

Muaviz Shah

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EDUCATION

VIT Bhopal University

B.Tech (Computer Science and Engineering - Cyber Security and Digital Forensics)

April, 2028

Bhopal, MP

Relevant Courses: Data Structures and Analysis of Algorithms, Computer Architecture and Organisation, Microprocessors and Microcontrollers, Object Oriented Programming with C++

PROJECTS

nand2tetris | HDL, Assembly, C/C++

Oct. 2025 – Present

- Designed and implemented **gate-level digital circuits** in HDL, including multiplexers, demultiplexers, adders, ALU, registers, memory units, and 16K RAM.
- Built a **two-pass assembler** in C to translate HACK assembly language into 16-bit machine code using symbol resolution and binary code generation.
- Developed a **stack-based Virtual Machine (VM) translator** in C++ supporting arithmetic, memory access, program flow, and function call commands.
- Currently implementing the remaining layers of the system, including the high-level language **compiler**, **operating system**, and application software to complete a fully functional **16-bit computer** built from first principles.

dd | C++, CMake

Feb, 2026 - Jun, 2026

- Developed a Git-inspired **version control system** implementing core concepts of **content-addressable storage**.
- Designed object types (blob, tree, commit) with **hash-based identification** and persistent storage.
- Implemented commands including init, add, commit, log, and checkout, supporting commit history traversal.
- Built commit chaining via parent references and tree reconstruction logic.
- Configured build system using CMake with modular project structure

ephttp | C++

Sep, 2025

- Built a minimal **HTTP/1.1 server** from scratch using POSIX socket APIs.
- Implemented request parsing, routing, and response generation without external frameworks.
- Structured the codebase using **object-oriented design** for connection handling and request abstraction.
- Handled concurrent client connections and basic error handling at the protocol level.

SKILLS

Languages: C, C++, Python, x86 ASM

Systems & Tools: CMake, GDB, Valgrind, Git, Linux

INTERESTS

Hobbies: Football, Videography, Trekking, CTFs