

# Beau McCartney

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## SUMMARY

New graduate software engineer specializing in graphics programming and compilers. Currently building from-scratch C meta-framework to serve as a base layer for any C project.

## EDUCATION

**University of Calgary** Calgary, AB  
*MEng in Electrical and Computer Engineering, Software Engineering Specialization* Sep 2025 — May 2026

**University of Calgary** Calgary, AB  
*BSc in Software Engineering with distinction* Sep 2019 — May 2024  
• GPA: 3.705/4.0 | Jason Lang Scholarship (Fall 2020, Winter 2021)

## PROJECTS

**Solo Developer**, root c ([github.com/beaumccartney/root\\_c](https://github.com/beaumccartney/root_c)) Dec 2024 — Present

- ~11000 SLOC C99 codebase
- Modules for string operations, OS operations, virtual memory, linear algebra, command line parsing, logging, and arena-based allocation, built from-scratch on top of OS APIs
- Custom metaprogramming domain-specific language to generate C code from JSON-like tables
- Cross-platform window management and event processing system
- Currently developing a unified rendering API abstraction layer for cross-platform graphics programming

**Project Manager**, Heat Pump Calculator ([github.com/beaumccartney/heat-pump-calculator](https://github.com/beaumccartney/heat-pump-calculator)) Jan 2024 — April 2024

- Architected and implemented FastAPI-based REST API backend to process frontend computation requests via Excel integration, serving results with structured CSV responses
- Executed comprehensive project planning and stakeholder management, conducting pre-project research and requirements gathering to define technical scope and deliverables
- Led project team as Project Manager, coordinating meetings between various stakeholders and managing deliverable deadlines

**Contributor**, Bear ([github.com/beaumccartney/Bear](https://github.com/beaumccartney/Bear)) Jan 2024 — April 2024

- Automated database infrastructure setup by developing initialization and seeding scripts to populate the database with credible data, eliminating manual setup and enabling work from a known, fixed database
- Designed a comprehensive API test suite using Postman, finding 10+ backend bugs before project submission
- Facilitated collaboration between frontend and backend teams by translating UI requirements into REST API specifications, implementing endpoints to meet frontend needs
- Automated API endpoint extraction with a python script that parses all Express API endpoint definitions, streamlining API documentation and testing

**Solo Developer**, GoLF (GoLang Fragment) ([github.com/beaumccartney/golf](https://github.com/beaumccartney/golf)) Jan 2023 — April 2023

- ~2900 SLOC C++17 compiler that compiles a subset of go to MIPS assembly
- Recursive-descent parser for go syntax that correctly handles semicolon insertion and arbitrarily nested expressions
- Stack-based symbol table with lexical scoping to typecheck identifiers

## WORK EXPERIENCE

**Programming Educator** Jul 2021 — Nov 2022  
Code Ninjas Marda Loop Calgary, AB

- Instructed students (ages 8-15) in computer science fundamentals, game development, and web development, adapting technical concepts to degrees of experience and learning needs
- Led project-based web development summer camps where each student designed and built a personal website

## TECHNOLOGIES AND TOOLS

- **Proficient:** C, Odin, Git, Win32, Raddebugger
- **Previous Experience:** C++, Python, Rust, Objective C, D3D11, Jai, Batch, Bash, OpenGL, Zig, Make, CMake, HTML, CSS, Tailwind, Javascript/Typescript, React, NextJS, Vercel, GitHub Actions, GitHub Pages, FastAPI, Express, SQLite, MySQL, Postman, Node, Astro, Numpy, PlatformIO, Tensorflow, Django, Java, Typst
- **Ask me about:** Classical and Jazz Bass, Music theory, History