ILOVAN CRISTIAN DANIEL | ilovancristian.com

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EDUCATION

"**Babes-Bolyai**" Faculty of Mathematics and Computer Science, Cluj-Napoca, Romania **Bachelor's in Computer Science, 2023 - 2026**

- Admission algorithmic exam grade **98 out of 100**
- Participating at teacher training department level 1, 2023 - 2026

Romania, Bistrita, National College **"Liviu Rebreanu"**, **Mathematics and Computer Science Intensive, 2019 - 2023**

- Baccalaureate 2023 Informatics **9.75 out of 10**
- Qualified for the National Stage of Informatics Olympiad being **36th (Romania country rank) year 2022** online or saved archive
- **Performance award** for 2020 - 2021 school year for competition results view saved archive

WORK / PERSONAL PROJECTS

Currently teaching algorithms using C++

VIEW SAMPLE **Author book "Graphs" ISBN 978-973-0-40836-2, 2024, 6th AMAZON BEST SELLERS** at Data Structures and Algorithms and **1st AMAZON NEW RELEASE** at Data Structures and Algorithms, both in 08.10.2024**.** About 20% of the book are page images to improve learning.

- RECOMMENDED BY PBINFO.RO ON MAIN PAGE, a Romanian website used by almost all high schools to learn algorithms

- C++ compile, execute, **TESTING ALGORITHMS** regarding SYNTAX ERRORS, LOGIC ERRORS, MEMORY LEAKS using linux SHELL and BASH SCRIPT, advanced **C++ techniques POINTERS, CLASSES, TEMPLATES, INHERITANCE, POLYMORPHISM, ABSTRACTION, ENCAPSULATION** while providing **TIME, MEMORY** and **CODE READABILITY optimizations**, source code provided for almost every algorithm

- **GRAPHS** introduction, representation, algorithms
- **SEARCH** depth first search, breadth first search
- **TREES** traversals
  - **BINARY TREES** binary search tree, balanced trees, red black tree, avl tree
  - **MINIMUM SPANNING TREE** kruskal, prim
  - **HEAP**
- **FLOW** maximum flow, ford fulkerson, edmons karp, dinic
- **TOPOLOGICAL SORT** kahn, depth first search
- **DIVIDE AND CONQUER** logarithmic power, binary search, merge sort
- **CYCLES** depth first search, hamiltonian, eulerian
- **COMPONENTS** tarjan, kosaraju
- **SHORTEST PATH** middle, bellman ford, roy floyd warshall, dijsktra, a*
- **HUFFMAN COMPRESSION**
- **BIPARTITE GRAPH VERIFICATION**
- **ARTIFICIAL INTELLIGENCE**
  - **SEARCH** min max, alpha beta pruning
  - **NEURAL NETWORKS** tune by hand, machine learning, derivatives, back propagation

VIEW SAMPLE **Author book "Practice Assembly 32 bits NASM" ISBN 978-973-0-40044-1, 2024, 57th AMAZON BEST SELLERS** at Assembly Programming Language in 02.10.2024. On 506 pages:

- **ASSEMBLY SUMMARY** on about **70 pages**
  - **REGISTERS AND MEMORY** register values, eflags, memory pointers in NASM, segment data, **the stack**
  - **INSTRUCTIONS REFERENCE**
  - **MEMORY** little and big endian
  - **FUNCTIONS** calling NASM from C, using C functions in NASM, **function call stack**, function call conventions
  - **NASM and C** Assembly representation of C arrays, local variables, global variables, compilation
  - **DEBUGGER FOR ASSEMBLY MEMORY AND CODE**
- **ALGORITHMS** 179 algorithmic problems with solutions on about **430 pages**

Base calculator using Python with source code Even though normal repeated divisions and substitution imply restrictions on numbers, **I managed to implement a series of ADVANCED CONVERSIONS which do not imply restrictions on numbers**:

- in any base: addition, subtraction, multiplication, division
- conversions: repeated division, substitution, middle base, fast

Minimalist Snake Game using **C++ and SFML 2D graphics** implementing single player and **local multi player**.

- **published 09.10.2021** on a **website, CSS** aspect/design/looking/aesthetics oriented **built by me**

Server management for multiplayer 3D graphics game **Unturned** of maximum size 24 players

- **twice in 2 different summer breaks,** when I was in **middle school**
- allowing almost **ANY PLAYER FROM ALL AROUND THE GLOBE** to connect.
- First time, the server was a computer which behaved as a server from my house.
- Second time, rented server machine from a provider for **1 month.**

C++ Apartments Administrator Application OOP, CRUD, Domain, Repository, Service, UI, QT Graphical Interface, Test Coverage
Python Grades for Students Administration Application CRUD, Domain, Repository, Service, UI
C++ 2D graphics games: C++ maze escape using 2D ASCII graphics, C++ higher or lower using 2D SFML graphics

FREE TIME PROJECTS

ELECTRICAL AND TECHNICAL ENGINEERING on free time using lego technic, voltage and ampere electric transformers, electric motors, electric circuits, electricity and water

- Real working Lego Technic **Camera Crane, OVER 4.8K VIEWS, 45 LIKES**, published 28.10.2022
- Real working Lego Technic **Compact Gearbox, 3 speeds + reverse**, published 8.10.2022
- Real Lego Technic inline 4 **COMBUSTION ENGINE MODEL** with **INSTRUCTIONS**, published 10.12.2021
- **SAFE using 3 KEYS SYSTEM**, published 2.11.2022
- Real working Lego Technic WATER PUMP, published 13.10.2022

LANGUAGES

Romanian: native

English: **Cambridge C1** 196 score 9 July 2022

PROGRAMMING LANGUAGES / TECHNOLOGIES / TECHNIQUES

C++, C, Assembly, Python, Fast API, HTML, CSS, JavaScript, SQL, Java, Bash, Shell, web development API structure, REST API structure, CRUD structure, HTTP structure, front end, back end, operating systems structure, linux, servers, concurrency threads, multiple processes management, computer networks, databases, REGEX, computer reasoning using computational logic structures, source code testing, SFML, QT graphics, PHP, git, GIMP

ABOUT ME

What I like about programming are the challenges, programming is just a complex puzzle. For me, the purpose, objective, aim, goal, end matters. I want to use what I've learned to help the growth of the society, not the degradation. **I like to meet new people, listening to different points of view help expand my understandings.** I like to read books, main interest, informatics and philosophy. **I like to push my limits and help others reach goals.** I like sports, favorite is swimming.