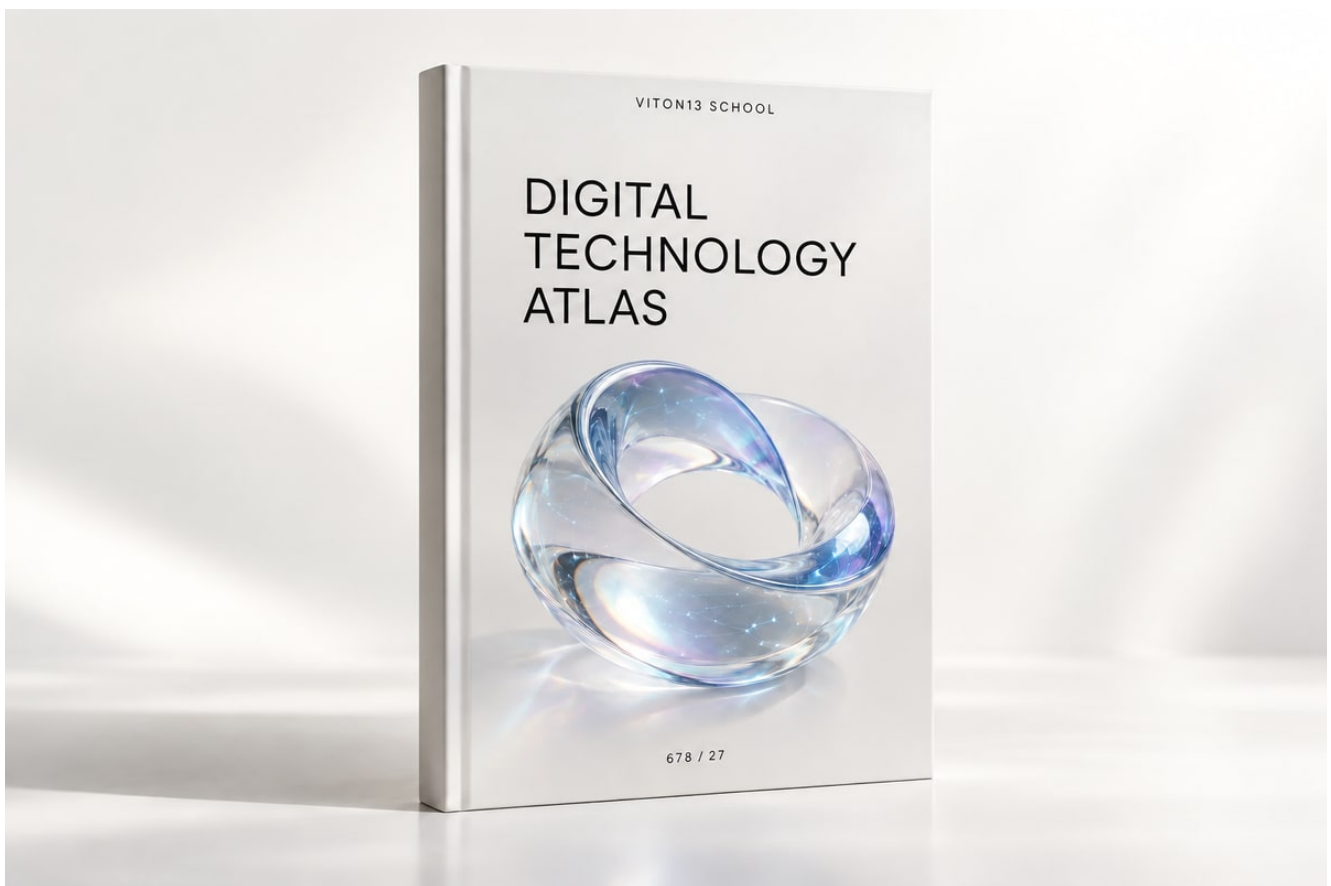


VITON13 SCHOOL

Digital Technology Atlas

678 catalogue entries. 27 sections. One practical learning route.



ENGLISH EDITION

Free to download. No registration required.

How to use this atlas

This book is a map of technologies. Do not try to study everything in order. Choose a goal first, then one section, and take your learning through to a measurable result.

A protocol for every section

1. GOAL

Define the specific result you want to achieve.

2. EXPLORATION

Open 3-5 resources from your chosen section and build a map of concepts.

3. PRACTICE

Reproduce a working example yourself rather than only reading about it.

4. PROJECT

Build an independent mini-product, script, study or prototype.

5. VERIFICATION

Test the result, explain your decisions in your own words and correct weak points.

6. ARTIFACT

Save the code, screenshots, findings and a link to the result in your portfolio or knowledge base.

Three levels of progress

START - Understand the terminology and run a first example.

BUILD - Connect several tools into a working project.

MASTER - Compare alternatives, measure quality and explain architectural trade-offs.

One completed project is worth more than twenty saved links.

This English edition translates the original Russian introductions, practical tasks and navigation notes. All 678 catalogue entries and all 676 original external links are preserved. External resources may change; a listing does not promise that a resource is free.

Contents

Choose a section that serves your goal. Each chapter includes an introduction, a practical task and its full resource catalogue.

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SECTION 01 / 57 CATALOGUE ENTRIES

01. Platforms

A platform defines the environment in which a product runs: from mobile devices and the cloud to IoT and desktop.

VITON13 TASK

Choose one platform, set up a minimal working environment and run a demonstration application.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Node.js

Async non-blocking event-driven JavaScript runtime built on Chrome's V8 JavaScript engine.

02. Cross-Platform

Writing cross-platform code on Node.js.

03. Frontend Development**04. iOS**

Mobile operating system for Apple phones and tablets.

05. Android

Mobile operating system developed by Google.

06. IoT & Hybrid Apps**07. Electron**

Cross-platform native desktop apps using JavaScript/HTML/CSS.

08. Cordova

JavaScript API for hybrid apps.

09. React Native

JavaScript framework for writing natively rendering mobile apps for iOS and Android.

10. Linux**11. Containers****12. eBPF**

Virtual machine that allows you to write more efficient and powerful tracing and monitoring for Linux systems.

13. Arch-based Projects

Linux distributions and projects based on Arch Linux.

14. Appliance

Package apps in a single file that works on various mainstream Linux distributions.

15. Omarchy

Opinionated Arch Linux and Hyprland desktop environment from the creator of Ruby on Rails.

16. macOS

Operating system for Apple's Mac computers.

17. Screensavers**18. Apps****19. Open Source Apps****20. watchOS**

Operating system for the Apple Watch.

21. JVM**22. Salesforce****23. Amazon Web Services****24. Windows**

Consumer desktop operating system.

25. PowerToys Run Plugins

Community plugins for the Windows quick launcher.

26. IPFS

P2P hypermedia protocol.

27. Fuse

Mobile development tools.

28. Heroku

Cloud platform as a service.

29. Raspberry Pi

Credit card-sized computer aimed at teaching kids programming, but capable of a lot more.

30. WebExtensions

Cross-browser extension system.

31. Smart TV

Create apps for different TV platforms.

32. GNOME

Simple and distraction-free desktop environment for Linux.

33. KDE

A free software community dedicated to creating an open and user-friendly computing experience.

34. .NET**35. Core****36. Roslyn**

Open-source compilers and code analysis APIs for C# and VB.NET languages.

37. DigitalOcean

Cloud computing platform designed for developers.

38. Flutter

Google's mobile SDK for building native iOS and Android apps from a single codebase written in Dart.

39. Home Assistant

Open source home automation that puts local control and privacy first.

40. IBM Cloud

Cloud platform for developers and companies.

41. Firebase

App development platform built on Google Cloud.

42. Adafruit IO

Visualize and store data from any device.

43. Cloudflare

CDN, DNS, DDoS protection, and security for your site.

44. Actions on Google

Developer platform for Google Assistant.

45. ESP

Low-cost microcontrollers with WiFi and broad IoT applications.

46. Deno

A secure runtime for JavaScript and TypeScript that uses V8 and is built in Rust.

47. DOS

Operating system for x86-based personal computers that was popular during the 1980s and early 1990s.

48. Nix

Package manager for Linux and other Unix systems that makes package management reliable and reproducible.

49. Integration

Linking together different IT systems (components) to functionally cooperate as a whole.

50. Node-RED

A programming tool for wiring together hardware devices, APIs, and online services.

51. Low Code

Allowing business professionals to address their needs on their own with little to no coding skills.

52. Capacitor

Cross-platform open source runtime for building Web Native apps.

53. ArcGIS Developer

Mapping and location analysis platform for developers.

54. Bluetooth Low Energy

Low-power wireless communication protocol ideal for IoT, wearables, and other battery-powered applications.

55. Uno Platform

Open-source .NET UI platform for building cross-platform apps.

56. Firebase Genkit

An open-source framework for building AI-powered apps and features.

57. Backstage

Open-source platform for building Internal Developer Portals that unify tools and workflows.

SECTION 02 / 77 CATALOGUE ENTRIES

02. Programming Languages

A language defines how you express ideas, its library ecosystem, and the trade-offs between development speed, safety and performance.

VITON13 TASK

Choose one language, implement a small command-line utility and compare its library ecosystem with a language you already know.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. JavaScript**02. Promises****03. Standard Style**

Style guide and linter.

04. Must Watch Talks**05. Tips****06. Network Layer****07. Micro npm Packages****08. Mad Science npm Packages**

Impossible sounding projects that exist.

09. Maintenance Modules

For npm packages.

10. npm

Package manager.

11. AVA

Test runner.

12. ESLint

Linter.

13. Functional Programming**14. Observables****15. npm scripts**

Task runner.

16. 30 Seconds of Code

Code snippets you can understand in 30 seconds.

17. Ponyfills

Like polyfills but without overriding native APIs.

18. Swift

Apple's compiled programming language that is secure, modern, programmer-friendly, and fast.

19. Education**20. Playgrounds****21. Python**

General-purpose programming language designed for readability.

22. Asyncio

Asynchronous I/O in Python 3.

23. Scientific Audio

Scientific research in audio/music.

24. CircuitPython

A version of Python for microcontrollers.

25. Data Science

Data analysis and machine learning.

26. Typing

Optional static typing for Python.

27. MicroPython

A lean and efficient implementation of Python 3 for microcontrollers.

28. Rust**29. Pest**

Parser generator.

30. Haskell**31. PureScript****32. Go****33. Scala****34. Scala Native**

Optimizing ahead-of-time compiler for Scala based on LLVM.

35. Ruby**36. Clojure****37. ClojureScript****38. Elixir****39. Elm****40. Erlang**

41. Julia

High-level dynamic programming language designed to address the needs of high-performance numerical analysis and computational science.

42. Lua**43. C/C++**

General-purpose language with a bias toward system programming and embedded, resource-constrained software.

44. R

Functional programming language and environment for statistical computing and graphics.

45. Learning**46. D****47. Common Lisp**

Powerful dynamic multiparadigm language that facilitates iterative and interactive development.

48. Learning**49. Perl****50. Groovy****51. Dart****52. Java**

Popular secure object-oriented language designed for flexibility to "write once, run anywhere".

53. RxJava**54. J2ME**

Java specification designed for old keypad phones and PDAs..

55. Kotlin**56. OCaml****57. ColdFusion****58. Fortran****59. PHP**

Server-side scripting language.

60. Composer

Package manager.

61. Pascal**62. AutoHotkey****63. Autolt****64. Crystal****65. CMake**

Build, test, and package software.

66. ActionScript 3

Object-oriented language targeting Adobe AIR.

67. Idris

General purpose pure functional programming language with dependent types influenced by Haskell and ML.

68. Ada/SPARK

Modern programming language designed for large, long-lived apps where reliability and efficiency are essential.

69. Q#

Domain-specific programming language used for expressing quantum algorithms.

70. Imba

Programming language inspired by Ruby and Python and compiles to performant JavaScript.

71. Vala

Programming language designed to take full advantage of the GLib and GNOME ecosystems, while preserving the speed of C code.

72. Coq

Formal language and environment for programming and specification which facilitates interactive development of machine-checked proofs.

73. V

Simple, fast, safe, compiled language for developing maintainable software.

74. Move

Domain-specific programming language for writing safe smart contracts.

75. Esolangs

Programming languages designed for experimentation or as jokes rather than actual use.

76. VBA

An event-driven version of Visual Basic 6.0 built into most Microsoft Office apps for automation and scripting.

77. F#

A .NET-based language with focus on functional programming.

SECTION 03 / 85 CATALOGUE ENTRIES

03. Front-End Development

Front-end development connects engineering, interfaces, accessibility and the perceived speed of a product.

VITON13 TASK

Build a responsive, accessible interface, measure its performance and present the result as a small case study.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. ES6 Tools**02. Web Performance Optimization****03. Web Tools****04. CSS**

Style sheet language that specifies how HTML elements are displayed on screen.

05. Critical-Path Tools**06. Scalability****07. Must-Watch Talks****08. Protips****09. Frameworks****10. React**

JavaScript library for building user interfaces.

11. Relay

Framework for building data-driven React apps.

12. React Hooks

Lets you use state and other React features without writing a class.

13. Web Components**14. Polymer**

JavaScript library to develop Web Components.

15. Angular

App framework.

16. Backbone

App framework.

17. HTML5

Markup language used for websites & web apps.

18. SVG

XML-based vector image format.

19. Canvas**20. KnockoutJS**

JavaScript library.

21. Dojo Toolkit

JavaScript toolkit.

22. Inspiration**23. Ember**

App framework.

24. Android UI**25. iOS UI****26. Meteor****27. BEM****28. Flexbox****29. Web Typography****30. Web Accessibility****31. Material Design****32. D3**

Library for producing dynamic, interactive data visualizations.

33. Emails**34. jQuery**

Easy to use JavaScript library for DOM manipulation.

35. Tips**36. Web Audio****37. Offline-First****38. Static Website Services****39. Cycle.js**

Functional and reactive JavaScript framework.

40. Text Editing**41. Motion UI Design****42. Vue.js**

App framework.

43. [Marionette.js](#)

App framework.

44. [Aurelia](#)

App framework.

45. [Charting](#)**46. [Ionic Framework](#)****47. [Chrome DevTools](#)****48. [PostCSS](#)**

CSS tool.

49. [Draft.js](#)

Rich text editor framework for React.

50. [Service Workers](#)**51. [Progressive Web Apps](#)****52. [choo](#)**

App framework.

53. [Redux](#)

State container for JavaScript apps.

54. [Browserify](#)

Module bundler.

55. [Sass](#)

CSS preprocessor.

56. [Ant Design](#)

Enterprise-class UI design language.

57. [Less](#)

CSS preprocessor.

58. [WebGL](#)

JavaScript API for rendering 3D graphics.

59. [Preact](#)

App framework.

60. [Progressive Enhancement](#)**61. [Next.js](#)**

Framework for server-rendered React apps.

62. [lit](#)

Library for building web components with a declarative template system.

63. [JAMstack](#)

Modern web development architecture based on client-side JavaScript, reusable APIs, and prebuilt markup.

64. [WordPress-Gatsby](#)

Web development technology stack with WordPress as a back end and Gatsby as a front end.

65. Mobile Web Development

Creating a great mobile web experience.

66. Storybook

Development environment for UI components.

67. Blazor

.NET web framework using C#/Razor and HTML that runs in the browser with WebAssembly.

68. PageSpeed Metrics

Metrics to help understand page speed and user experience.

69. Tailwind CSS

Utility-first CSS framework for rapid UI development.

70. Seed

Rust framework for creating web apps running in WebAssembly.

71. Web Performance Budget

Techniques to ensure certain performance metrics for a website.

72. Web Animation

Animations in the browser with JavaScript, CSS, SVG, etc.

73. Yew

Rust framework inspired by Elm and React for creating multi-threaded frontend web apps with WebAssembly.

74. Material-UI

Material Design React components for faster and easier web development.

75. Building Blocks for Web Apps

Standalone features to be integrated into web apps.

76. Svelte

App framework.

77. Design systems

Collection of reusable components, guided by rules that ensure consistency and speed.

78. Inertia.js

Make single-page apps without building an API.

79. MDBBootstrap

Templates, layouts, components, and widgets to rapidly build websites.

80. Master CSS

A virtual CSS language with enhanced syntax.

81. Hydrogen

Edge-first framework for building Shopify storefronts with React.

82. Tiny JS

Frontend libraries that fit into 2 kB with dependencies.

83. Frontend GIS

Geographic Information Systems (GIS) for web browsers.

84. WebGPU

JavaScript API for rendering and compute on GPUs.

85. **WebAssembly**

A portable binary format for running code efficiently across platforms.

SECTION 04 / 32 CATALOGUE ENTRIES

04. Back-End Development

The back end handles business logic, APIs, data, integrations, reliability and scaling.

VITON13 TASK

Build an API with validation, logging, tests and a database. Document your architectural decisions.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Flask

Python framework.

02. Docker**03. Vagrant**

Automation virtual machine environment.

04. Pyramid

Python framework.

05. Play1 Framework**06. CakePHP**

PHP framework.

07. Symfony

PHP framework.

08. Education**09. Laravel**

PHP framework.

10. Education**11. Rails**

Web app framework for Ruby.

12. Gems

Packages.

13. Phalcon

PHP framework.

14. Useful `.htaccess` Snippets**15. nginx**

Web server.

16. Dropwizard

Java framework.

17. Kubernetes

Open-source platform that automates Linux container operations.

18. Lumen

PHP micro-framework.

19. Serverless Framework

Serverless computing and serverless architectures.

20. Apache Wicket

Java web app framework.

21. Vert.x

Toolkit for building reactive apps on the JVM.

22. Terraform

Tool for building, changing, and versioning infrastructure.

23. Vapor

Server-side development in Swift.

24. Dash

Python web app framework.

25. FastAPI

Python web app framework.

26. CDK

Open-source software development framework for defining cloud infrastructure in code.

27. IAM

User accounts, authentication and authorization.

28. Slim

PHP framework.

29. Fiber

Web framework built on top of Fasthttp, the fastest HTTP engine for Go.

30. Kustomize

Kubernetes native declarative configuration management tool.

31. OpenTofu

Open-source infrastructure as code tool.

32. Reflex

Python web framework for building both your frontend and backend with no JavaScript.

SECTION 05 / 38 CATALOGUE ENTRIES

05. Computer Science

Fundamental knowledge helps you understand both how to use a tool and why a system behaves as it does.

VITON13 TASK

Choose one fundamental topic, implement an algorithm or data structure and explain its complexity in your own words.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. University Courses**02. Data Science****03. Tutorials****04. Machine Learning****05. Tutorials****06. ML with Ruby**

Learning, implementing, and applying Machine Learning using Ruby.

07. Core ML Models

Models for Apple's machine learning framework.

08. H2O

Open source distributed machine learning platform written in Java with APIs in R, Python, and Scala.

09. Software Engineering for Machine Learning

From experiment to production-level machine learning.

10. AI in Finance

Solving problems in finance with machine learning.

11. JAX

Automatic differentiation and XLA compilation brought together for high-performance machine learning research.

12. XAI

Providing insight, explanations, and interpretability to machine learning methods.

13. Speech and Natural Language Processing**14. Spanish****15. NLP with Ruby****16. Question Answering**

The science of asking and answering in natural language with a machine.

17. Natural Language Generation

Generation of text used in data-to-text, conversational agents, and narrative generation applications.

18. Linguistics**19. Cryptography****20. Papers**

Theory basics for using cryptography by non-cryptographers.

21. Computer Vision**22. Deep Learning**

Neural networks.

23. TensorFlow

Library for machine intelligence.

24. TensorFlow.js

WebGL-accelerated machine learning JavaScript library for training and deploying models.

25. TensorFlow Lite

Framework that optimizes TensorFlow models for on-device machine learning.

26. Papers

The most cited deep learning papers.

27. Education**28. Deep Vision****29. Open Source Society University****30. Functional Programming****31. Empirical Software Engineering**

Evidence-based research on software systems.

32. Static Analysis & Code Quality**33. Information Retrieval**

Learn to develop your own search engine.

34. Quantum Computing

Computing that utilizes quantum mechanics and qubits on quantum computers.

35. Theoretical Computer Science

The interplay of computer science and pure mathematics, distinguished by its emphasis on mathematical rigour and technique.

36. Conversational AI

Build awesome chatbots and digital assistants.

37. Generative AI

Automatically generates a wide range of unique content in text, image, and audio format.

38. Position-Based Quantum Cryptography

Theory on quantum cryptography that utilizes special relativistic constraints to achieve quantum-security under certain conditions.

SECTION 06 / 9 CATALOGUE ENTRIES

06. Big Data

Working with big data requires architecture, stream processing, data quality and observability.

VITON13 TASK

Build a small pipeline: acquire data, clean it, store it, calculate metrics and visualise the result.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Big Data**02. Public Datasets****03. Hadoop**

Framework for distributed storage and processing of very large data sets.

04. Data Engineering**05. Streaming****06. Apache Spark**

Unified engine for large-scale data processing.

07. Qlik

Business intelligence platform for data visualization, analytics, and reporting apps.

08. Splunk

Platform for searching, monitoring, and analyzing structured and unstructured machine-generated big data in real time.

09. Network Analysis

SECTION 07 / 14 CATALOGUE ENTRIES

07. Theory

Theory provides models that help you choose suitable solutions and assess their limitations.

VITON13 TASK

Choose one theoretical area and connect it to a practical example in code or system design.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. [Papers We Love](#)

02. [Talks](#)

03. [Algorithms](#)

04. [Education](#)

Learning and practicing.

05. [Algorithm Visualizations](#)

06. [Artificial Intelligence](#)

07. [Search Engine Optimization](#)

08. [Competitive Programming](#)

09. [Math](#)

10. [Recursion Schemes](#)

Traversing nested data structures.

11. [Audit Algorithms](#)

Algorithmic audits of algorithms.

12. [AGI & CoCoSci](#)

The reciprocation of Artificial General Intelligence (AGI) and Computational Cognitive Sciences (CoCoSci).

13. [Complex Systems](#)

The scientific field studying systems with multiple interacting parts and emergent properties.

14. [VLM Architectures](#)

Vision Language Model architectures.

SECTION 08 / 6 CATALOGUE ENTRIES

08. Books

Books provide a long, coherent learning path that fragmented lessons often lack.

VITON13 TASK

Create a route through three books: foundational, applied and advanced. After each one, produce notes and a practical artifact.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. [Free Programming Books](#)

02. [Go Books](#)

03. [R Books](#)

04. [Mind Expanding Books](#)

05. [Book Authoring](#)

06. [Elixir Books](#)

SECTION 09 / 5 CATALOGUE ENTRIES

09. Editors

A well-configured development environment reduces friction and makes repeated operations almost effortless.

VITON13 TASK

Configure your workspace for one real project: navigation, formatting, linting, debugging and quick commands.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Sublime Text**02. Vim****03. Neovim**

Vim-fork focused on extensibility and usability.

04. Emacs**05. Visual Studio Code**

Cross-platform open-source text editor.

SECTION 10 / 28 CATALOGUE ENTRIES

10. Gaming

Games combine graphics, physics, AI, sound, interfaces, narrative and demanding performance requirements.

VITON13 TASK

Build a vertical slice of a game: controls, one mechanic, an enemy or obstacle, an interface and a runnable build.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Game Development**02. Game Talks****03. Godot**

Game engine.

04. Open Source Games**05. Chess****06. LÖVE**

Game engine.

07. PICO-8

Fantasy console.

08. Game Boy Development**09. Construct 2**

Game engine.

10. Gideros

Game engine.

11. Minecraft

Sandbox video game.

12. ComputerCraft

Minecraft mod that adds programmable computers.

13. Game Datasets

Materials and datasets for Artificial Intelligence in games.

14. Haxe Game Development

A high-level strongly typed programming language used to produce cross-platform native code.

15. libGDX

Java game framework.

16. PlayCanvas

Game engine.

17. Game Remakes

Actively maintained open-source game remakes.

18. Flame

Game engine for Flutter.

19. Discord Communities

Chat with friends and communities.

20. CHIP-8

Virtual computer game machine from the 70s.

21. Games of Coding

Learn a programming language by making games.

22. Esports

Video games played as a sport.

23. Learn Gamedev

The craft of video game creation.

24. Game Engine Development

Building software to speed up game creation.

25. GameMaker

Game engine.

26. Game Production

Leading the process of designing, developing, testing and distributing a video game from concept to release.

27. Babylon.js

Game engine for cross-platform web and native game development.

28. Roblox

Immersive platform for hosting millions of diverse experiences.

SECTION 11 / 21 CATALOGUE ENTRIES

11. Development Environment

A reproducible environment reduces "it works on my machine" errors and speeds up teamwork.

VITON13 TASK

Automate local development: installation, environment variables, run commands, tests and a reproducible build.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Quick Look Plugins

For macOS.

02. Dev Env**03. Dotfiles****04. Shell****05. Fish**

User-friendly shell.

06. Command-Line Apps**07. ZSH Plugins****08. GitHub**

Hosting service for Git repositories.

09. Browser Extensions**10. Cheat Sheet****11. Pinned Gists**

Dynamic pinned gists for your GitHub profile.

12. Git Cheat Sheet & Git Flow**13. Git Tips****14. Git Add-ons**

Enhance the `git` CLI.

15. Git Hooks

Scripts for automating tasks during `git` workflows.

16. SSH**17. FOSS for Developers**

18. [Hyper](#)

Cross-platform terminal app built on web technologies.

19. [Terminals Are Sexy](#)

20. [GitHub Actions](#)

Create tasks to automate your workflow and share them with others on GitHub.

21. [WezTerm](#)

Powerful cross-platform terminal emulator.

SECTION 12 / 5 CATALOGUE ENTRIES

12. Entertainment

Creative technologies broaden your understanding of interaction, generative systems and digital experiences.

VITON13 TASK

Choose one creative field and make a demonstration project you can show in a portfolio.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Science Fiction

Scifi.

02. Fantasy**03. Podcasts****04. Email Newsletters****05. IT Quotes**

SECTION 13 / 17 CATALOGUE ENTRIES

13. Databases

Data becomes valuable when it can be stored, found, changed and restored reliably.

VITON13 TASK

Design a data model, implement CRUD operations, indexes and backups, then check typical queries.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Database**02. MySQL****03. SQLAlchemy****04. InfluxDB****05. Neo4j****06. MongoDB**

NoSQL database.

07. RethinkDB**08. TinkerPop**

Graph computing framework.

09. PostgreSQL

Object-relational database.

10. CouchDB

Document-oriented NoSQL database.

11. HBase

Distributed, scalable, big data store.

12. NoSQL Guides

Help on using non-relational, distributed, open-source, and horizontally scalable databases.

13. Database Tools

Everything that makes working with databases easier.

14. TypeDB

Logical database to organize large and complex networks of data as one body of knowledge.

15. Supabase

An open-source alternative to Firebase.

16. PocketBase

An open-source, Go-based backend in one file.

17. Neon

An open-source alternative to AWS Aurora.

SECTION 14 / 14 CATALOGUE ENTRIES

14. Media

Media technologies cover the creation, encoding, processing, delivery and analysis of visual and audio content.

VITON13 TASK

Create a short pipeline for an image, audio or video: import, processing, export and quality control.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Fonts**02. Codeface**

Text editor fonts.

03. Stock Resources**04. GIF**

Image format known for animated images.

05. Music**06. Open Source Documents****07. Audio Visualization****08. Broadcasting****09. Pixel Art**

Pixel-level digital art.

10. FFmpeg

Cross-platform solution to record, convert and stream audio and video.

11. Icons

Downloadable SVG/PNG/font icon projects.

12. Audiovisual

Lighting, audio and video in professional environments.

13. VLC

Cross-platform media player software and streaming server.

14. Audio Over IP

Reliably transmit uncompressed, low-latency audio over an IP (layer 3) network.

SECTION 15 / 15 CATALOGUE ENTRIES

15. Learning

A strong learning system turns a chaotic stream of material into steady skills development.

VITON13 TASK

Build a personal 30-day programme: one topic a day, one exercise and a small project each week.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. CLI Workshoppers

Interactive tutorials.

02. Learn to Program**03. Speaking****04. Tech Videos****05. Computer History****06. Programming for Kids****07. STEAM**

Supplements for specific science, technology, engineering, arts, and math (STEAM) courses across all grade levels.

08. Educational Games

Learn while playing.

09. JavaScript Learning**10. CSS Learning**

Mainly about CSS - the language and the modules.

11. Product Management

Learn how to be a better product manager.

12. Roadmaps

Gives you a clear route to improve your knowledge and skills.

13. YouTubers

Watch video tutorials from YouTubers that teach you about technology.

14. Hackathon

Running fun and productive hackathons.

15. Certificates

Free computer science certifications to showcase your knowledge.

SECTION 16 / 29 CATALOGUE ENTRIES

16. Security

Security is risk management: assets, threats, vulnerabilities, access control, observability and recovery.

VITON13 TASK

Work only on your own systems or with explicit permission. Build a defensive lab: inventory, configuration checks, logging, updates and a report.

Ethical rule: carry out security checks only on your own systems or with the explicit permission of the owner.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Application Security**02. Security****03. CTF**

Capture The Flag.

04. Cyber Security University

Free educational resources that focus on learning by doing.

05. Malware Analysis**06. Android Security****07. Hacking****08. Hacking Spots****09. Honeypots**

Deception trap, designed to entice an attacker into attempting to compromise the information systems in an organization.

10. Incident Response**11. Vehicle Security and Car Hacking****12. Web Security**

Security of web apps & services.

13. Lockpicking

The art of unlocking a lock by manipulating its components without the key.

14. Cybersecurity Blue Team

Groups of individuals who identify security flaws in information technology systems.

15. Fuzzing

Automated software testing technique that involves feeding pseudo-randomly generated input data.

16. Embedded and IoT Security**17. GDPR**

Regulation on data protection and privacy for all individuals within EU.

18. DevSecOps

Integration of security practices into [DevOps](<https://en.wikipedia.org/wiki/DevOps>).

19. Executable Packing

Packing and unpacking executable formats.

20. Malware Persistence

Techniques that adversaries use to keep access to systems across restarts.

21. EVM Security

Understanding the Ethereum Virtual Machine security ecosystem.

22. Password Cracking

The process of recovering passwords from data that has been stored in or transmitted by a system in scrambled form.

23. Security Card Games

Train your skills and discuss various security topics.

24. Suricata

Intrusion detection/prevention system and network security monitoring engine.

25. Prompt Injection

A type of vulnerability that specifically targets machine learning models.

26. Detection Engineering

Design, build, and operate detective cybersecurity controls.

27. Annual Security Reports

Exploring cybersecurity trends, insights, and challenges.

28. CI/CD Attacks

Offensive research of systems and processes related to developing and deploying code.

29. OpenID Connect

Identity standard and authentication protocol built on OAuth 2.0 for user identity assertion.

SECTION 17 / 11 CATALOGUE ENTRIES

17. Content Management Systems

A CMS separates content from development and helps teams publish and maintain digital products more quickly.

VITON13 TASK

Deploy a CMS and create a content structure, roles, a page template and backups.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Umbraco**02. Refinery CMS**

Ruby on Rails CMS.

03. Wagtail

Django CMS focused on flexibility and user experience.

04. Textpattern

Lightweight PHP-based CMS.

05. Drupal

Extensible PHP-based CMS.

06. Craft CMS

Content-first CMS.

07. Sitecore

.NET digital marketing platform that combines CMS with tools for managing multiple websites.

08. Silverstripe CMS

PHP MVC framework that serves as a classic or headless CMS.

09. Directus

A real-time API and app dashboard for managing SQL database content.

10. Plone

Open source Python CMS.

11. Payload

Next.js native and open source headless CMS.

SECTION 18 / 11 CATALOGUE ENTRIES

18. Hardware

Hardware projects connect code to the physical world and teach you to account for power, interfaces, constraints and reliability.

VITON13 TASK

Build a safe device prototype or a simulation: a sensor or input, logic, output and circuit documentation.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Robotics**02. Internet of Things****03. Electronics**

For electronic engineers and hobbyists.

04. Bluetooth Beacons**05. Electric Guitar Specifications**

Checklist for building your own electric guitar.

06. Plotters

Computer-controlled drawing machines and other visual art robots.

07. Robotic Tooling

Free and open tools for professional robotic development.

08. LIDAR

Sensor for measuring distances by illuminating the target with laser light.

09. Open Hardware

Open-source hardware projects.

10. ADS-B

Technology broadcasting aircraft's identity, position, and data periodically.

11. Flying FPV

Open hardware and software related to drones / UAVs.

SECTION 19 / 12 CATALOGUE ENTRIES

19. Business

Technology has commercial value when it solves a clear problem and its effect can be measured.

VITON13 TASK

Choose one business task and create a measurable experiment: a hypothesis, channel, metric, time frame and success criterion.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Open Companies**02. Places to Post Your Startup****03. OKR Methodology**

Goal setting & communication best practices.

04. Indie

Independent developer businesses.

05. Tools of the Trade

Tools used by companies on Hacker News.

06. Clean Tech

Fighting climate change with technology.

07. Wardley Maps

Provides high situational awareness to help improve strategic planning and decision making.

08. Social Enterprise

Building an organization primarily focused on social impact that is at least partially self-funded.

09. Engineering Team Management

How to transition from software development to engineering management.

10. Developer-First Products

Products that target developers as the user.

11. Billing

Payments, invoicing, pricing, accounting, marketplace, fraud, and business intelligence.

12. Engineering Strategy

How to design and execute engineering strategies for tech leadership.

SECTION 20 / 7 CATALOGUE ENTRIES

20. Work and Careers

Turn skills into evidence of competence that you can present in the job market.

VITON13 TASK

Update your career toolkit: portfolio, CV, profile, application process and a table for measuring conversion.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Slack

Team collaboration.

02. Communities**03. Remote Jobs****04. Productivity****05. Niche Job Boards****06. Code Review**

Reviewing code.

07. Creative Technology

Businesses & groups that specialize in combining computing, design, art, and user experience.

SECTION 21 / 5 CATALOGUE ENTRIES

21. Networking

Networks connect systems. Understanding protocols and infrastructure is essential to performance and resilience.

VITON13 TASK

Build a test network or lab and describe its topology, addressing, observability and a failure scenario.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. PCAPTtools**02. Real-Time Communications**

Network protocols for near simultaneous exchange of media and data.

03. SNMP

A protocol for collecting, modifying, and organizing information about managed devices on IP networks.

04. Scapy

Python-based interactive packet manipulation.

05. Cilium

Provides networking and security capabilities for containerized apps, microservices, and virtual machines.

SECTION 22 / 17 CATALOGUE ENTRIES

22. Decentralized Systems

Decentralisation changes the model of trust, data ownership and agreement on state between participants.

VITON13 TASK

Build an educational prototype with a clear model of trust, threats and limitations. Do not use real money unless necessary.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Bitcoin

Services and tools for Bitcoin software developers.

02. Ripple

Open source distributed settlement network.

03. Non-Financial Blockchain

Applications of Blockchain beyond finance.

04. Mastodon

Open source decentralized microblogging network.

05. Ethereum

Distributed computing platform for smart contract development.

06. Blockchain AI

AI and machine-learning projects built on Blockchain.

07. EOSIO

A decentralized operating system supporting industrial-scale apps.

08. Corda

Open source Blockchain platform designed for business.

09. Waves

Open source Blockchain platform and development toolset for Web 3.0 apps and decentralized solutions.

10. Substrate

Framework for writing scalable, upgradeable blockchains in Rust.

11. Golem

Open source peer-to-peer marketplace for computing resources.

12. Stacks

A smart contract platform secured by Bitcoin.

13. Algorand

An open-source, proof of stake Blockchain and smart contract computing platform.

14. ZeroNet

A decentralized web-like network of peer-to-peer users.

15. Cosmos SDK

Modular framework for building app-specific blockchains in Go.

16. Tor

A free overlay network for enabling anonymous communication.

17. ATProto

Open, decentralized network for building social apps.

SECTION 23 / 12 CATALOGUE ENTRIES

23. Health and Social Science

These fields show how computational methods interact with people, society and scientific data.

VITON13 TASK

Choose a research task and define the question, data source, analytical method and limits of interpretation.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Biomedical Information Extraction

How to extract information from unstructured biomedical data and text.

02. Computational Neuroscience

A multidisciplinary science which uses computational approaches to study the nervous system.

03. Diversity

Creating a more inclusive and diverse tech community.

04. Digital History

Computer-aided scientific investigation of history.

05. Empathy in Engineering

Building and promoting more compassionate engineering cultures.

06. Healthcare

Open source healthcare software for facilities, providers, developers, policy experts, and researchers.

07. Mental Health

Awareness and self-care in the software industry.

08. Neuroscience

Study of the nervous system and brain.

09. Digital Humanities

Software for humanities scholars using quantitative or computational methods.

10. Lucid Dreams

A dream where one becomes aware they are dreaming.

11. Neuroimaging

Software for analyzing brain data from living subjects.

12. Transgender

Someone whose gender identity differs from their assigned birth sex.

SECTION 24 / 3 CATALOGUE ENTRIES

24. Events

Events accelerate learning through exchanging experience, building connections and observing the practices of a professional community.

VITON13 TASK

Create a professional development calendar. For each event, define a goal, questions and an expected outcome in advance.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Creative Tech Events

Events around the globe for creative coding, tech, design, music, arts and cool stuff.

02. Events in Italy

Tech-related events in Italy.

03. Events in the Netherlands

Tech-related events in the Netherlands.

SECTION 25 / 11 CATALOGUE ENTRIES

25. Testing

Testing turns expectations about a system into verifiable assertions and reduces the cost of changes.

VITON13 TASK

Cover one small project with unit, integration and end-to-end tests, and measure which defects they actually catch.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Testing

Software testing.

02. Visual Regression Testing

Ensures changes did not break the functionality or style.

03. Selenium

Open-source browser automation framework and ecosystem.

04. Appium

Test automation tool for apps.

05. TAP

Test Anything Protocol.

06. JMeter

Load testing and performance measurement tool.

07. k6

Open-source, developer-centric performance monitoring and load testing solution.

08. Playwright

Node.js library to automate Chromium, Firefox and WebKit with a single API.

09. Quality Assurance Roadmap

How to start & build a career in software testing.

10. Gatling

Open-source load and performance testing framework based on Scala, Akka, and Netty.

11. CodeRabbit

AI-powered code review platform.

SECTION 26 / 132 CATALOGUE ENTRIES

26. Miscellaneous

Interdisciplinary topics often generate unexpected ideas and connect technology to real tasks.

VITON13 TASK

Choose one unusual field and turn it into an interdisciplinary mini-project with a clearly defined result.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Scientific Writing

Distraction-free scientific writing with Markdown, reStructuredText and Jupyter notebooks.

02. JSON

Text based data interchange format.

03. GeoJSON**04. CSV**

A text file format that stores tabular data and uses a comma to separate values.

05. Discounts for Student Developers**06. Radio****07. Meta-catalogue**

Recursive navigation through themed collections.

08. Analytics**09. REST****10. Continuous Integration and Continuous Delivery****11. Services Engineering****12. Free for Developers****13. Boilerplate Projects****14. Readme****15. GitHub Wiki**

Comprehensive documentation on GitHub beyond README.

16. Design and Development Guides**17. Software Engineering Blogs****18. Self Hosted****19. FOSS Production Apps**

20. Gulp

Task runner.

21. AMA

Ask Me Anything.

22. Answers**23. Open Source Photography****24. OpenGL**

Cross-platform API for rendering 2D and 3D graphics.

25. GraphQL**26. Urban & Regional Planning**

Concerning the built environment and communities.

27. Transit

Data standards, APIs, apps, tools, datasets, and research around open source technology of public transit.

28. Research Tools**29. Data Visualization****30. Microservices****31. Unicode**

Standards, quirks, packages and resources for Unicode.

32. Code Points**33. Beginner-Friendly Projects****34. Katas****35. Tools for Activism****36. Citizen Science**

For community-based and non-institutional scientists.

37. MQTT

"Internet of Things" connectivity protocol.

38. For Girls**39. Vorpai**

Node.js CLI framework.

40. Vulkan

Low-overhead, cross-platform 3D graphics and compute API.

41. LaTeX

Typesetting language.

42. Economics

An economist's starter kit.

43. Funny Markov Chains

44. Bioinformatics**45. Cheminformatics**

Informatics techniques applied to problems in chemistry.

46. Colorful

Choose your next color scheme.

47. Steam

Digital distribution platform.

48. Bots

Building bots.

49. Site Reliability Engineering**50. DTrace**

Dynamic tracing framework.

51. Userscripts

Enhance your browsing experience.

52. Pokémon

Resources for Pokémon and Pokémon GO.

53. ChatOps

Managing technical and business operations through a chat.

54. Falsehood

Falsehoods programmers believe in.

55. Domain-Driven Design

Software development approach for complex needs by connecting the implementation to an evolving model.

56. Quantified Self

Self-tracking through technology.

57. Web Design

For digital designers.

58. Creative Coding

Programming something expressive instead of something functional.

59. No-Login Web Apps

Web apps that work without login.

60. Free Software

Free as in freedom.

61. Framer

Prototyping interactive UI designs.

62. Markdown

Markup language.

63. Dev Fun

Funny developer projects.

64. Magento 2

Open Source eCommerce built with PHP.

65. TikZ

Graph drawing packages for TeX/LaTeX/ConTeXt.

66. Ad-Free

Alternatives without ads.

67. Prometheus

Open-source monitoring system.

68. Homematic

Smart home devices.

69. Ledger

Double-entry accounting on the command-line.

70. Web Monetization

A free open web standard service that allows you to send money directly in your browser.

71. Uncopyright

Public domain works.

72. Crypto Currency Tools & Algorithms

Digital currency where encryption is used to regulate the generation of units and verify transfers.

73. Open Source Supporters

Companies that offer their tools and services for free to open source projects.

74. Design Principles

Create better and more consistent designs and experiences.

75. Theravada

Teachings from the Theravada Buddhist tradition.

76. inspectIT

Open source Java app performance management tool.

77. Open Source Maintainers

The experience of being an open source maintainer.

78. Calculators

Tools for every platform.

79. Captcha

A type of challenge-response test used in computing to determine whether or not the user is human.

80. Jupyter

Create and share documents that contain code, equations, visualizations and narrative text.

81. FIRST Robotics Competition

International high school robotics championship.

82. Speakers

Conference and meetup speakers in the programming and design community.

83. Board Games

Table-top gaming fun for all.

84. Software Patreons

Fund individual programmers or the development of open source projects.

85. Parasite

Parasites and host-pathogen interactions.

86. Food

Projects on GitHub related to food.

87. Bitcoin Payment Processors

Start accepting Bitcoin.

88. Scientific Computing

Solving complex scientific problems using computers.

89. Amazon Sellers**90. Agriculture**

Open source technology for farming and gardening.

91. Product Design

Design a product from the initial concept to production.

92. Prisma

Turn your database into a GraphQL API.

93. Software Architecture

The discipline of designing and building software.

94. Connectivity Data and Reports

Better understand who has access to telecommunication and internet infrastructure and on what terms.

95. Stacks

Tech stacks for building different apps and features.

96. Cytodata

Image-based profiling of biological phenotypes for computational biologists.

97. IRC

Open source messaging protocol.

98. Advertising

Programmatic media and ad tech for websites.

99. Earth

Find ways to resolve the climate crisis.

100. Naming

Guides for naming things in computer science.

101. Web Archiving

An effort to preserve the Web for future generations.

102. WP-CLI

Command-line interface for WordPress.

103. Credit Modeling

Methods for classifying credit applicants into risk classes.

104. Ansible

A Python-based, open-source IT configuration management and automation platform.

105. Biological Visualizations

Interactive visualization of biological data on the web.

106. QR Code

A type of matrix barcode that can be used to store and share a small amount of information.

107. Veganism

Making the plant-based lifestyle easy and accessible.

108. Translations

The transfer of the meaning of a text from one language to another.

109. Scriptable

An iOS app for automation in JavaScript.

110. WebXR

Enables immersive virtual reality and augmented reality content on the web.

111. Computational Geometry

Computational approaches for problems in geometry.

112. OpenStreetMap

An open data mapping project utilized by many apps and devices.

113. Computational Biology

Computational approaches applied to problems in biology.

114. Read the Docs

Example documentation projects to inspire and help bootstrap new documentation projects.

115. Quarto

Scientific and technical open-source publishing system built on Pandoc.

116. Biological Image Analysis

Interpreting biological phenomena using images.

117. ChatGPT

Artificial intelligence chatbot developed by OpenAI.

118. Whisper

Open-source AI-powered speech recognition system developed by OpenAI.

119. Stock Trading

Purchase and sale of equities of publicly traded companies to generate profits.

120. Steam Deck

A handheld gaming computer developed by Valve.

121. Astrophotography

Photography of astronomical objects, celestial events, or areas of the night sky.

122. HPC

High Performance Computing.

123. Geocaching

Outdoor treasure-hunting activity that uses GPS-enabled devices.

124. Regex

Specialized language for matching patterns in text.

125. Event-Driven Architecture

A software architecture approach where services collaborate by publishing and subscribing to events.

126. Permacomputing

Resilient and regenerative computing practices inspired by permaculture.

127. Standards

Proposals and standards that define and enhance software, languages, and related technologies.

128. Claude Code

Terminal-based AI coding assistant by Anthropic.

129. Gemini CLI

Terminal-based AI coding assistant by Google.

130. SAP Commerce

An e-commerce platform built with Java, Spring MVC, and Angular.

131. Tech Ethics

Mitigating and avoiding the potential negative effects of technology on society.

132. Copilot Agents

AI pair programming assistant by GitHub that provides code suggestions and completions.

SECTION 27 / 5 CATALOGUE ENTRIES

27. Navigation and Related Catalogues

Additional navigation helps expand your knowledge map without turning learning into endless link collecting.

VITON13 TASK

Use navigation tools to expand your own learning graph. Regularly remove outdated and duplicate resources.

Goal > 3 resources > practice > mini-project > verification > artifact.

Resource catalogue

01. Global Themed Catalogues

A map of thematic collections.

02. Search Themed Catalogues

Quick search across collections.

03. Random Navigator

Random material from a large collection.

04. CLI Navigator

Command-line navigation through collections.

05. Update Tracker

Track changes in collections.

Your next 90 days

Do not measure progress by the number of pages you open. Measure it by the number of things you can design, build, test and explain.

Suggested 90-day cycle

Days 1-30

One foundational area and daily practice.

Days 31-60

One applied stack and a project of moderate complexity.

Days 61-90

Integrate several fields, create a final product and document it.

One completed project is worth more than twenty saved links.

Goal > 3 resources > practice > mini-project > verification > artifact.

[VITON13 SCHOOL](#)