

TYLER GUEST

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SUMMARY

Computer Science student at University of Michigan–Flint specializing in systems programming with C/C++ and Python on Linux. Built production-style memory allocators and relational database systems with extensive testing and benchmarking. Seeking software engineering internship roles in systems, embedded, or infrastructure.

EDUCATION

University of Michigan - Flint | B.S. Computer Science (GPA: 3.86)

June 2023 - Apr 2027

- Relevant Coursework: Object-Oriented Programming, Data Structures, Algorithm Analysis, Computer Architecture, Operating Systems, Theory of Computation, Discrete Structures, Database Design

TECHNICAL PROJECTS

Memory Manager | C, Linux, Make | [\[source code\]](#)

Sep 2025 - Present

- Implemented a Two-Level Segregated Fit (TLSF) memory allocator featuring O(1) malloc/free via two-level bitmap indexing across 30×32 segregated free lists, with 16-byte alignment and immediate coalescing.
- Designed a reserve-then-commit heap strategy using mmap/mprotect to pre-reserve 1GB virtual address space while committing memory on-demand, ensuring pointer stability during dynamic heap growth.
- Architected large allocation bypass ($\geq 1\text{MB}$) via direct mmap with O(1) tracking, plus boundary-tagged blocks enabling bidirectional physical traversal for efficient coalescing.
- Built 20+ unit tests covering double-free detection, block splitting/coalescing, in-place realloc, alignment verification, and benchmarks demonstrating $\sim 5\times$ throughput vs. glibc malloc.

Service & Inventory Database | SQL, PL/SQL | [\[source code\]](#)

Sep 2025 - Dec 2025

- Designed a relational database to track the full lifecycle of production jobs (Tickets → Estimates → Invoices), ensuring end-to-end traceability of parts and labor.
- Coded complex PL/SQL triggers to automatically deduct inventory and recalculate taxes upon sale, eliminating the risk of manual data entry errors.
- Implemented strict constraints to enforce data integrity, ensuring reliable reporting for stock levels and revenue.

EXPERIENCE

We Can Do It Graphics

Flint, MI

Graphic Designer

May 2015 - Jan 2023

- Led a team of 5 in a high-volume production environment, implementing process improvements that increased throughput while reducing material waste.
- Performed final visual and dimensional inspections on production units, strictly adhering to client specifications.
- Managed the daily operation, calibration, and maintenance of wide-format printing hardware to ensure consistent output quality.
- Utilized Adobe Creative Suite (Illustrator, Photoshop) to configure and validate vector files, verifying dimensional tolerances and file integrity prior to manufacturing.
- Maintained detailed production logs, inventory records, and order specifications to ensure full job tracking and accountability.

SKILLS

- Languages: C, C++, Python, SQL
- Software: Ubuntu 24.04, VS Code, Git, Opencode, Make, gdb, Valgrind, VMM