

The Study of Emulator for 8051 Microprocessor

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ABSTRACT

The fundamental architecture of emulator includes six main modules: program loader, program memory, program processor, instruction processor, register module and data memory. Referring to 8051 microprocessor hardware specification, 8051 emulator is built to animate real 8051 hardware environment. The program processor of 8051 is implemented through Basic Interpretation technique, and the instruction set behavior is simulated clearly. Through the design of 8051 emulator, the basic frame of microprocessor simulation is built. According to the main frame of emulator, the program loader, program processor, and instruction set processor are set up. The main processor hardware environment is implemented, and the real 8051 microprocessor is simulated. The Hex File and disassembly in uVision2 are loaded and the processing is tested. It is proved that the emulator behavior is identical to the disassembly in uVision2. The complete emulator is very complicated. The performance of main frame of emulator can be clearly identified through the study of 8051 emulator. Also the tedious detail of clumsy hardware simulation can be neglected.

Keywords : Emulator ; 8051 Microprocessor ; Basic Interpretation ; Disassembly ; Program processor ; Instruction processor

Table of Contents

封面內頁 簽名頁 授權書 中文摘要 英文摘要 誌謝 目錄 圖目錄 表目錄 第一章 緒論 1.1 前言 1.2 研究動機與目的 1.3 文獻回顧 第二章 模擬器的基本原理 2.1 模擬器的組成結構 2.2 模擬器的基本設計方法 2.3 輸入輸出設備的模擬方法 第三章 8051微處理器硬體環境 3.1 AT89C51微處理器基本特性 3.2 介紹AT89C51微處理器接腳 3.3 AT89C51微處理器資料記憶體結構 3.4 AT89C51的特殊功能暫存器 第四章 8051模擬器設計 4.1 8051硬體環境模擬 4.2 8051指令結構與指令模型 4.3 建立8051指令載入表 4.4 實作8051程式處理器 4.5 8051指令集動作的模擬 第五章 ROM Image的載入方法與模擬器驗證 5.1 介紹Intel Hexadecimal Object File 5.2 實作程式載入器 5.3 8051模擬器的驗證與測試 第六章 結論 6.1 本文結論 6.2 未來展望 參考文獻

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