Reverse engineering hardware, backing up ROMs, hardware emulation including use of JIT and dynamic recompilers, and emulation of retro video game systems

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November 7, 2026

Contents

Preface **2**

I Reverse engineering hardware **3**

II Hardware emulation **4**

1 Emulation **5**

III Backing up ROMS, including CD (bin/cue) and DVD (iso), and mounting them (can mount ISO with "mount", cdemu for CDs) **6**

IV Lossless compression of ROMS, including regular

zip, chd, gz, rvz **7**

V NES **8**

VI Game Boy **9**

VII Game Boy Advance **10**

VIII SNES **11**

IX N64 **12**

X Arcade systems **13**

XI Sony consoles **14**

XII Sega consoles **15**

XIII Field-programmable gate array (FPGA) **16**

XIV SORT **17**

2 SORT 2025 **18**

Preface

This is a live document, and is full of gaps, mistakes, typos etc.

Part I

Reverse engineering hardware

Part II

Hardware emulation

Chapter 1

Emulation

1.1 Low-level emulation

1.1.1 Emulating memory

big array of bytes hex numbers of some length

1.1.2 Emulating processors

emulation. cpu has operations. need to emulate them. convert to native. table with lookup for clock cycle requirements, mode etc.

1.2 High-level emulation

1.3 Containers

1.4 Virtualisation

Part III

Backing up ROMS, including CD (bin/cue) and DVD (iso), and mounting them (can mount ISO with "mount", cdemu for CDs)

Part IV

Lossless compression of ROMS, including regular zip, chd, gz, rvz

Part V

NES

Part VI

Game Boy

Part VII

Game Boy Advance

Part VIII

SNES

Part IX

N64

Part X

Arcade systems

Part XI

Sony consoles

Part XII

Sega consoles

Part XIII

Field-programmable gate array (FPGA)

Part XIV

SORT

Chapter 2

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2.1 Introduction

2.1.1 Introduction

something on specialist emulators dosbox pcem mame

ppsspp vita3k duckstation pcsx2 rcps3

dolphin sameboy mgba

thing on various bioses, firmware and microcode around here too? + gameboy, gbc, gba have bios/bootrom + nes and snes no bios or bootrom? + master system has bios?? not genesis? + sega cd, pcengine cd, saturn have bios?? + snes (not nes), genesis have bios??? + ps1, but this also has stuff on talking to hardware? n64 has one too + when discussing them, DO SO AFTER LINUX SO CAN DISCUSS EMULATION OF THEM also have dosbox there?

emulation notes: + getting contents of mask rom + getting bios contents + h3 on ripping stuff. iso, bin/cue, rom, bios + h3 on emulating ram and registers and various types of rom/cd + including emulating memory mapped IO and bank switching. + h3 on cpu emulation + h3 on gpu/ppu emulation + h3 on specifics