

# Aurora-16 Software CPU

## Team Members

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# Repository

The complete source, documentation, schematics, example programs, assembler, emulator, and demo video are hosted at:

<https://github.com/ganeshsjsu/aurora-softcpu>

# Download, Compile, and Run

**Prerequisites:** C++20 compiler (Homebrew g++-15 or clang++), make.

**Get the code:**

```
git clone https://github.com/ganeshsjsu/aurora-softcpu.git
cd aurora-softcpu
```

**Build:**

```
make
```

**Assemble samples:**

```
./softcpu assemble programs/hello.asm -o build/hello.bin
./softcpu assemble programs/fibonacci.asm -o build/fib.bin
./softcpu assemble programs/timer.asm -o build/timer.bin
```

**Run:**

```
./softcpu run build/hello.bin --trace
./softcpu run build/fib.bin
./softcpu run build/timer.bin --cycles 20 --trace
```

**Notes:** Omit `--trace` for clean program output.

## Team Contributions

**Ganesh** led architecture definition, ISA spec, memory map, emulator entry-points, and CLI tooling.

**Tushar** implemented core CPU logic: ALU, status flag semantics, and control-unit sequencing.

**Jeevan** authored the assembler, directive/label resolution, and example programs (Hello, Fibonacci, Timer).

**Sindhura** produced documentation (architecture/emulator/assembler/programs), the schematic, demo video, and compiled the report.