated any of quests common-core and common-core-rank-05. You must have finished quest(s) common-core-rank-04. You should have validated 1 of cpp-module-09 and ft\_containers



## CPP Module 05

unavailable

about 25 hours

This module is designed to help you understand Try/Catch and Exceptions in CPP.

You must not have validated any of quests common-core-rank-05. You must not have those projects ongoing or validated: cpp-module-05. You must have finished quest(s) common-core-rank-04. You must have validated cpp-module-04

CPP Module 06

unavailable

about 25 hours

This module is designed to help you understand the different casts in CPP.

You must not have validated any of quests common-core-rank-05. You must not have those projects ongoing or validated: cpp-module-06. You must have finished quest(s) common-core-rank-04. You must have validated cpp-module-05

## CPP Module 07

unavailable

about 25 hours

This module is designed to help you understand Templates in CPP.

You must not have validated any of quests common-core-rank-05. You must not have those projects ongoing or validated: cpp-module-07. You must have finished quest(s) common-core-rank-04. You must have validated cpp-module-06

CPP Module 08

unavailable

about 25 hours

This module is designed to help you understand templated containers, iterators and algorithms in CPP.

You must not have those projects ongoing or validated: cpp-module-08. You must have finished quest(s) common-core-rank-04. You must have validated cpp-module-07. You must not have validated any of quests common-core-rank-05

## CPP Module 09

unavailable

about 40 hours

This module is designed to help you understand the containers in CPP.

You must not have validated any of quests common-core and common-core-rank-05. You must have finished quest(s) common-core-rank-04. You must have validated cpp-module-08. You must not have those projects ongoing or validated: cpp-module-09 and ft\_containers

about 0 days

This project will evaluate your abilities and knowledge about programming.

You must have finished quest(s) common-core-rank-04. You must not have those projects ongoing or validated: exam-rank-05. You should have validated 1 of cpp-module-09 and ft\_containers. You must not have validated any of quests common-core and common-core-rank-05

# Ring 6 : Specialisation Courses

## Layer One : Professional Experience



### Internship I

unavailable

about 120 days

Your first step in a company is an important milestone of your 42 training. This internship entails discovering the professional world and putting your work and adaptation skills at the service of the market. This is a first element for your resume and the opportunity to see emerge your future domain of interest.

You must have validated 1 of exam-rank-06 and c-exam-alone-in-the-dark-beginner. You must not have those projects ongoing or validated: 42cursus-startup-internship and internship-ii. You must have finished quest(s) common-core

### Part\_Time I

unavailable

about 120 days

Your first step in a company is an important milestone of your 42 training. This internship entails discovering the professional world and putting your work and adaptation skills at the service of the market. This is a first element for your resume and the opportunity to see emerge your future domain of interest.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert. You must have validated 1 of exam-rank-06 and c-exam-alone-in-the-dark-beginner

### Part\_Time II

about 120 days

Your first step in a company is a milestone of your 42 training. This entails discovering the professional world and putting your work and adaptation skills at the service of the market. This is a first element for your resume and the opportunity to see emerge your future domain of interest.

You must be at least level 14 in common-core. You must not have validated many projects: internship-i, internship-ii, part\_time-i, part\_time-ii, and 42cursus-startup-internship

### Internship II

unavailable

about 120 days

Your course 42 can be continued with a second period of professional integration: the second internship. This is a continuation of the first one.

### Startup Internship

unavailable

about 120 days

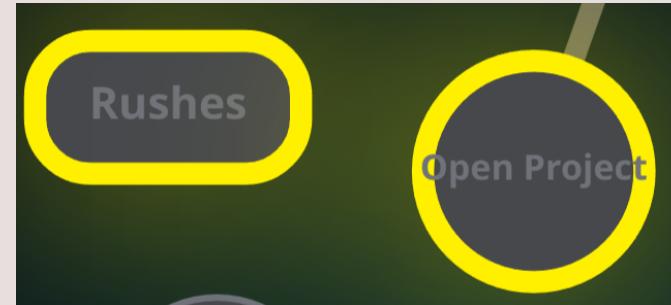
A good professional integration remains one of the fundamental objectives of the school. This project offers you the possibility of founding a startup and work on it as a full-time job for the next months.

internship. This internship is the accomplishment of your journey, and will have you demonstrate your expertise professionally in a company. This will be the springboard for your career.

You must have validated 1 of first-internship and internship-i. You must be at least level 14 in cursus 42cursus. You must not have validated more than 3 of internship-i, internship-ii, part\_time-i, part\_time-ii, and 42cursus-startup-internship

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert.  
You must have validated 1 of exam-rank-06 and c-exam-alone-in-the-dark-beginner. You must not have validated more than 2 of internship-i, internship-ii, part\_time-i, part\_time-ii, apprentissage-2-ans-2eme-annee, and apprentissage-1-an

## Layer 2 : Development



Rushes  
about 125 hours  
~~aborative\_resume~~

Rushes are offered from time to time to discover unusual topics and face a 48h speed coding session.

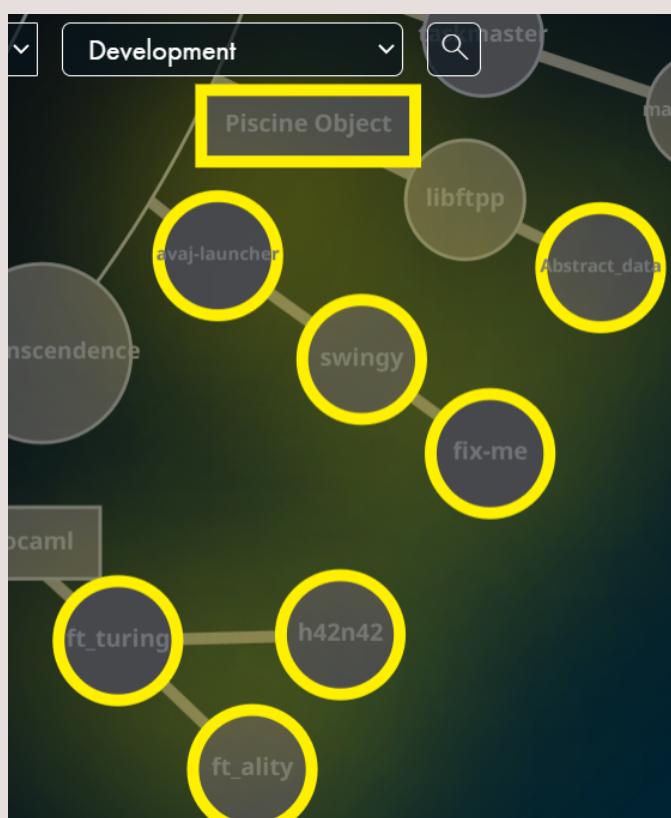
Open Project

unavailable

about 180 days

This project offers the opportunity for long-term project management on a topic of your choice, including some computer science related elements. Collaborate with other 42 students and complete within 6 months.

You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert



Piscine Object

unavailable

about 64 hours

Piscines are an important time in your cursus, during which you will have the occasion to learn a new language, or even a new paradigm!

You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert

avaj-launcher

unavailable

about 50 hours

First projet of the Java projects arc.  
Implementation of a simple Java program according to a given class diagram written in UML.

## Abstract\_data

unavailable

about 290 hours

The multiple available containers in C++ all have a very different usage. To make sure you understand them all, let's re-implement them!

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert.

You should have validated piscine-object

## libftpp

unavailable

about 98 hours

This subject aims to introduce you to advanced C++ concepts through the development of complex tools and systems.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

## ft\_ality

unavailable

about 98 hours

This project will get you acquainted with problems linked to automatic syntax analysis ("parson") by studying finite automation in a combat game.

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core.

You should have validated 42cursus-ft\_turing

## h42n42

unavailable

about 98 hours

Project introducing Framework OCSIGEN, used to create applications rich in OCaml. Design a simulator of bugs escaping a dangerous virus.

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core.

You should have validated 42cursus-ft\_turing

You must have validated at least one of quests:

42-to-42cursus-transfert and common-core

## swingy

unavailable

about 98 hours

This is the second project from the Java world at 42. You will learn to develop GUI applications with the SWING framework, in order to create an RPG game.

You should have validated 42cursus-avaj-launcher. You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

## swingy

unavailable

about 196 hours

Final project of the Java Programming arc. Write a program that simulates stock exchanges and deals with trading algorithms, with networking and socket implementations.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert.

You should have validated 42cursus-swingy

## ft\_turing

unavailable

about 98 hours

ft\_turing will help you discover the turing model using imperative programming through an implementation of this model with OCaml

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

## ft\_yacc

unavailable

about 300 hours

A project about syntactic analysis and stack automata

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert.

You should have validated ft\_lex



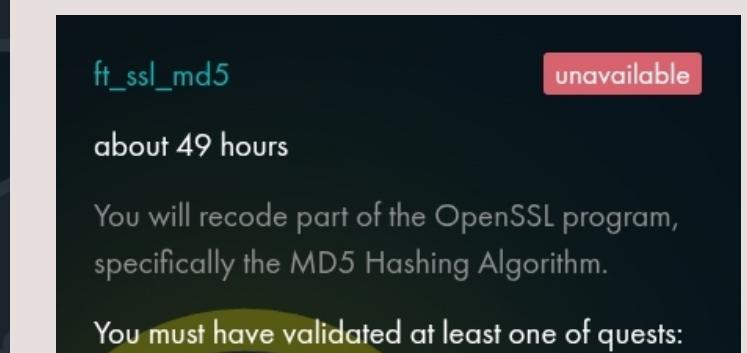
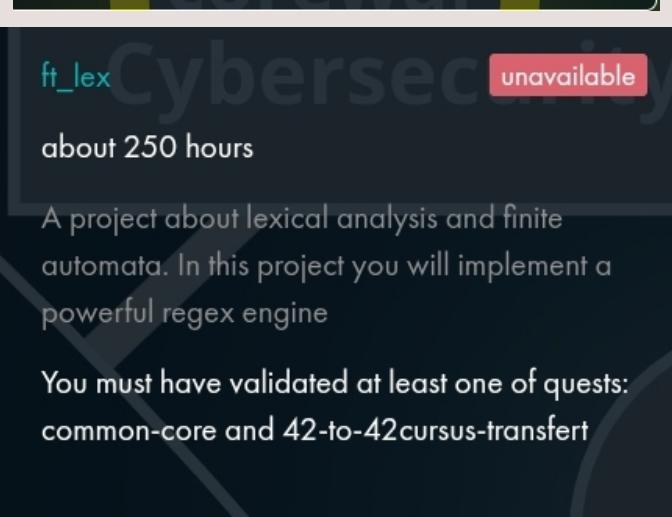
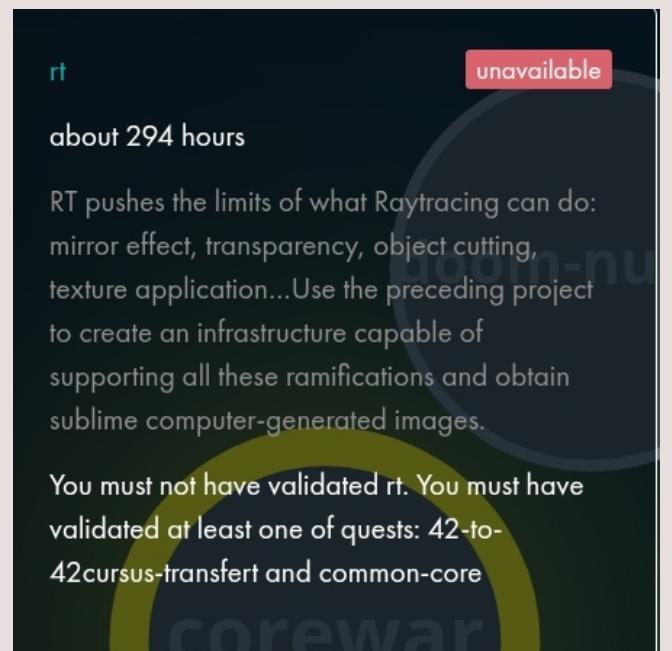
**corewar** unavailable

about 196 hours

This project involves creating a virtual arena, and having simplistic-language programs fight each other. You will thus get acquainted with VM conception (with instructions it recognizes, registers, etc) and compilation problems of an assembly language in bytecode. In bonus, the pleasure to have your champions fight in the arena.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

## Layer 3 : Cryptography & Maths



42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-ft\_ping

### ft\_ssl\_des

unavailable

about 49 hours

You will recode part of the OpenSSL program, specifically BASE64, DES-ECB and DES-CBC.

You must have validated at least one of quests:

42-to-42cursus-transfert and common-core.

You should have validated 42cursus-ft\_ssl\_md5

42cursus

Cryptography & Maths



### computorv1

unavailable

about 49 hours

The goal of this project is to get acquainted with handling elementary math tools that may be helpful for other 42 projects. You will not "do math for doing math", but to develop a progressive and relaxed approach to projects where these tools are needed. You can choose the language of your choice for this subject.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

### ft\_ssl\_rsa

unavailable

about 49 hours

You will code your own random prime number generator and use it to make private RSA keys.

You should have validated 42cursus-ft\_ssl\_des.

You must have validated at least one of quests:

42-to-42cursus-transfert and common-core

### ready set boole

unavailable

about 110 hours

Discover the basics of computer-related mathematics with Boolean Algebra and Sets Theory!

You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert

### computorv1

unavailable

about 110 hours

You've probably encountered vectors and vector spaces before. Now it's time to formalize them through Linear Algebra and to learn how matrices and linear transformations work.

You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert

### computorv2

unavailable

about 147 hours

Now that you have programmed your equation solver, it's time to go further. Computor V2 let's

### ft\_kalman

unavailable

about 210 hours

Aboard a generic vehicle with flawed sensors,

you create your own calculator in command line, which will integrate your computer V1 as well as functions for matrix calculus, function resolution, calculation with complex numbers, etc.

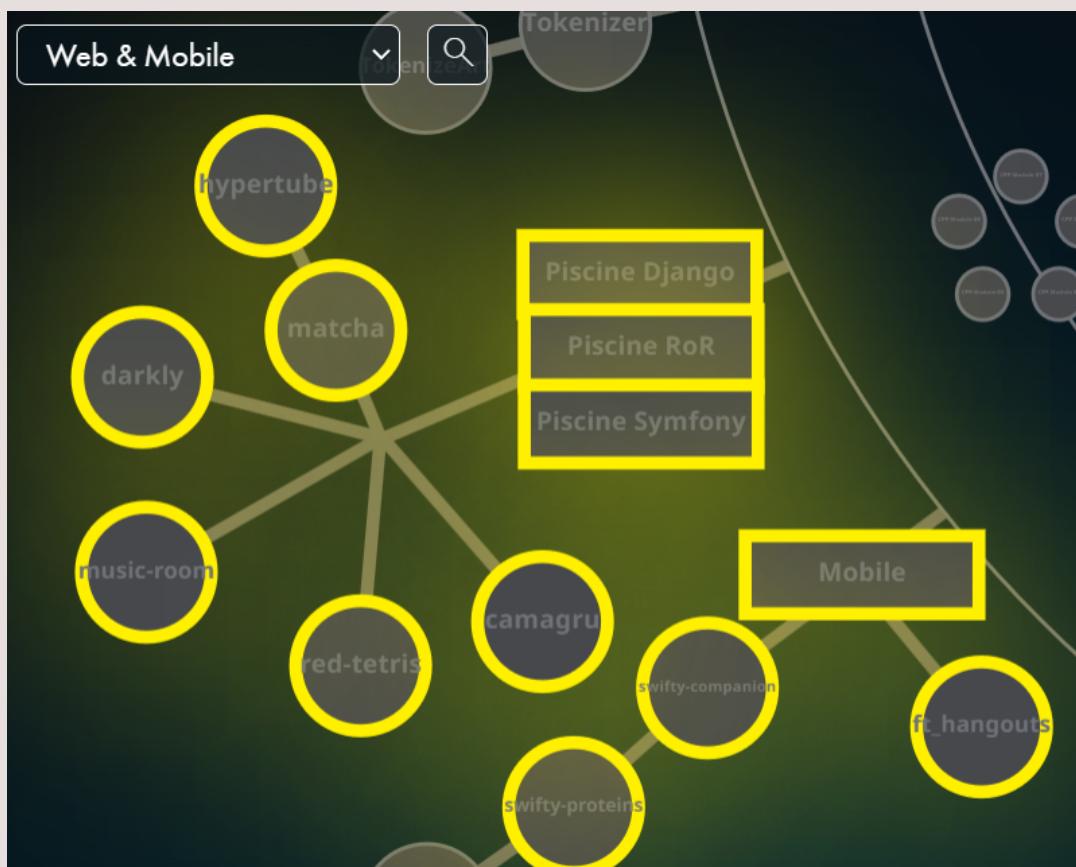
You must have validated at least one of quests: 42-to-42cursus-transfert and common-core.

You should have validated 42cursus-computory1

you will need to create a kalman filter in order to track his position coordinates. This project is a good introduction to signal filtering, matrix operations, gaussian noise and correlation.

You should have validated matrix. You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

## Layer 4 : Web & Mobile



### Mobile

about 63 hours

Piscines are an important time in your cursus, during which you will have the occasion to learn a new language, or even a new paradigm!

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

unavailable

### swifty-proteins

about 147 hours

This project will give you the opportunity to create 3D scenes. For the most part, you will make an application that models ligands in 3D. This will also help you to deepen your knowledge of a mobile framework.

unavailable

on My  
tetris

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

You must have validated at least one of quests:

## ft\_hangouts

unavailable

about 49 hours

The goal of this project is to get you acquainted with mobile app development. You will create a contact management mobile app. You will have to understand how a mobile app functions, how mobile manages your application and how to use the SDK

You must have validated at least one of quests:

42-to-42cursus-transfert and common-core

## Peace\_Break

unavailable

about 98 hours

This project, inspired by the famous game 'Brick Breaker', is a fantastic opportunity for you to dive into mobile application development. You will learn how to design an attractive user interface, manage user registrations and information, implement key game functionalities, and master techniques specific to mobile device development. This project will enable you to turn an idea into a functional mobile application, thus equipping you with essential skills in mobile programming.

You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert.

You should have validated swifty-proteins

## Peace\_Break

## darkly

unavailable

about 98 hours

Introductory project to computer security in the specific field of the web, this project will have

42-to-42cursus-transfert and common-core.

You should have validated 42cursus-swifty-companion

## swifty-companion

unavailable

about 49 hours

This project is an introduction to mobile programming. The goal is to create, an application which will allow you to get infos about 42students, using the API.

You must have validated at least one of quests:

42-to-42cursus-transfert and common-core

## Piscine Django

unavailable

about 63 hours

Piscines are an important time in your cursus, during which you will have the occasion to learn a new language, or even a new paradigm!

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

## camagru

unavailable

about 49 hours

This project is a warmup for web. You will need to realize, a small, instagram-like website allowing its users to create and share photomontage. You will, from scratch, implement basic functionnalities used by any website with a userbase

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

specific field of the web, this project will have you dissect a vulnerable website. In doing so, you will develop your own approach to thinking about security in a web application and become aware of issues related to simple development errors, both from a programming and a design perspective.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

matcha

unavailable

about 98 hours

This second project will introduce a more evolved tool to create your web applications: the micro-framework. We invite you to create, in the language of your choice, a dating site. Interaction between users is the heart of the project!

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

hypertube

unavailable

about 196 hours

Last project in this series, the Hypertube project invites you to discover an extremely powerful tool category: MVC frameworks. You will learn how to manipulate a MVC, in the language of your choice, to create a streaming site of videos downloaded via the BitTorrent protocol.

You should have validated 42cursus-matcha.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

music-room

unavailable

about 196 hours

Project in partnership with Deezer. In a group, create a complete mobile app of collaborative playlist using the SDK and API of Deezer. On the menu, mobile native development, back-end development and creation of API REST.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

red-tetris

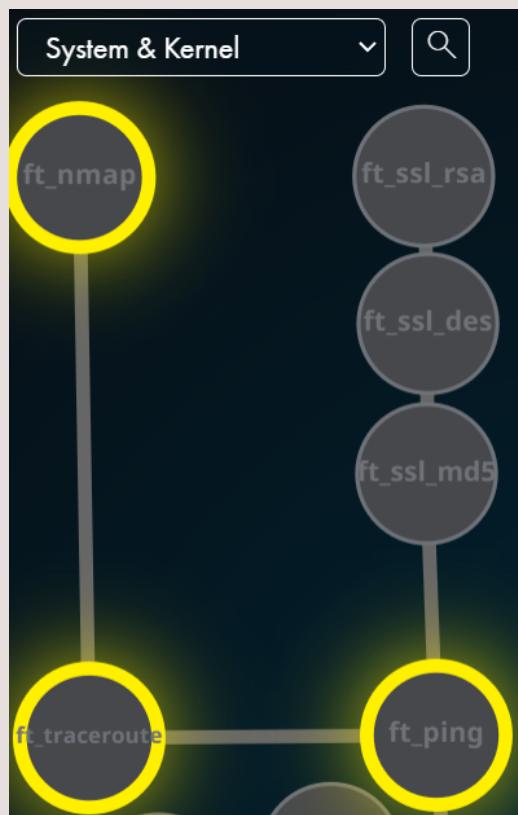
unavailable

about 147 hours

The goal of this project is to develop a multiplayer tetris game on the network with a set of software exclusively from Full Stack Javascript.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

# Layer 5 : System & Kernel



ft\_traceroute

unavailable

about 49 hours

Re-coding the traceroute command will be the opportunity to deepen your knowledge of TCP/IP networks by following the paths of an IP packet from one machine to another.

You should have validated 1 of ft\_ping and 42cursus-ft\_ping. You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

ft traceroute

ft\_nmap

unavailable

about 49 hours

Re-coding the nmap command will be the opportunity to deepen your knowledge of TCP/IP networks and thus understand advanced use of threads in real life.

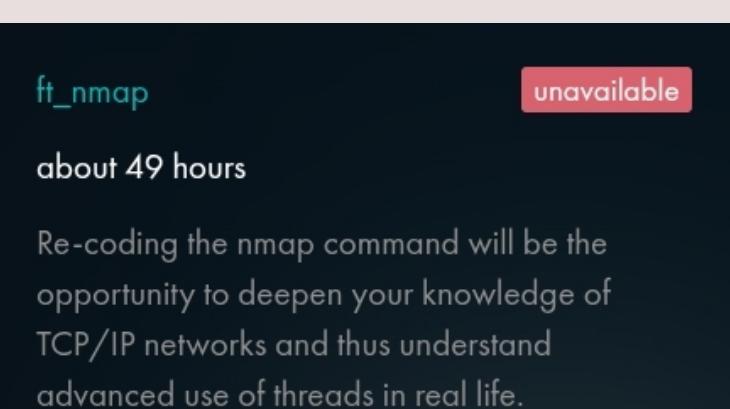
ft\_ping

unavailable

about 49 hours

Re-coding the ping command will let you get acquainted with TCP/IP communication between two machines on a network

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

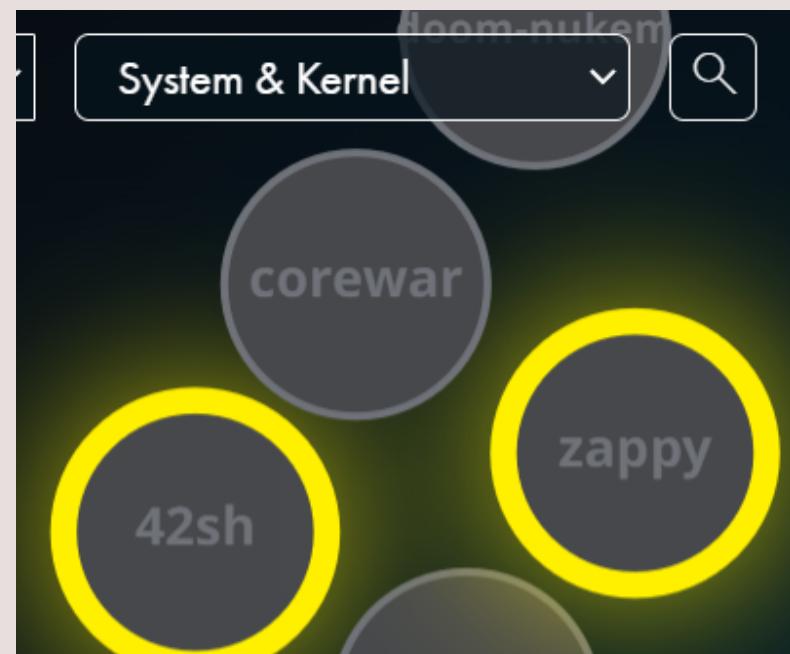


You must have validated at least one of quests:

42-to-42cursus-transfert and common-core.

You should have validated 42cursus-

ft\_traceroute



**zappy**

unavailable

about 294 hours

You will now create a multi-player game in a TCP/IP network. The game will consist of a server managing the game field, a graphic client which displays the state of the board, and IA clients that connect to the server to pilot a player on the filed. This is a real complete project that will let you express your creativity on top of your technical knowledge.

You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert

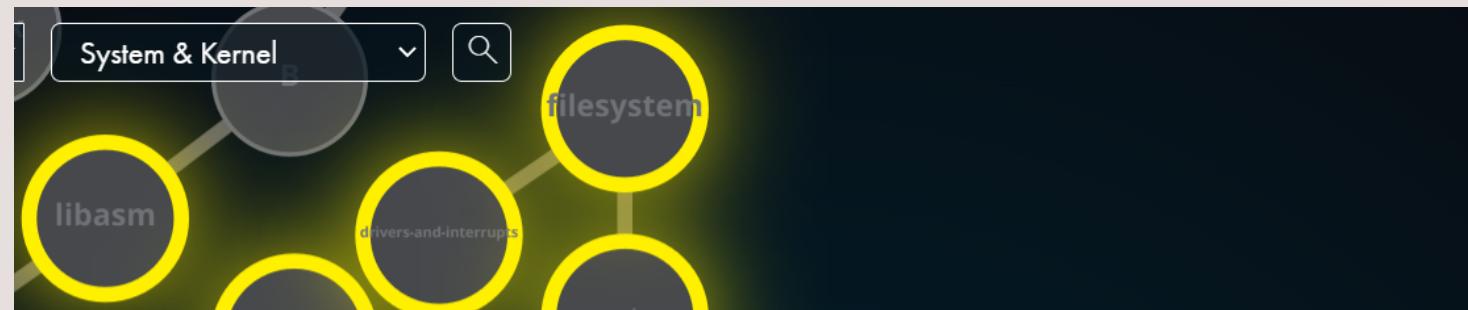
**42sh**

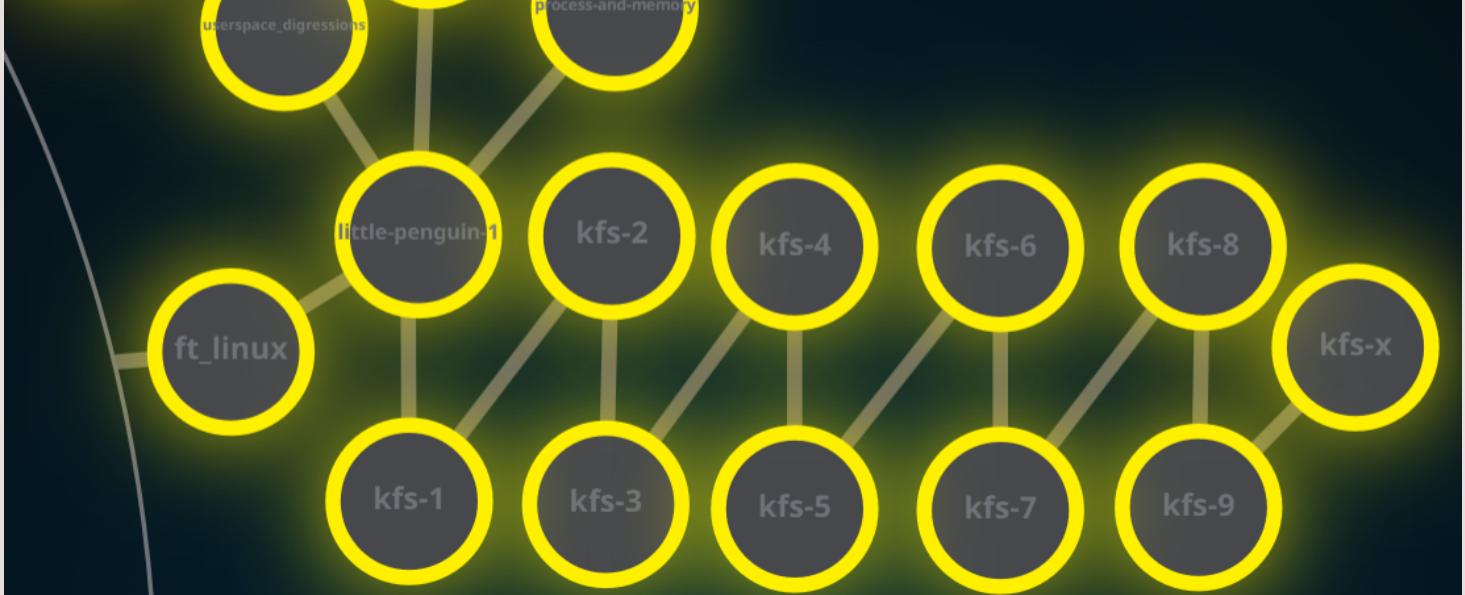
unavailable

about 294 hours

This project consists of creating a complete shell and uses the work done on your 21sh. A minimum set of functionalities is asked, from which you will build your own finalized shell, potentially going as far as job control and shell script. This project will involve a large variety of standard UNIX (and POSIX) functionalities.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You must not have validated 42sh





**libasm** unavailable

## ft\_llex

about 20 hours

The aim of this project is to get familiar with assembly language.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

**ft\_linux** unavailable

## ft\_llex

about 49 hours

The first project of the Kernel branch! This is a simple LFS so that you can build your own distribution which will be used in the next projects

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

**little-penguin-1** unavailable

## little-penguin-1

about 100 hours

The start of a series of challenges inspired by Eudyptula. You will get acquainted with many points of Kernel development.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You must have validated 42cursus-ft\_linux

**process-and-memory** unavailable

## process-and-memory

about 98 hours

An introduction to syscalls and memory management within linux kernel

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You must have validated 42cursus-ft\_linux

**drivers-and-interrupts** unavailable

## drivers-and-interrupts

about 100 hours

**filesystem** unavailable

## filesystem

about 100 hours

about 98 hours

Learn how to connect a driver to your kernel.  
We will use a keyboard driver for this project.

You must have validated at least one of quests:  
**42-to-42cursus-transfert and common-core.**  
You must have validated **42cursus-ft\_linux**

about 196 hours

Create your own filesystem, for your linux  
kernel.

You must have validated at least one of quests:  
**42-to-42cursus-transfert and common-core.**  
You must have validated **42cursus-ft\_linux**

**userspace\_digressions**

unavailable

about 294 hours

Make your own userspace init binary.

You must have validated at least one of quests:  
**42-to-42cursus-transfert and common-core.**

You should have validated **42cursus-little-penguin-1**

**drivers-and-interrupts**

kfs-1

unavailable

about 294 hours

Discover the world of "Kernel Programming"  
and learn how to create your very own Kernel  
from scratch.

You should have validated **42cursus-little-penguin-1**. You must have validated at least  
one of quests: **42-to-42cursus-transfert and  
common-core**

**drivers-and-interrupts**

kfs-2

unavailable

about 294 hours

Discover the world of Kernel Programming and  
learn how to create your very own Kernel from  
scratch.

You must have validated at least one of quests:  
**42-to-42cursus-transfert and common-core.**

You must have finished quest(s) **common-core**.  
You should have validated **42cursus-kfs-1**

**drivers-and-interrupts**

kfs-3

unavailable

about 294 hours

Third Kernel from Scratch project. Learn how to  
manage the memory in you kernel.

You must have validated at least one of quests:  
**common-core and 42-to-42cursus-transfert.**

You should have validated **42cursus-kfs-2**

**kfs-4**

unavailable

about 196 hours

Project aimed at creating an Interrupt  
Description Table and handle interrupts within  
your Kernel.

**kfs-5**

unavailable

about 392 hours

You must now develop process managing in  
your Kernel, by implementing how to interpret  
the command :(){ :|:& }

your Kernel

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-kfs-3

You should have validated 42cursus-kfs-4. You  
must have validated at least one of quests: 42-  
to-42cursus-transfert and common-core

### kfs-6

unavailable

about 294 hours

Keep on developping your own kernel. This  
project will help you set up your own filesystem.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-kfs-5

### kfs-8

unavailable

about 196 hours

Build a module interface for your kernel.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-kfs-7

### kfs-x

unavailable

about 56 hours

This is the final kernel project. It just requires you  
to create a complete linux environment. Maybe  
name your kernel aswell?

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-kfs-9

### kfs-7

unavailable

about 630 hours

This project will teach you how to build your  
own syscalls for your kernel, as well as user  
accounts, sockets, and a Unix-like hierarchy.  
Almost a full kernel here!

You should have validated 42cursus-kfs-6. You  
must have validated at least one of quests: 42-  
to-42cursus-transfert and common-core

### kfs-9

unavailable

about 245 hours

Create an ELF parser and loader for your  
kernel.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-kfs-8



`ft_ls`

about 49 hours

For knowing the filesystem inside out, and how files and directories are sorted, you will code by yourself one of the most used command: ls.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

`malloc` unavailable

`malloc`

about 49 hours

What's the deal with malloc? You've been using it since the piscine C but it's not a system call. Find out the workings behind optimum memory management and recode it, as well as free and realloc.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

`nm`

unavailable

about 14 days

This project will educate you on a deeper comprehension of how linux handle executables, by re-creating the command nm

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

# Layer 6 : Graphics & Gaming

nibbler

unavailable

about 98 hours

This project in C++ will make you recode a Snake where you can switch the interface at run time

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-lem-ipc

doom-nukem

unavailable

about 294 hours

Doom Nukem pushes the possibilities of Raycasting much further while bringing a dimension of Game design, so you are going to have to make a mix of Doom and Duke Nukem 3D. It's up to you to find the one that suits you and that will allow you to add the requested features as well as those you want to see there.

You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert.  
You must not have validated doom-nukem

rt

unavailable

about 294 hours

RT pushes the limits of what Raytracing can do: mirror effect, transparency, object cutting, texture application... Use the preceding project to create an infrastructure capable of supporting all these ramifications and obtain sublime computer-generated images.

You must not have validated rt. You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

Graphics & Gaming



doom-nukem

corewar

zappy

rt

zappy

unavailable

about 294 hours

You will now create a multi-player game in a TCP/IP network. The game will consist of a server managing the game field, a graphic client which displays the state of the board, and IA clients that connect to the server to pilot a player on the filed. This is a real complete project that will let you express your creativity on top of your technical knowledge.

You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert



card. It's up to you to design and create the weirdest objects thanks to shaders programming.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-humangl

Unity

unavailable

about 49 hours

Piscines are an important time in your cursus, during which you will have the occasion to learn a new language, or even a new paradigm!

You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert

in-the-shadows

unavailable

about 147 hours

This project wants you to develop a complete game using a bit of algo and a lot of creativity.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

xv

unavailable

about 392 hours

This project was designed by the Daher company and has you develop a graphic interface under Unity for optimizing industrial processes.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-in-the-shadows

bomberman

unavailable

about 196 hours

Bomberman is a classic video game: as simple in its gameplay as it is fun to play! You will leverage its simplicity here to undertake your first major professional-grade C++ project. Your goal is to recode a version of Bomberman in C++ and OpenGL, with the aim of creating the most polished game possible.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-humangl

mod1

unavailable

about 98 hours

This simulation graphic project will have you represent a surface in 3D, on which water will flow. Empirical or scientific (with many equations), recreate a wave, a tsunami or maybe just rain on your surface.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

guimp

unavailable

about 147 hours

The goal of this project is to create a graphic interface library. You will have to prove it works correctly with a small 2D image software. This library must be as complete and modular as possible, the goal being to re-use it in future projects, whether for projects in the graphic branch or other projects of your training.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

ft\_minecraft

unavailable

about 560 hours

ft\_minecraft is the continuation of ft\_vox, with a more advanced approach to procedural generation, rendering techniques and networking.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert.

You should have validated 42cursus-ft\_vox

freddie-mercury

unavailable

about 14 days

VR escape game

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

Very\_Real\_Engine

unavailable

about 600 hours

Create and implement a library containing all necessary tools, notably a graphics engine and a physics engine.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert.

You should have validated 2 of ft\_minecraft and ft\_newton

Very\_Real\_Engine

## Layer 7 : Algo & AI & Data



## Python for Data Science

unavailable

about 35 hours

Piscines are an important time in your cursus, during which you will have the occasion to learn a new language, or even a new paradigm!

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert.

You must not have validated deprecated-python-module-04

## total-perspective-vortex

unavailable

about 98 hours

Learn to use python tools to process large dimension data, and create a man-machine interface thanks to brainwaves.

You should have validated 1 of 42cursus-dslr and dslr. You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

## Leaffliction

unavailable

about 294 hours

An innovative computer vision project utilizing leaf image analysis for disease recognition.

You should have validated 42cursus-dslr. You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

## Piscine Data Science

unavailable

about 35 hours

Introduction to data science via the different professions

You should have validated python-for-data-science. You must not have validated deprecated-ml-module-04. You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

## ft\_linear\_regression

unavailable

about 70 hours

This project will be your first steps into AI and Machine Learning. You're going to start with a simple, basic machine learning algorithm. You will have to create a program that predicts the price of a car by using a linear function train with a gradient descent algorithm.

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

## multilayer-perceptron

unavailable

about 98 hours

## total-perspective-vortex

unavailable

about 98 hours

Discover Data Science through this project by recreating the Hogwarts Sorting Hat using logistic regression!

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

This project is an introduction to artificial neural networks thanks to the implementation of a multilayer perceptron.

## Multilayer-perceptron

You must have validated at least one of quests:

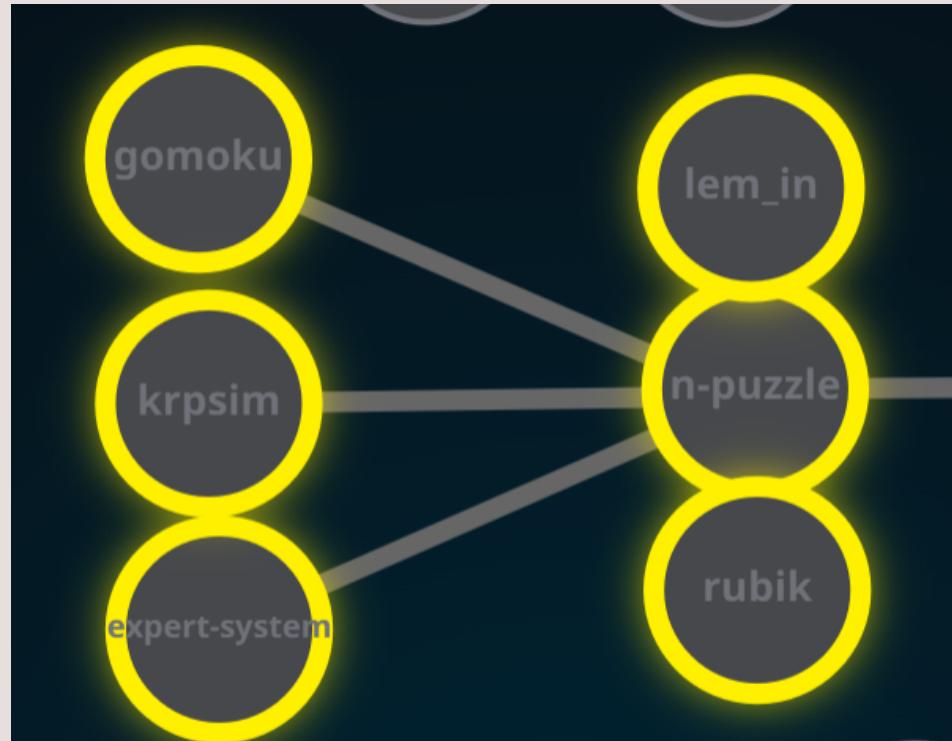
42-to-42cursus-transfert and common-core.

You should have validated 42cursus-dslr

corewar

zappy

42sh



zappy

unavailable

about 294 hours

You will now create a multi-player game in a TCP/IP network. The game will consist of a server managing the game field, a graphic client which displays the state of the board, and IA clients that connect to the server to pilot a player on the filed. This is a real complete project that will let you express your creativity on top of your technical knowledge.

You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert

corewar

unavailable

about 196 hours

This project involves creating a virtual arena, and having simplistic-language programs fight each other. You will thus get acquainted with VM conception (with instructions it recognizes, registers, etc) and compilation problems of an assembly language in bytecode. In bonus, the pleasure to have your champions fight in the arena.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

lem\_in

## matrix

unavailable

about 98 hours

Your ant colony must move from on point to another. How do you do it in the shortest time

gomoku

unavailable

about 196 hours

This project involves creating, in the language of your choice, a Gomoku game integrating an

possible? This project will get you acquainted with graph traversal algorithms: your program will have to intelligently select paths and precise movements used by the ants

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

krpsim

unavailable

about 49 hours

This algorithm project consists of creating a program that will optimize rendering of a process graph, with some resource constraints. It's up to you to explore the existing algorithms and choose, possibly create, what you seem most fit. For this project, you can choose the language you want

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.

You should have validated 1 of 42cursus-lem\_in, 42cursus-n-puzzle, and 42cursus-rubik

AI player capable of beating a human player the fastest way possible. To do this, you will implement a min-max algorithm but also do research, trial and error to find the most adapted heuristics. This will not be as easy as checkers.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.

You should have validated 1 of 42cursus-lem\_in, 42cursus-rubik, and 42cursus-n-puzzle

rubik

unavailable

about 98 hours

Non-trivial algorithm project: create a Rubik's cube solver. You can choose the language you want for this project.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

expert-system

unavailable

about 98 hours

This project involves creating, in the language of your choice, an expert system in proposal calculation. In other words, a program that can reason on a set of rules and initial facts to deduce other facts.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.

You should have validated 1 of 42cursus-lem\_in, 42cursus-rubik, and 42cursus-n-puzzle

n-puzzle

unavailable

about 98 hours

We are going to do, in any language, a program capable to solve n-puzzles of various sizes, as optimized as possible

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

## Layer 8 : Security

boot2root

override



## Cybersecurity

unavailable

about 63 hours

Piscines are an important time in your cursus, during which you will have the occasion to learn a new language, or even a new paradigm!

**You must have validated at least one of quests:**  
**42-to-42cursus-transfert and common-core**

## boot2root

unavailable

about 49 hours

Security Challenge.In a group, search for various means to pass root on the ISO given to you.

**You should have validated 42cursus-snow-crash.** You must have validated at least one of quests: **42-to-42cursus-transfert and common-core**

## snow-crash

unavailable

about 147 hours

This project is an introduction to computer security. Snow Crash will make you discover security in various sub-domains, with a developer-oriented approach. You will become familiar with several languages (ASM/perl/php...), develop a certain logic to understand unknown programs, and become aware of problems linked to simple programming errors

**You must have validated at least one of quests:**  
**42-to-42cursus-transfert and common-core**

## UnleashTheBox

unavailable

about 147 hours

An immersive cybersecurity project where participants learn to exploit systems and

## rainfall

unavailable

about 28 days

Rainfall is an iso challenge slightly more complex than Snow Crash. You will have to dive deep into reverse engineering, learn to reconstruct a code, and understand it to detect faults. Will you reach the last level?

**You must have validated at least one of quests:**  
**42-to-42cursus-transfert and common-core.**

**You should have validated 42cursus-snow-crash**

## override

unavailable

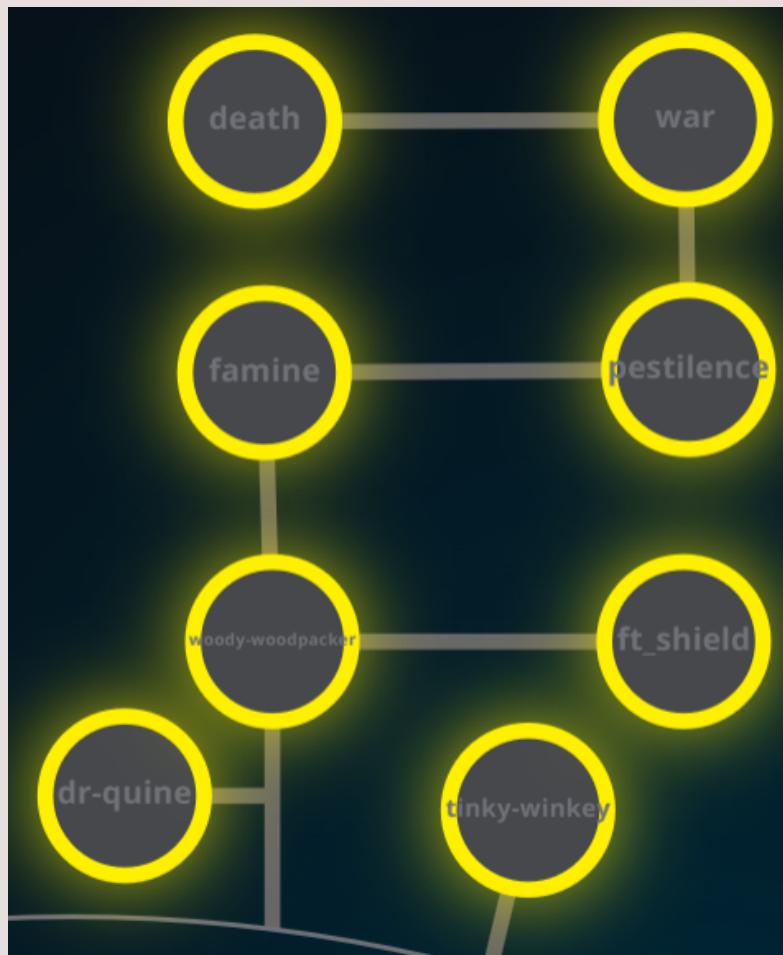
about 196 hours

participants learn to exploit systems and acquire essential skills to navigate the dynamic world of information security.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert.  
You should have validated 42cursus-boot2root

If you thought Rainfall was easy, here's a more daunting challenge. Override is last ISO that will have you search for faults present in the protected binaries, and re-build these binaries depending on their behavior.

You should have validated 42cursus-rainfall.  
You must have validated at least one of quests: 42-to-42cursus-transfert and common-core



### dr-quine

about 14 hours

This small algo project will get you acquainted with auto-replication problems and confront the Kleene recursion theorem.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

unavailable

### tinky-winkey

about 210 hours

Introduction to windows operating system by creating a service that run a keylogger.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

unavailable

woody-woodpacker

unavailable

about 49 hours

A logical follow-up project on nm/otools that is designed to modify the headers of a ELF64 file. The goal here is to add a chunk of code and hide a non-stripped part of a file.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

famine

unavailable

about 98 hours

Welcome to the wonderful world of viruses, trojans and other ... Your goal here is to put your skills on handling binary files and make your first virus. WARNING: this project is solely for educational purposes!

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core.

You should have validated 42cursus-woody-woodpacker

war

unavailable

about 196 hours

Third virus project. Reuse Pestilence, and manage to have your binary modify its signature on runtime.

You must have validated 42cursus-pestilence.

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

ft\_shield

unavailable

about 196 hours

Use your skills to create a daemon to create your first basic trojan.

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core.

You should have validated 42cursus-woody-woodpacker

pestilence

unavailable

about 196 hours

Second virus project. Reuse the Famine base to add a hiding method of your code.

You must have validated 42cursus-famine. You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

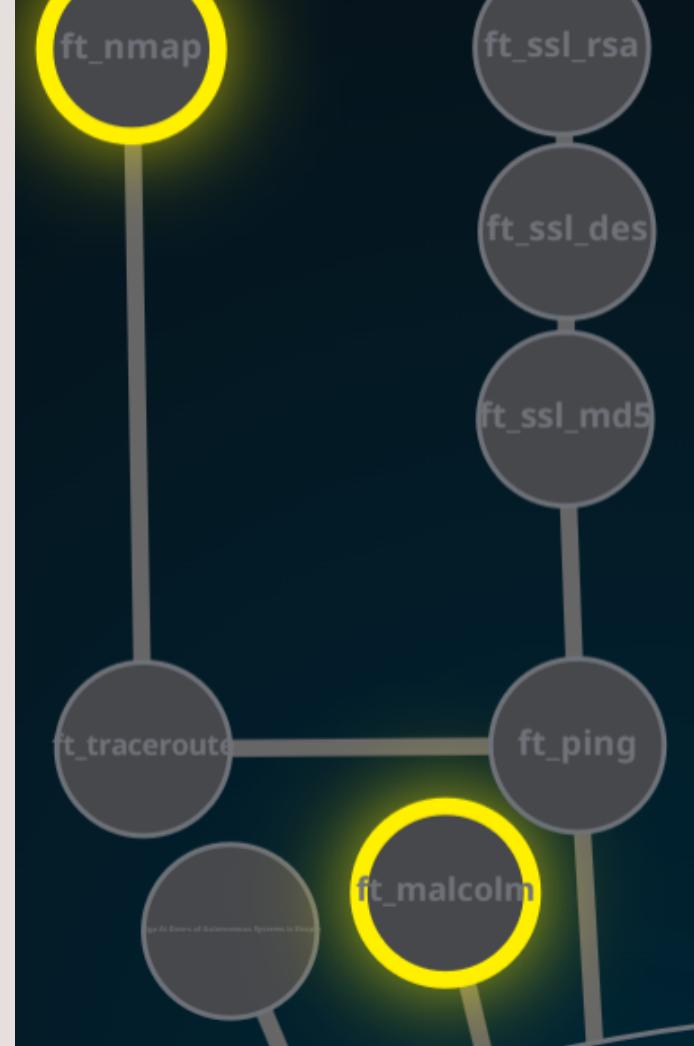
death

unavailable

about 147 hours

Last virus project. Create with your Famine, Pestilence and War a real metamorphic code.

You must have validated 42cursus-war. You must have validated at least one of quests: 42-to-42cursus-transfert and common-core



**ft\_malcolm** unavailable

about 49 hours

An introduction to network security with Man In The Middle attack

You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert

**ft\_nmap** unavailable

about 49 hours

Re-coding the nmap command will be the opportunity to deepen your knowledge of TCP/IP networks and thus understand advanced use of threads in real life.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-ft\_traceroute

# Layer 9 : Dev Ops



ft\_traceroute

unavailable

about 49 hours

Re-coding the traceroute command will be the opportunity to deepen your knowledge of TCP/IP networks by following the paths of an IP packet from one machine to another.

You should have validated 1 of ft\_ping and 42cursus-ft\_ping. You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

Bgp At Doors of Autonomous Systems is Simple

unavailable

about 200 hours

The purpose of this project is to deepen your knowledge of NetPractice. You will have to simulate several networks (VXLAN+BGP-EVPN) in GNS3.

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

ft\_ping

unavailable

about 49 hours

ft\_traceroute

unavailable

about 49 hours

Re-coding the traceroute command will be the opportunity to deepen your knowledge of TCP/IP networks by following the paths of an IP

Re-coding the ping command will let you get acquainted with TCP/IP communication between two machines on a network

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

packet from one machine to another.

You should have validated 1 of ft\_ping and 42cursus-ft\_ping. You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

### ft\_nmap

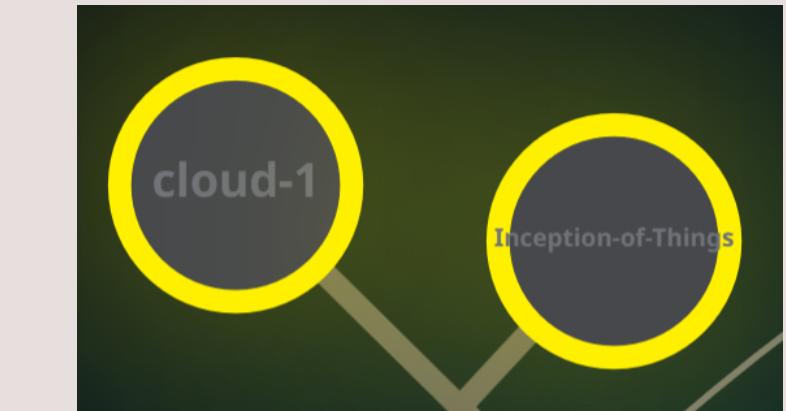
unavailable

about 49 hours

Re-coding the nmap command will be the opportunity to deepen your knowledge of TCP/IP networks and thus understand advanced use of threads in real life.

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core.

You should have validated 42cursus-ft\_traceroute



### cloud-1

unavailable

about 100 hours

This project is an introduction to cloud servers

You must have validated at least one of quests: 42-to-42cursus-transfert and common-core

### Inception-of-Things

unavailable

about 200 hours

This project aims to introduce you to kubernetes from a developer perspective. You will have to set up small clusters and discover the mechanics of continuous integration. At the end of this project you will be able to have a working cluster in docker and have a usable continuous integration for your applications.

You must have validated at least one of quests:

42-to-42cursus-transfert and common-core

The screenshot shows a quest card for the game 'taskmaster'. The card has a dark blue background with a faint 'TC\_IS' watermark. At the top left, the quest title 'taskmaster' is displayed in white. To the right, there is a red rectangular button with the word 'unavailable' in white. Below the title, the text 'about 98 hours' is shown in white. The main description reads: 'This program is a job control task, in any language. The project is very close to the supervisor program on your computer'. Underneath this, it says: 'You must have validated at least one of questi: 42-to-42cursus-transfert and common-core'. A large magnifying glass icon is overlaid on the bottom right corner of the card.

taskmaster

unavailable

about 98 hours

This program is a job control task, in any language. The project is very close to the supervisor program on your computer

You must have validated at least one of questi:  
42-to-42cursus-transfert and common-core

taskmaster

# Others / Ungrouped Modules

ft\_turing

unavailable

about 98 hours

ft\_turing will help you discover the turing model using imperative programming through an implementation of this model with OCaml

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core

h42n42

unavailable

about 98 hours

Project introducing Framework OCSIGEN, used to create applications rich in OCaml. Design a simulator of bugs escaping a dangerous virus.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.

You should have validated 42cursus-ft\_turing

ft\_ality

unavailable

about 98 hours

This project will get you acquainted with problems linked to automatic syntax analysis ("parson") by studying finite automation in a combat game.

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-ft\_turing

strace

unavailable

about 49 hours

First step in a serie of projects in C language leading to creation of a mini-GDB, this project will ask you to recode strace, a tool allowing you to list syscalls done by a running program

You must have validated at least one of quests:  
42-to-42cursus-transfert and common-core.  
You should have validated 42cursus-lem-ipc

lem-ipc

unavailable

about 98 hours

You have already seen communication between processes on a network via TCP/IP. You are now going to use other UNIX tools so that processes can communicate locally. You will discover these tools by creating a client of a classic boardgame.

You should have validated 42cursus-malloc.  
You must have validated at least one of quests:  
common-core and 42-to-42cursus-transfert

ft\_transcendence

unavailable

about 245 hours

This project is centered around the design, development, and organization of a full-stack web application.

You must have finished quest(s) common-core-rank-05. You must not have those projects ongoing or validated: ft\_transcendence. You must not have validated any of quests common-core

about 63 hours

Piscines are an important time in your cursus, during which you will have the occasion to learn a new language, or even a new paradigm!

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert.

You must not have validated deprecated-piscine-ocaml

about 180 days

This project offers the opportunity for long-term project management on a topic of your choice, including some computer science related elements. Collaborate with other 42 students and complete within 6 months.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

## 42\_Collaborative\_resume

unavailable

about 35 hours

Develop your communication, self-assessment, and professional document writing skills by closely collaborating with a classmate. Through conducting mutual interviews, you will learn to highlight your own strengths while discovering those of your partner, thereby facilitating the creation of authentic and relevant resumes.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

## Fil\_quantum

unavailable

about 98 hours

This project is an introduction to quantum programming. It will challenge you to create different quantum programs, and run them on a real quantum computer.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

## Learn2Slither

unavailable

about 98 hours

A cutting-edge Q-learning project focused on autonomous decision-making in a dynamic environment.

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert.

You should have validated 42cursus-dslr

## Tokenizer

unavailable

about 98 hours

This project allows you to learn the basics in web3. You will have to create your personal token!

You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

# Tokenizer

TokenizeArt

unavailable

about 98 hours

This project allows you to learn the basics in web3. You will have to create your non-fungible token!

You should have validated tokenizer. You must have validated at least one of quests: common-core and 42-to-42cursus-transfert

Tokenizer