Association 42
96, Boulevard Bessières
75017 Paris
FRANCE

ACADEMIC RESULTS FOR BORIS DENOYELLE

I, the undersigned Sophie VIGER, Managing Director of 42 Paris located at 96, Boulevard Bessières, 75017 Paris, FRANCE, hereby certify that:

Boris Denoyelle, born on January 03, 1988 in paris (France)

obtained the grades detailed below as of September 18, 2024.

This certificate is delivered upon request for all legal intents and purposes.

Selected in: **September 2018**
Curriculum started on: **November 05, 2018**
Curriculum ended on: **January 23, 2024**

Founded in 2013, 42 is a worldwide network of ICT schools. We are a non-traditional educator offering high-quality and scalable software engineering education to anyone who wants to learn.
It is our mission to prepare the next generation for the jobs of today and tomorrow. We do so using an innovative educational model, which relies on peer-to-peer learning, project-based and hands-on approach to programming. Our innovative model, allowing individual pace and path, has proven that our students become industry-ready software engineers within 2 to 5 years.

The progression of the student inside the curriculum is represented by its level, over 21.
The current level of the student is: **22.33.**

The 42 curriculum is divided into two halves: the common core and the 42 advanced part. Once students complete the first half (the common core), they have the option to either continue their journey in the 42 advanced part, or conclude their progression and become an alumni at any point during this second part.
The current situation of the student is: **alumni.**
See details below.

Made in Paris, on September 18, 2024

DETAILS

Here is a description of each part of the curriculum and the current position of the student:

The Common Core

The common core of the 42 curriculum represents the minimum set of skills to be ready for a first professional experience. It provides basic and standard coding skills, as well as a fruitful range of soft skills. The delay of the CC is approximately between 1 and 2 years. The following information represent the skills developed during this part of the curriculum and the current progression of the student:

Boris Denoyelle : Common core achieved at: **100%.**

Developed skills during the entire common core:

- ***Algorithms & AI:*** Standards algorithms on standards structures: searching, sorting, insertion, deletion, balance, on: arrays, linked lists, trees. State machine and asynchronous management.

- ***Graphics:*** Image management, RGB structure of an image, manipulating areas, drawing into an image, interacting with the window management system and getting user events and inputs from keyboard and mouse, programming with callbacks and event loop.

- ***Group & interpersonal:*** Collaboration, relationships and group management situations, including different kinds of interactions between people (friendly, tensions ...)

- ***Imperative programming:*** Basics of coding in C : the C syntax, variable, loops, conditional branches, functions, recursivity, instructions, calculus and expressions, comparisons operators, standard and advanced types, strings processing, structures, includes and libraries, memory allocation and release, linked lists, trees, the C standard library

- ***Network & system administration:*** Basics of computer networking : IP addresses, subnets, default routing, local network structure, host to host connectivity to network services; Basics of system administration : operating system installation with Linux, setting up security, access, users, storage, installing network services like mail, dns, web server, ...

- ***Object-oriented programming:*** Object programming principles in C++, classes, namespaces, constructors and destructors, memory management in C++, inheritance, abstraction, overloading, templates, standard C++ library types and tools

- ***Rigor:*** The need to fulfill administrative and technical constraints. The need for a wide and deep testing process to eliminate failure.

- ***System programming:*** Classic Unix system interactions : system calls, filesystem access and management, process creation, execution, management; inter-process communications : pipes and signals; device management and ioctl, terminal capabilities; network communication : TCP & UDP sockets, DNS resolution, endianness

- ***Web:*** The client-server architecture involved in the web, role and actions of the web server, role and actions of the web browser; The HTTP protocol; Web technologies involved : HTML, CSS, Javascript, images and videos; Backend language and framework for dynamic websites: one among php, ruby, python, go, javascript, Rails, Symfony, Django, Node, ... ; MVC model; users web services : web sessions, authentification, cookies, search, caddie, backoffice configuration, ... ; Basics of user experience, user interface, and design.

Details of each validated project in appendix 1.

The 42 Advanced Part

The 42 Advanced offers a choice of path among various ICT specialisations: each student can select the topic(s) she/he wants to develop and improve. This part of the curriculum also contains several professional experiences (internships, part-time jobs, ...).

- Security: 5
- Devops: 6
- Web & Mobile: 7
- System & Kernel: 7
- Cryptography & Maths: 1
- Development: 1

Professional experiences: 2 Internships 1 Apprenticeship

Details of the validated projects in appendix 2.

SPECIAL

A student can eventually benefit from special programs or projects valuable for their personal skill set, and thus included in their curriculum. They are mentioned here:

Name	Equivalent workload
ProjectsUser - piscine-reloaded	17H
ProjectsUser - libft	84H
ProjectsUser - get_next_line	86H
ProjectsUser - fillit	70H
ProjectsUser - init	70H
ProjectsUser - roger-skyline-1	42H
ProjectsUser - docker-1	84H
ProjectsUser - ft_printf	65H
ProjectsUser - curriculum-vitae	16H
ProjectsUser - minishell	87H
ProjectsUser - c-exam-alone-in-the-dark-beginner	58H
ProjectsUser - piscine-php	72H
42cursus - Creative Hackaton - SupDePub	70H
ProjectsUser - 21sh	203H

APPENDIX 1

Projects covered during the common core:

The student completed the common core in a different curriculum and therefore no projects are shown in this section.

APPENDIX 2

Projects covered during the 42 advanced:

Name	Estimated workload	Result	Associated skills	Validation date
ft_ls	49H	Pass	Algorithms & AI, Unix, Imperative programming	March 18, 2019
ft_select	168H	Pass with bonus	Rigor, Unix, Imperative programming	April 29, 2019
camagru	49H	Pass with bonus	Web, DB & Data, Security	July 13, 2019
matcha	98H	Pass with bonus	Web, DB & Data, Security	September 22, 2019
hypertube	196H	Pass with bonus	Web, DB & Data, Group & interpersonal	November 07, 2019
taskmaster	98H	Pass with bonus	Rigor, Algorithms & AI, Unix	January 06, 2020
computorv1	49H	Pass with bonus	Rigor, Algorithms & AI	September 10, 2020
ft_hangouts	49H	Pass with bonus	Rigor, DB & Data, Object-oriented programming, Technology integration	October 09, 2020
cloud-1	100H	Pass	Web, DB & Data, Network & system administration, Technology integration	November 17, 2020
darkly	98H	Pass with bonus	Web, Adaptation & creativity, Security	January 02, 2021
dr-quine	14H	Pass with bonus	Algorithms & AI, Unix, Imperative programming	January 25, 2021
Old-LibftASM	168H	Pass	Rigor, Imperative programming	January 30, 2021
Old-Philosophers	70H	Pass	Rigor, Unix, Imperative programming	March 06, 2021
libasm	20H	Pass	Rigor, Imperative programming	June 04, 2021
matt-daemon	49H	Pass with bonus	Unix, Network & system administration, Imperative programming	June 07, 2021
avaj-launcher	50H	Pass	Rigor, Adaptation & creativity, Object-oriented programming, Imperative programming	June 11, 2021
swifty-companion	49H	Pass	DB & Data, Adaptation & creativity, Object-oriented programming, Technology integration	June 17, 2021
ft_linux	49H	Failed	Rigor, Unix, Technology integration	September 09, 2021
red-tetris	147H	Pass with bonus	Functional programming, Web, Object-oriented programming, Technology integration	September 10, 2021
ft_script	168H	Failed	Unix	October 27, 2021
Inception-of-Things	200H	Pass	Rigor, Network & system administration	February 27, 2022
nm	336H	Pass with bonus	Rigor, Unix	May 02, 2022
ft_ping	49H	Pass	Unix, Network & system administration, Imperative programming	May 06, 2022
snow-crash	147H	Pass with bonus	Unix, Adaptation & creativity, Security	July 10, 2022
[DEPRECATED] Python Module 00	24H	Pass	Rigor, Unix, Object-oriented programming	October 17, 2022
rainfall	672H	Pass with bonus	Unix, Adaptation & creativity, Security	December 15, 2022
Old-IRC	175H	Failed	Rigor, Unix, Network & system administration, Object-oriented programming	January 02, 2023
[DEPRECATED] Python Module	24H	Pass	Rigor, Object-oriented programming	January 02,

01				2023
[DEPRECATED] Python Module 02	24H	Pass	Rigor, Object-oriented programming	January 05, 2023
[DEPRECATED] Python Module 03	24H	Pass	Rigor, Algorithms & AI, Object-oriented programming	February 23, 2023
[DEPRECATED] Python Module 04	24H	Pass	Rigor, Algorithms & AI, Object-oriented programming	February 27, 2023
Bgp At Doors of Autonomous Systems is Simple	200H	Pass	Rigor, Network & system administration	July 19, 2023
ft_nmap	49H	Pass with bonus	Unix, Network & system administration, Imperative programming	July 19, 2023
scop	49H	in progress	Rigor, Graphics	-
ft_linear_regression	70H	in progress	Rigor, Algorithms & AI, DB & Data	-
ft_traceroute	49H	in progress	Unix, Network & system administration, Imperative programming	-
ft_turing	98H	in progress	Rigor, Functional programming, Algorithms & AI, Imperative programming	-
swifty-proteins	147H	in progress	Group & interpersonal, Adaptation & creativity, Technology integration, Graphics	-
ft_ality	98H	in progress	Rigor, Functional programming, Algorithms & AI	-
little-penguin-1	100H	in progress	Rigor, Unix	-
process-and-memory	98H	in progress	Rigor, Unix, Technology integration	-
drivers-and-interrupts	98H	in progress	Rigor, Unix	-
filesystem	196H	in progress	Rigor, Unix	-
kfs-2	294H	in progress	Rigor, Unix	-
kfs-1	294H	in progress	Rigor, Unix, Group & interpersonal	-
kfs-3	294H	in progress	Rigor, Unix, Group & interpersonal	-
h42n42	98H	in progress	Functional programming, Web, Technology integration	-
kfs-4	196H	in progress	Unix, Group & interpersonal	-
kfs-5	392H	in progress	Unix, Group & interpersonal	-
computorv2	147H	in progress	Rigor, Algorithms & AI, Organization	-
swingy	98H	in progress	Rigor, Adaptation & creativity, Object-oriented programming, Imperative programming	-
kfs-6	294H	in progress	Unix, Group & interpersonal	-
kfs-7	630H	in progress	Unix, Group & interpersonal	-
kfs-8	196H	in progress	Unix, Group & interpersonal	-
kfs-9	245H	in progress	Unix, Group & interpersonal	-
kfs-x	56H	in progress	Unix, Group & interpersonal	-
boot2root	49H	in progress	Unix, Adaptation & creativity, Security	-
ft_shield	196H	in progress	Unix, Network & system administration, Imperative programming	-
userspace_digressions	294H	in progress	Rigor, Unix	-
doom-nukem	294H	in progress	Organization, Group & interpersonal, Adaptation & creativity, Graphics	-
zappy	294H	in progress	Organization, Unix, Group & interpersonal, Adaptation & creativity	-
malloc	49H	in progress	Algorithms & AI, Unix	-
corewar	196H	in progress	Algorithms & AI, Organization, Group & interpersonal, Adaptation & creativity	-
Open Project	4320H	in progress	Organization, Group & interpersonal, Adaptation & creativity	-
42sh	294H	in progress	Organization, Unix, Group & interpersonal	-
rt	294H	in progress	Organization, Group & interpersonal, Adaptation & creativity, Graphics	-
[DEPRECATED] ML Module 00	24H	in progress	Rigor, Algorithms & AI, Object-oriented programming	-
Mobile	63H	in progress	Rigor, Algorithms & AI, Unix	-

Internship and professional experiences				
Company name	**Duration**	**Validation**	**Skills**	**Validation date**
Wiserskills	6 months	Pass	Company experience, Group & interpersonal	November 07, 2019
BANQUE DE FRANCE	6 months	Pass with bonus	Company experience, Group & interpersonal	March 14, 2022
Banque de France	12 months	Pass with bonus	Company experience, Group & interpersonal	March 27, 2023

APPENDIX 3

Description of each covered project:

Name	Description
ft_ls	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.
ft_select	The goal of this project is to get you started on terminal manipulation with termcaps. Here you will learn how to create a user interface for a program launched on the terminal.
taskmaster	This program is a job control task, in any language. The project is very close to the supervisor program on your computer
camagru	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
matcha	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!
hypertube	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.
computorv1	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.
ft_hangouts	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 an mobile app functions, how mobile manages your application and how to use the SDK
cloud-1	This project is an introduction to cloud servers
darkly	Introductory project to computer security in the 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.
dr-quine	This small algo project will get you acquainted with auto-replication problems and confront the Kleene recursion theorem.
Old-LibftASM	The aim of this project is to get familiar with assembly language.
Old-Philosophers	
libasm	The aim of this project is to get familiar with assembly language.
matt-daemon	A Unix project to create a daemon of type server. This server will listen on a given port and interpret a list of commands.
avaj-launcher	First projet of the Java projects arc. Implementation of a simple Java program according to a given class diagram written in UML.
swifty-companion	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.
red-tetris	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.
Inception-of-Things	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.
nm	This project will educate you on a deeper comprehension of how linux handle executables, by re-creating the command nm
ft_ping	Re-coding the ping command will let you get acquainted with TCP/IP communication between two machines on a network
snow-crash	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
[DEPRECATED] Python Module 00	This first module of Python is designed to to get started with the Python language. You will study basic setup, variables, data types, functions, ...
rainfall	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?
[DEPRECATED] Python Module 01	The goal of this module is to get started with the Python language. You will study objects, classes, inheritance, built-in functions, magic methods, generator ...
[DEPRECATED] Python Module 02	The goal of this module is to tackle advanced notions of Python. You will learn more about decorators, lambda, context manager, build package,
[DEPRECATED] Python Module 03	This fourth module of Python is designed to to get started with the library Numpy.
[DEPRECATED] Python Module 04	This fifth module is dedicated to the manipulation of Pandas library, widely used in datascience field.
Apprentissage 1 an	Le contrat d'apprentissage permet d'avoir à la fois une formation en entreprise tout en rendant en parallèle des projets à 42. Il a pour but de vous amener à la validation du diplôme 42. Cette expérience au sein d'une entreprise vous permettra d'appréhender de manière plus juste les enjeux et les besoins dans votre vie professionnelle future. Elle est très appréciée pour un employeur, et atteste de votre maturité professionnelle. Attention, c'est une expérience très prenante qui nécessite un réel investissement de votre part.
Bgp At Doors of Autonomous Systems is Simple	The purpose of this project is to deepen your knowledge of NetPractice. You will have to simulate several networks (VXLAN+BGP-EVPN) in GNS3.
ft_nmap	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.