

# Roadmap for Building a Portfolio HTTP Server

## Phase 1: Core HTTP Server Foundation

- Create TCP socket server that accepts connections
- Implement HTTP request parsing (method, path, headers, body)
- Build HTTP response generation with proper status codes
- Add basic error handling for malformed requests

## Phase 2: Static File Serving

- Implement file system access and file serving
- Add MIME type detection for common file extensions (HTML, CSS, JS, images)
- Handle directory listings or default index files
- Add basic security (prevent directory traversal attacks)
- Support for custom 404 pages

## Phase 3: Basic Configuration

- Create simple configuration file (JSON or basic text format)
- Support for setting document root, port, and server name
- Add ability to configure different file extensions
- Simple logging configuration

## Phase 4: Multi-threading/Concurrency

- Handle multiple connections simultaneously
- Implement thread pool or basic async I/O
- Add connection timeouts
- Basic request queuing

## Phase 5: Reverse Proxy for Hobby Projects

- Implement proxy pass to forward requests to backend applications
- Support for hosting Flask, Node.js, or other web applications
- Basic load balancing between multiple backend instances
- Handle proxy headers correctly

## Phase 6: Cool Features for Portfolio

- WebSocket support for real-time applications
- Basic caching for static files
- Simple rate limiting
- Request/response logging
- Server-sent events (SSE) support

## Phase 7: Polish and Usability

- Easy deployment script or Docker support
- Configuration validation with helpful error messages
- Basic monitoring dashboard (request counts, response times)
- Graceful shutdown handling
- Simple CLI interface

## Phase 8: Documentation and Showcase

- Write comprehensive README with examples
- Create example configurations for common use cases
- Add performance benchmarks vs other servers
- Document the architecture and design decisions
- Create demo website hosted on your server

This roadmap gives you a solid, impressive HTTP server perfect for hosting hobby projects while being substantial enough for your portfolio!