

Zalka Ernő

software developer, consultant



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Foreword

This is an experimental CV, contains much more information than a usual one.

Recruiters should check only the Keyword Matrix (page 2) for quick matching, and maybe Education chapter (page 3) for checking official requirements.

Technical interviewers may pick some of my professional or pet projects to talk about, even ones from my GitHub page, which are not mentioned here.

I will reject bigger homeworks and exhausting online tests. I can work under pressure, but I fail on 50% of online tests, even if I could know the solution. Smaller homeworks and NPP (non-programming programmer) tests are okay. I prefer collaborative programming sessions, I think, about a hour is enough to see, how the other person is thinking, dealing with problems, listening to other party, arguing etc.

HR KEYWORD MATRIX		EXPERIENCE		
		STRONG	FAIR	NONE
I N T E R E S T	YES	<i>Best match...</i>	<i>Good match...</i>	<i>Ready to learn...</i>
		<ul style="list-style-type: none"> • C, C++ dev. • Python dev. • Linux dev. • Embedded/IoT dev. • Systems architect • Multithreading • OOP design • Design patterns • GIT, GitFlow • Tooling • Integration testing • Unit testing • Teaching, mentoring 	<ul style="list-style-type: none"> • Assembly • IoT consultant • IoT product design • Microservices • Scrum • Compiler • Emulator • Docker • Key-value DBs • UI/UX design • Image processing • SDL2 • LaTeX 	<ul style="list-style-type: none"> • Rust • Django • FPGA • DSP • CUDA • Machine learning • OpenCV • Security • Functional programming • Linux driver development
	MAYBE	<i>Can do...</i>	<i>Will do...</i>	<i>Not planned...</i>
		<ul style="list-style-type: none"> • Backend • ERP consultant • Full stack dev. • Mumps/M/Caché • PHP • SQL, MySQL • Tech lead • Presentations • Education 	<ul style="list-style-type: none"> • Misra C • Ansible • Continuous integration • DevOps • Writing tech docs 	<ul style="list-style-type: none"> • .NET/C#/MONO • Big Data • Delphi • Erlang • PL/SQL, Oracle • Ruby, Ruby on Rails • SAP, ABAP • Scala
	NO	<i>Not again...</i>	<i>Forget it...</i>	<i>Strictly avoid...</i>
		<ul style="list-style-type: none"> • CIO • Frontend dev. • JavaScript • Node.js • SEO • Web development 	<ul style="list-style-type: none"> • Android • OpenGL • HTML, CSS • Java, JEE, Spring • Visual Studio • Project manager 	<ul style="list-style-type: none"> • Angular.js • ASP.NET • Drupal • Objective-C/iOS • Perl • Visual Basic • Windows dev. • Wordpress

Education

University	
School	Széchenyi István University, Győr
Specialization	Software developer
Period	1989-1993
Degree thesis	Sledge Hammer PC, a multimedia disk magazine for MS-DOS <ul style="list-style-type: none">• 6000 lines of pure 8086 assembly code• The GUI runs in CGA Hi-Res mode• Different paging effect for slow and fast machines• Contains built-in CGA emulator for Hercules cards• Displays images in native color mode on EGA/VGA• Converts images to B/W for displaying on CGA/Hercules• Articles can be printed in background• Single .EXE contains all the content files
Takeaway	Nothing. Really.

High School	
School	Lengyel Gyula (Deák Ferenc) SZKI, Győr
Specialization	IT system organizer
Period	1984-1989
Takeaway	IT organizer profession basics FAT12 file system structure

Languages	
Hungarian	Native
English	Professional working proficiency

Work Experience

Embedded developer, product validation engineer	
Company	Heitec Kft. (embedded systems development)
Period	2019 -
Projects, tasks	Implement healthcare product firmware (C)
	Create end-to-end test framework and tests (Python)
	Create test applications for embedded devices (C, C++)
Takeaway	I ² C, CAN, PCI experience
	Smart electronic product validation
	German corporate culture

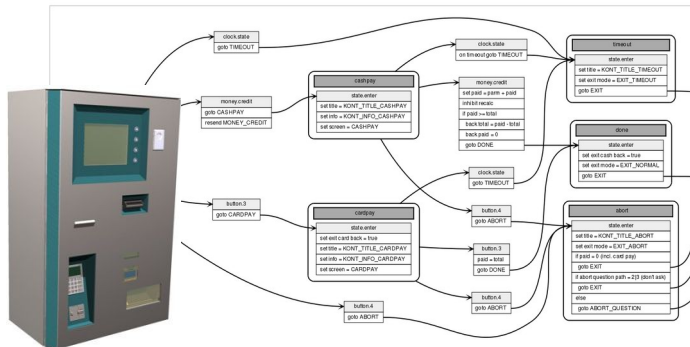
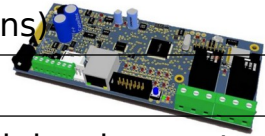
C++ developer	
Company	CAE Engineering Kft. (flight simulator development)
Period	2017 - 2019
Projects, tasks	Implement flight simulator functions (C++)
	Design and implement tools (Python)
	Mentoring developers, create educational materials
Reason for leave	Not my decision - Canadian government started a Canadian job supporting program, so Hungarian department became too expensive. Escaped from slow downsizing
	The central project management was a bad joke
Takeaway	Friendly atmosphere at a 100+ member company
	Optimal hiring process
	Professional CI system
	C++ knowledge update
	German corporate culture

Python / JavaScript developer	
Company	EcoStudio Kft. (web systems development)
Period	2016 - 2017
Projects, tasks	Design and develop microservices architecture application (JavaScript, Node.js, Haxe, RethinkDB, RabbitMQ)
	Create test framework and tests for microservices (Python, Hack)
	Re-implement core Haxe functionality in Python
Roles	Developer
	Responsible for product quality
Reason for leave	Not my decision - Project cancelled suddenly, also a promising lead cancelled
Takeaway	Importance of integration tests
	Microservices architecture
	Scrum

Web frontend developer	
Company	Netavis Kft. (video surveillance systems)
Period	2013 - 2016
Projects, tasks	Design and implement web client for video monitoring system
	Creating smaller utilities (Python, PHP, Java)
Reason for leave	Only web projects - professional dead-end
	Got a good offer, also +35% salary
Takeaway	Importance of the backend-frontend interface design
	Meet modern web technologies

Embedded and system developer

Company	Intep Kft. (parking systems, embedded solutions)
Period	2011 - 2013
Projects, tasks (incomplete)	Re-implementation of Makingthings embedded development framework for Linux (C)
	Complete firmware for LAN-RS232 / LAN-RS485 interface <ul style="list-style-type: none"> • Embedded app (C) • Configuration web UI (JavaScript) • Manufacturing preparation tool
	Outdoor LED wall firmware <ul style="list-style-type: none"> • Font renderer, with auto kerning (C++) • API for external applications (C++) • Reference external application (JavaScript) • Created custom font
	Payment kiosk firmware <ul style="list-style-type: none"> • Core logic, state machine (C++) • Autodoc creator for state machine (PHP, GraphViz) • Note and coin acceptor, bank card reader etc. Integration (C++) • Customizable web UI (JavaScript)
	Modular documentation system for generate datasheet PDFs (PHP, Wkhtmltopdf)
Reason for leave	No salary for months
	Pretty bad management
Takeaway	Entered the world of the the embedded development
	Participiate in full product creation process: design, software implemventation, integration, testing, documentation and even installation

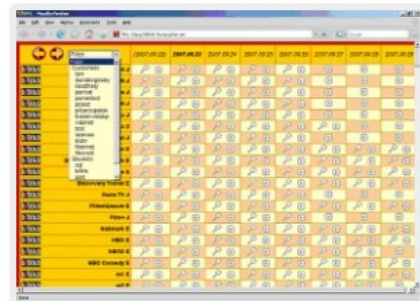


System architect and developer	
Company	DVB project <ul style="list-style-type: none"> • Porion Kft. (cable network solution provider) • Bitklub Kft. (DVB systems - partner)
Period	2006 - 2011
Projects, tasks	Digital television (DVB) SI/EPG inserter <ul style="list-style-type: none"> • system design and implementation (C++) • SI/EPG administration backend and admin UI (PHP, JavaScript) • The competition is suspected us of stealing the EPG system of Conax, the industry leader software (which is slow and expensive) • In 2021, the system is still used at various cable providers
	Video stream jukebox server design and implementation (C++)
Reason for leave	For customers, SI/EPG inserter was free, only maintenance fee was charged. Even my program is a replacement of a very expensive system, it was a permanent problem to figure out where I got salary from, as the customer has not paid for my program. Finally, I solved the problem
Takeaway	Don't afraid of mystic industries, like DVB, probably they're not as difficult as they look first
	C++ is a good choice for large, time-critical systems

EPG manager | EPG server Central Database and management server

The central core is able to manage and control data flows and playout modules. Local or remote playout modules can be controlled from a simple web interface. All configuration data are stored in XML files, so it's simple to configure via web interface or from 3rd party XML applications.

EPG data (program schedules for TV channels) are also stored on the central server. The import modules are very flexible to import different formats of EPG schedule data. (XML, SQL, Web source)



Web developer and architect, SEO expert, CTO

Company	Vendégváró.hu project <ul style="list-style-type: none">• Index.hu Rt. (the internet portal)• Windex Kft. (project company, short lived)• Rakit Kft. (startup - partner)• Well-Press Kft., Miskolc (publisher, marketing)
Period	2000 - 2006
Projects, tasks	Vendégváró.hu (market leading touristic portal) <ul style="list-style-type: none">• design, implement and run touristic portal (PHP, HTML, CSS)• use SEO techniques to increase number of visitors
	Design and implement a lite AdServer for Vendégváró.hu (PHP, HTML+CSS)
	Design and implement Google position rank monitoring tool for support and measure SEO results (Java, PHP, HTML, CSS)
Roles	Developer, architect
	SEO expert
	CTO (2004 - 2006)
Reason for leave	Friends called for participating in a green field project
	Despite being a market leader, the project was unprofitable. Instead of improving sales, they ordered a complete rewrite from an external company. Then again, within two years. I left just after the first new site revealed
	On a management meeting, which I participated as site CTO, it turned out, that no one of the managers are familiar with the simplest basics of how to run a company
Takeaway	Web development, how to run a medium traffic website
	Marketing aspects of web: SEO, content creation, ad server etc.
	Project management

Java / WAP developer	
Company	Nokia NWSS (mobile phone manufacturer)
Period	1999 - 2000
Projects, tasks	Creating games for WAP enabled mobile phones (JAVA, WML)
	File patents (cca. 2-3)
Reason for leave	Friends called for join a hot company (Index.hu)
	It was far from real game development
Takeaway	First experience with large-scale software development



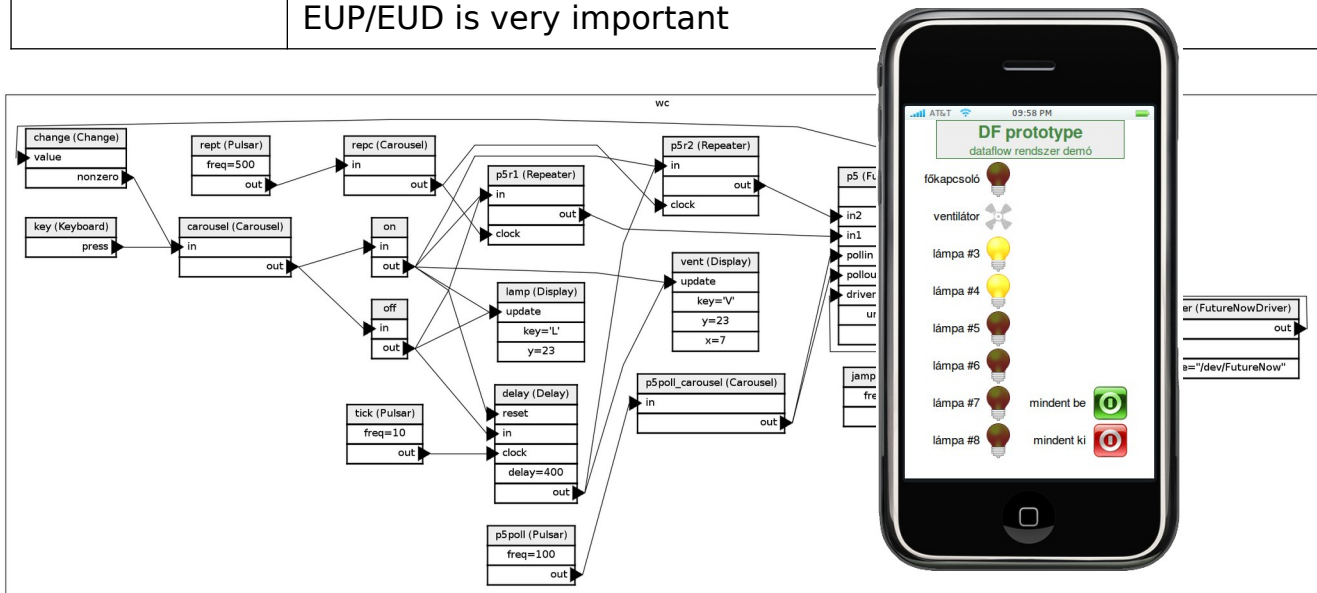
IT department leader (CIO)	
Company	Grabo Holding Rt., Győr <ul style="list-style-type: none"> • Uniontext Kft. (yarn and textile factory)
Period	1996 - 1999
Projects, tasks	Set up a complete software development and operation department almost from ground, run entire company's IT
	ISO 9001 compliant logistic system design and supervision
	Preliminary cost calculation system design
Reason for leave	A friend called to join a game development project
	The new employer offered 3x salary
Takeaway	Enterprise IT career top level reached
	Management and programming are mutually exclusive
	Massive knowledge about production, factory, accountancy, enterprise IT
	ISO 9001 knowledge
	Management: <ul style="list-style-type: none"> • lead small group of people • provide satisfactory service with restricted resources • you must understand the activity of your users in full depth, even better than they do, else you can't create them appropriate software

Enterprise application developer

Company	Grabo Holding Rt., Győr <ul style="list-style-type: none">Graboplast Kft. (leatherette factory)
Period	1989 - 1996
Projects, tasks	Write business applications and modules for locally developed ERP system (MUMPS)
	Create UI frameworks (MUMPS)
	Administrating HP-UX systems
	MS-DOS - Unix inter-system data transfer protocol design, implementation (8086 Assembler)
	Stock Register Book system design, backend imeplementation (FoxPro, dBase)
Reason for leave	Grabo Holding acquired Uniontext, and I won the contest for the IT manager position
Takeaway	MUMPS: best database system ever, low footprint, fast, effective, hierarchical database structure
	Enterprise knowledge

Pet projects (incomplete)

Ihome, dataflow system	
Description	Dataflow architecture home automation system prototype
	Framework is written In pure C++, using only stdlib and pthreads
	Transpiler from DF script to C++ (PHP-CLI)
	No graphic editor, only renderer (PHP-CLI, GraphViz)
	Later created an editor UI concept (JavaScript, Raphaël.js, SVG), source and demo : https://github.com/ern0/dataflow-editor-concept
	With a friend, we created 80 components (C++)
	The application is a Linux executable, runs even on minimal systems (e.g. Android)
	Mobile-first web UI (JavaScript)
	Presentation on YouTube (Hungarian, 25 mins): https://www.youtube.com/watch?v=s86zrAdW7Yc
Takeaway	Dataflow is optimal application development method for certain areas
	Clean architecture, loosy coupled modularity, expandability, self-documentation worth any effort, it pays off later
	No-code systems do not necessarily results performance loss
	EUP/EUD is very important



Plannr, collaborative spreadsheet

Description	Collaborative spreadsheet system proof-of-concept
	Backend engine (PHP, MySQL)
	Web UI (JavaScript)
	General components, ca. 10-15
	Demand planning purpose components written by a friend
Takeaway	Spreadsheet is a kind of dataflow architecture
	Collaboration is a great value for a small price
	Spredsheets are quite popular, it's and existing EUP/EUD (End-User Programming / Development) concept
	Actual spreadsheet implementations suffer several conceptional mistake, from the very beginning
	There are interesting spreadsheet ideas, e.g. hierarchical organization: https://futureofcoding.org/notes/paval-bazant-5-21-19.html
	EUP/EUD is very important

KolorWheel

Description	JavaScript library, palette generator using HSL color space
	A KolorWheel object represents a color, further objects can be obtained by calling absolute and relative item generator methods, finally resulting a palette
	Source code is available, follow link for detailed documentation with examples: https://github.com/ern0/kolorwheel.js/
Takeaway	Good frontends are easy to use, but real productivity can be only achieved by text-based tools
	JavaScript is quite popular, someone created NPM package from this library



XmlGraph

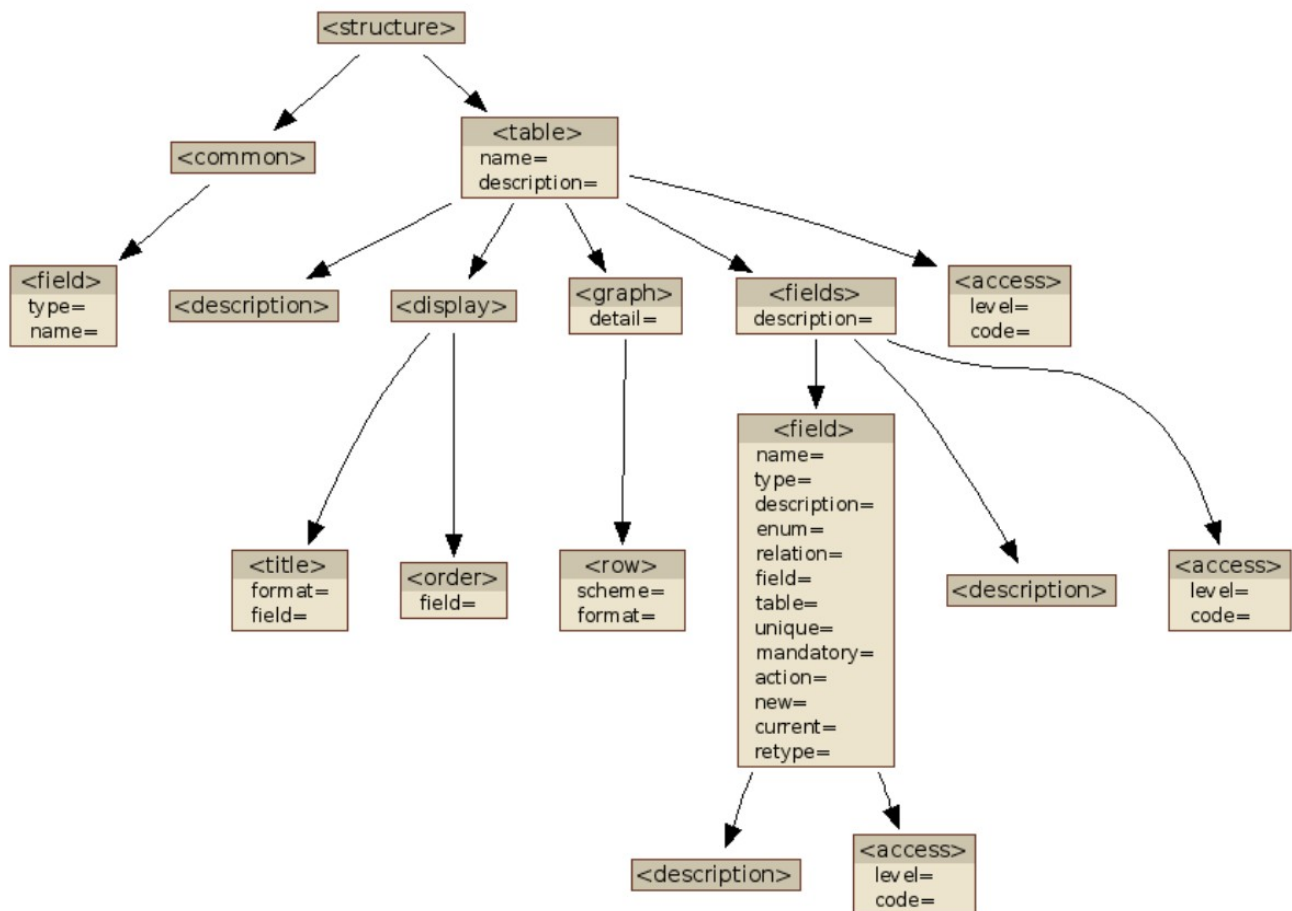
Description Utility which discovers given XML, then renders a visual documentation of it (PHP, HTML, CSS, GraphViz)

Source code available:

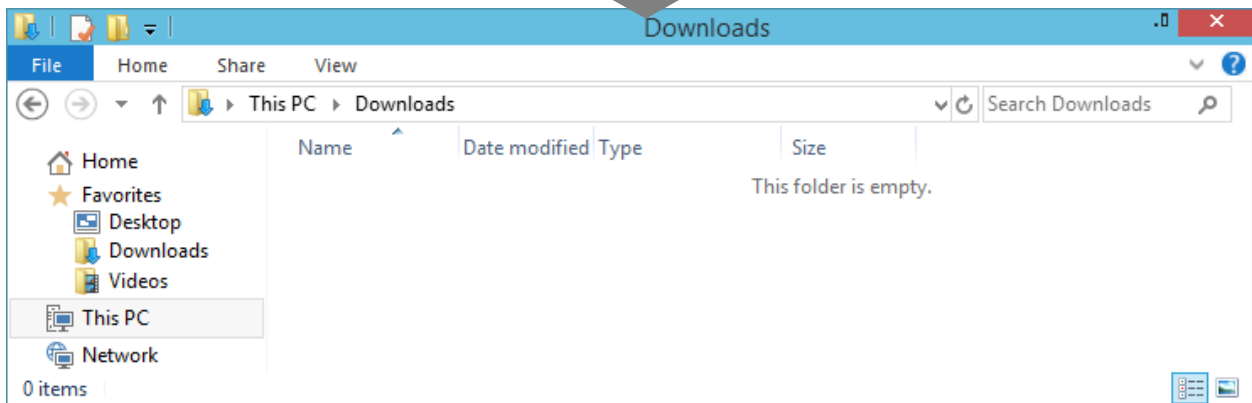
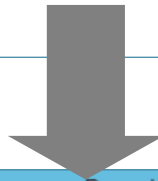
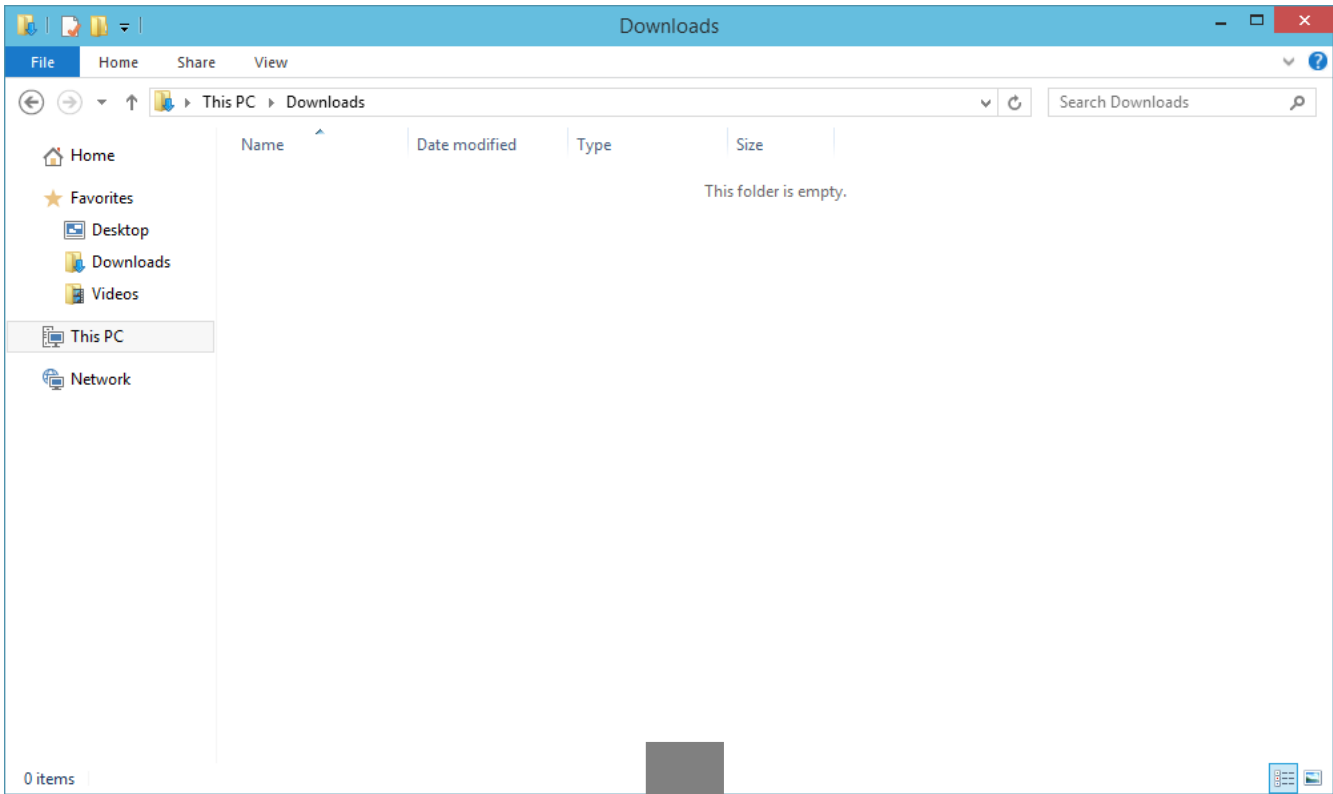
<https://github.com/ern0/xmlgraph>

Takeaway GraphViz is amazing

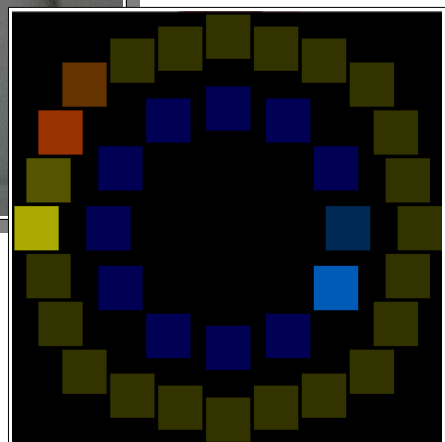
Instead of official documentation formats (e.g. UML), a practical, clear explanation is sometimes better



ShrinkShot	
Description	Utility which cut empty areas from an image, typically a screenshot of a program window (C, ImageMagick)
	Source code available: https://github.com/ern0/shrinkshot
Takeaway	ImageMagick is amazing
	Despite the trivial algorithm, which misses several cases (can't handle gradients and slipped empty areas), the utility is surprisingly usable

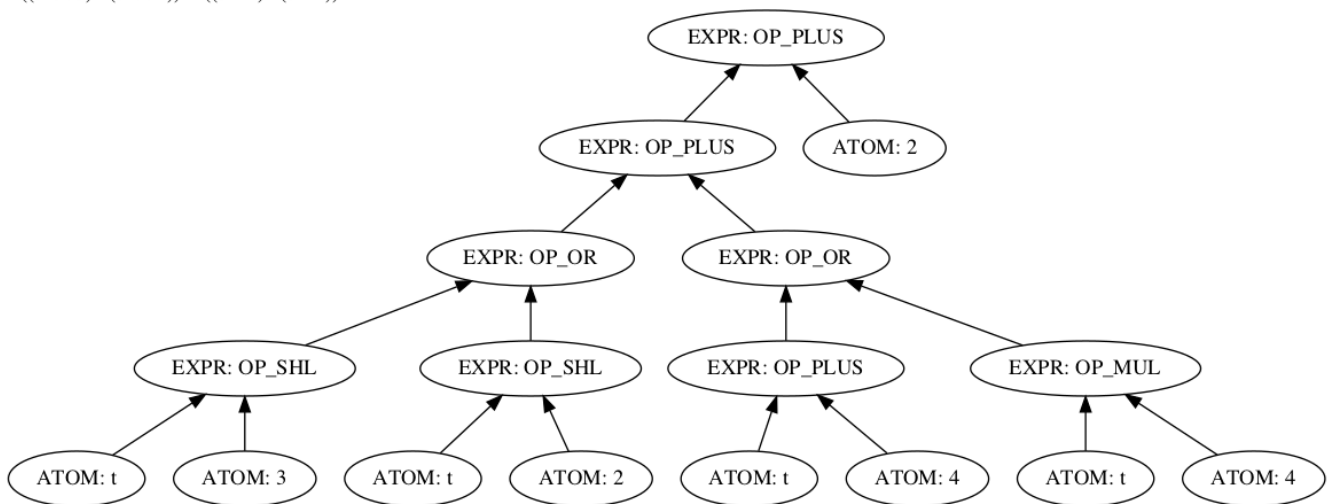


Posixino	
Description	Re-implementation of Arduino framework and some important libraries and features for Mac and GNU/Linux (C++, SDL2)
	List of implemented features: serial, digital out, web client, web server, LCD, timer interrupt, Adafruit NeoPixel
	Although, it's not an emulator, it makes embedded development just as comfortable as regular C programming is. With Posixino, C code can be tested on Mac or Linux
	Source code available: https://github.com/ern0/posixino
Takeaway	Arduino framework is designed by a Java programmer
	It was useful for the development of LED Clock project



Fomula Compiler (in progress)	
Description	Formula compiler for 8086 Assembly target (Python, Pylex)
	Purpose: create Assembly code from bytebeat formula
	Supports single-op and dual-op math and logical operators, ternary operator, array and string data indexing
	TODO: generate code from AST (Abstract Syntax Tree)
	Source code available: https://github.com/ern0/forcom
Takeaway	Writing a compiler is not too easy, but ultimate fun
	Wikipedia articles in Computer Science topics are pretty good
	Tree handling is an important area of the programming
	Modern compilers do awesome optimization

$((t \ll 3) | (t \ll 2)) + ((t + 4) | (t * 4)) + 2$



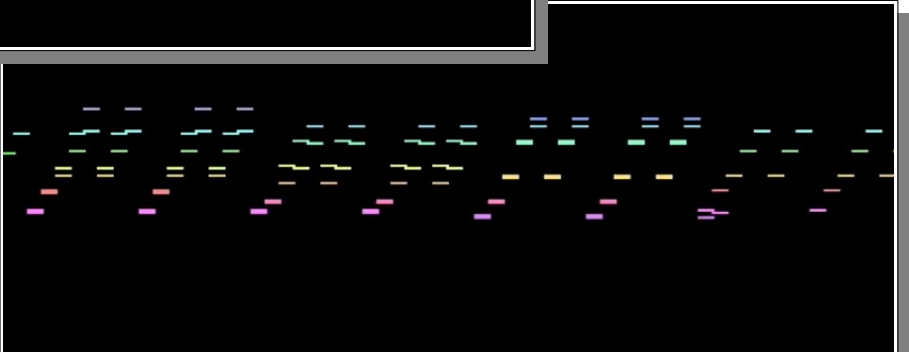
549Notes, 256-byte intro	
Description	256-byte intro for MS-DOS, which plays a 549-note piano piece
	Concept, draft player, test and compressor is by me, badass assembly optimization by a friend (Python, 8086 Assembly)
	Also I've created a presentation: "Making of 549Notes.com"
	Source code, presentation, link to video capture: https://github.com/ern0/549notes
Takeaway	Confirmed: optimization begins before writing a bit of code
	Creating educational material is a pain, but the result is satisfactory

```

W:\>dir *.com
Directory of W:\.
549NOTES COM           256 02-01-2019  9
DEBUG COM             20,788 02-01-2019 10
INSIGHT COM          32,935 02-01-2019 10
   3 File(s)          53,979 Bytes.
   0 Dir(s)          262,111,744 Bytes free.

W:\>_

```



Histogram of raw-diff-5 (27 values, 197 notes)

```

; 1. =00 65 65 #####
; 2. -01 22 87 #####
; 3. -02 21 108 #####
; 4. +01 15 123 #####
; 5. +02 14 137 #####
; 6. -07 11 148 #####
; 7. -03 11 159 #####
; 8. +05 6 165 #####
; 9. -04 5 170 #####
; 10. +03 5 175 #####
; 11. +04 3 178 ###
; 12. -10 2 180 ##
; 13. -09 2 182 ##
; 14. -05 2 184 ##
; 15. -35 1 185 #
; 16. -21 1 186 #
; 17. -14 1 187 #

```

**Top-heavy:
33% weight for
top value (4%)**

Hobbies

My primary hobby is programming.

Also I make music:

- for restricted platforms (buzzer, oldschool computers)
- bytebeat
- MIDI
- with professional DAW tools.

I prefer making originals, but I like to make covers, trying to re-interpret the original, or, if the target is a restricted platform, preserve as much as possible.

My public releases:

<https://soundcloud.com/ern0>

What others say

"You are the most inspiring guy I've ever met" - a visitor of Hungarian Robot Builders Association event, after talking him an hour about dataflow programming

"It was worth coming only for your presentation" - a visitor of the event where I was presenting dataflow programming (amongst marketing bullshit presentations, it wasn't a hard competition)

"I know it's always said that way, but I really mean that it was a pleasure to work with you" - B. Dávid, ex-colleague

"I have spent a lot of time in this profession and I am tired of all the shit happened with me, I'm practically burned out, but if I look at you, who is a decade older, and went through even more shit, I am impressed with your commitment and enthusiasm" - Sz. Marci, ex-colleague

"You're a really funny dude" - F. Krisztián, ex-colleague

