Nintendo Entertainment System Emulator

Functional and Non-Functional Requirements

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1 Introduction

This document contains **functional and not-functional requirements** of our Nintendo Entertainment System emulator project.

2 Functional Requirements

2.1 ROM Loading

To emulate any program, first step is loading it into memory. The emulator must provide a file selection interface that allows users to load NES ROM files easily. The goal is to successfully load a valid ROM and initiate gameplay.

2.2 Basic Gameplay Emulation

The emulator's core functionality is accurate emulation. It must faithfully replicate the NES CPU, PPU and APU to deliver a playable experience for most NES games. This requires correct graphics, sound and input responses for a sample set of popular ROMs.

2.3 Debugging Tools

Debugging tools are a key component of the emulator's educational value. The emulator should offer features such as step-by-step execution, memory content inspection and register state visualization. These tools must be clear, intuitive and well-illustrated with graphical representations to enhance usability and understanding

2.4 Error Handling

The emulator must display user-friendly error messages when encountering critical failures. Error messages should be design so that it's easy to understand what happened when program crashed. Easy error reporting functionality should also be a part of appropriate error handling.

2.5 Settings

Although advanced configuration is not in scope of this project, our software must allow users to adjust basic quality-of-life settings such as screen scaling, aspect ratio, resolution and audio volume.

2.6 Input Configuration

Simple input configuration is another functionality that emulator shall provide for its user for the sake of basic quality-of-life matter. The program must allow users to configure and map keyboard inputs to NES actions and use them to control gameplay in comfortable manner.

3 Non-Functional Requirements

3.1 Performance

3.2 Documentation, Code Base & Other Resources

3.3 Usability