How to start Programming for the Nintendo® GAME BOY®

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@rucury

What I'll talk about today

- Overview and History
- A little bit of architecture
  - CPU
  - Memory
- Graphics
- Tools Available for developers
- A quick example in C
- Where to go from here

Released in North America: July 31, 1989

Units sold worldwide (including the Game Boy Color): 118,000,000

April 6, 1993: Hillary Rodham Clinton plays a Nintendo "Game Boy" electronic game on her flight from Austin, Texas to Washington, DC.
- Clinton Library

?? ??, 2018-2019: Scarlett Johansson and Chris Evans play with the Nintendo "Game Boy" electronic game.

Architecture

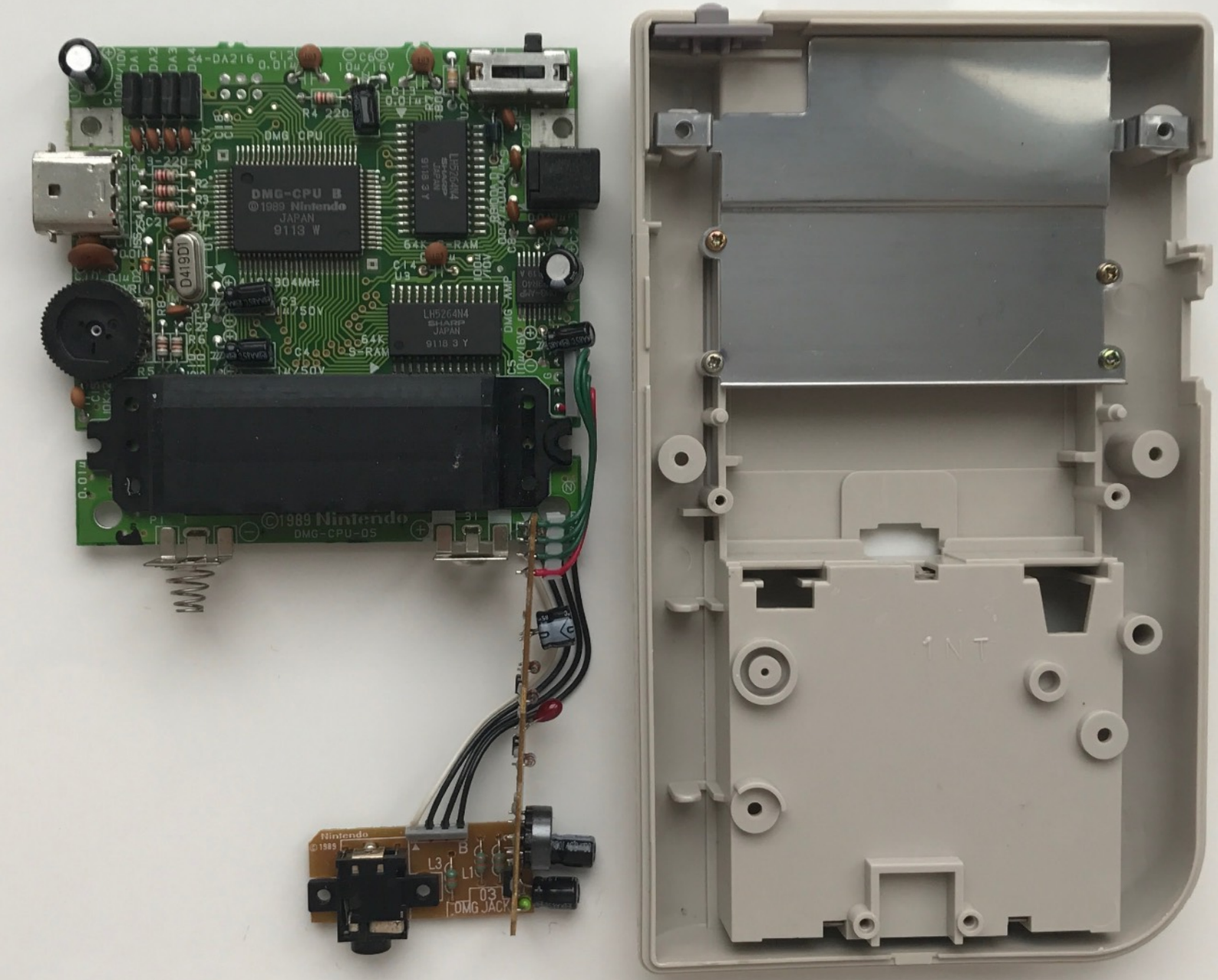


Image credit: Michael Steil

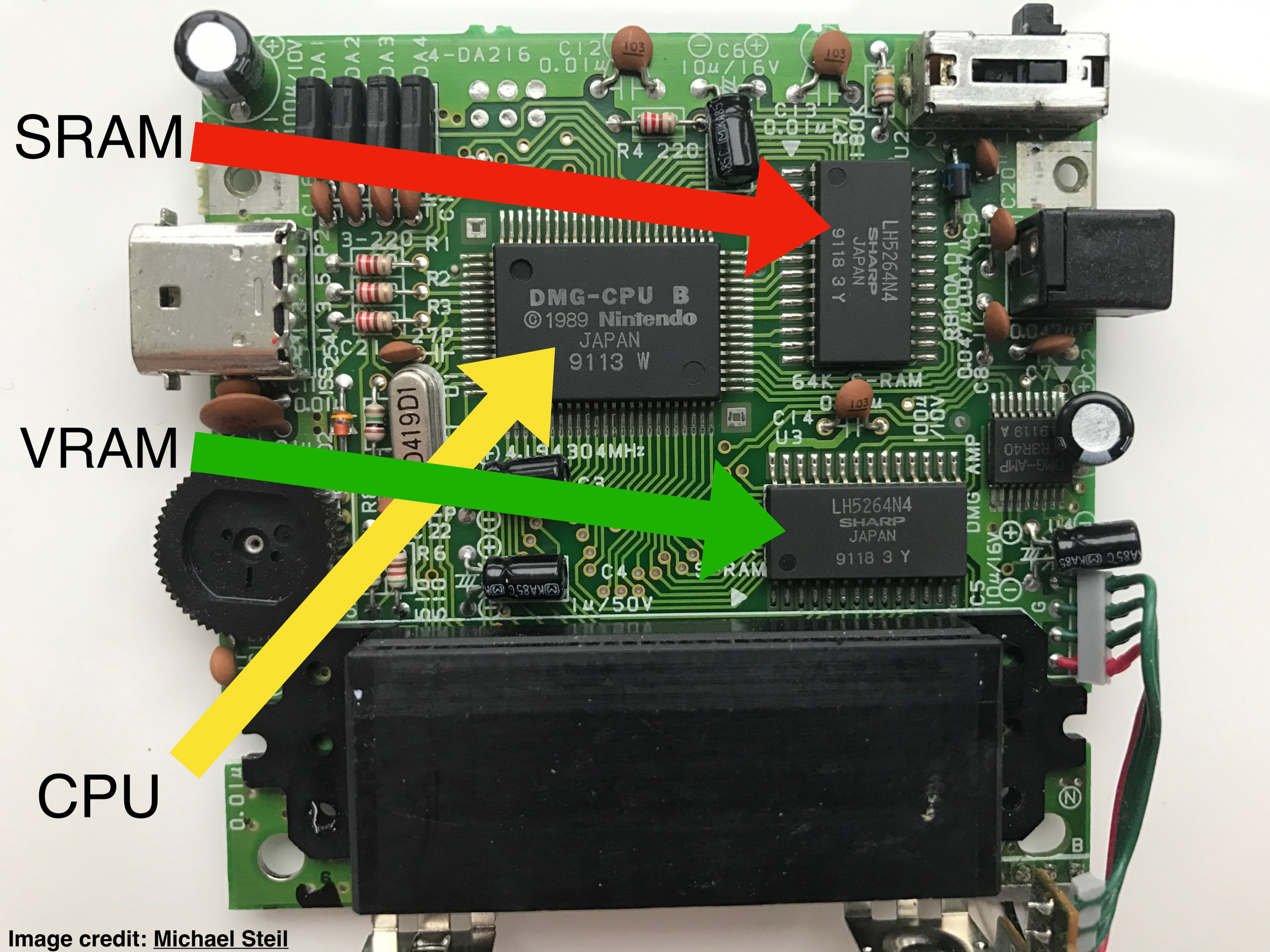
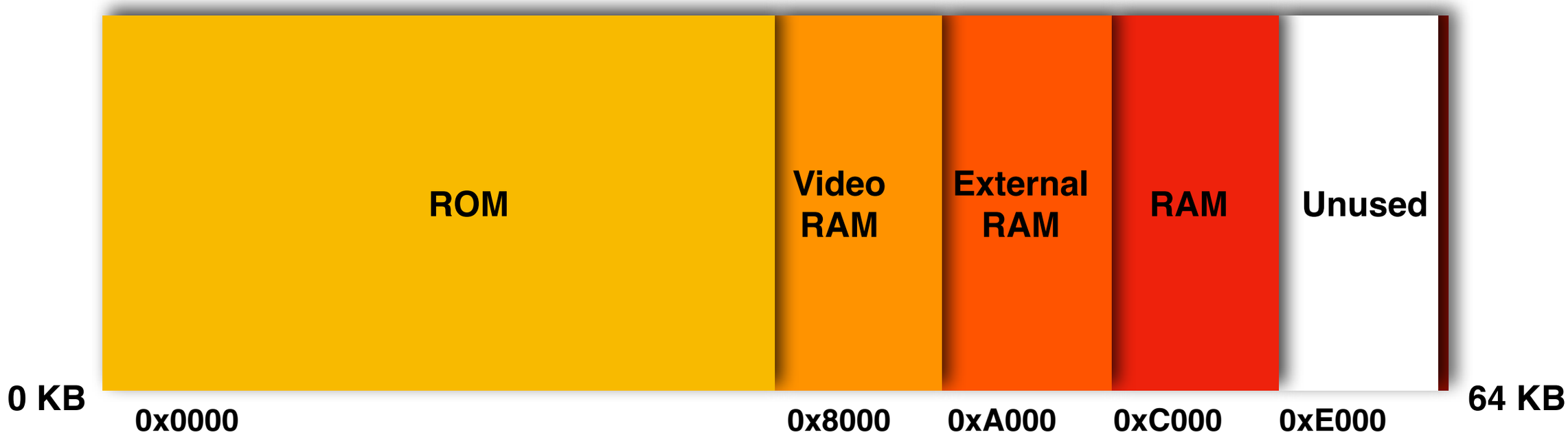
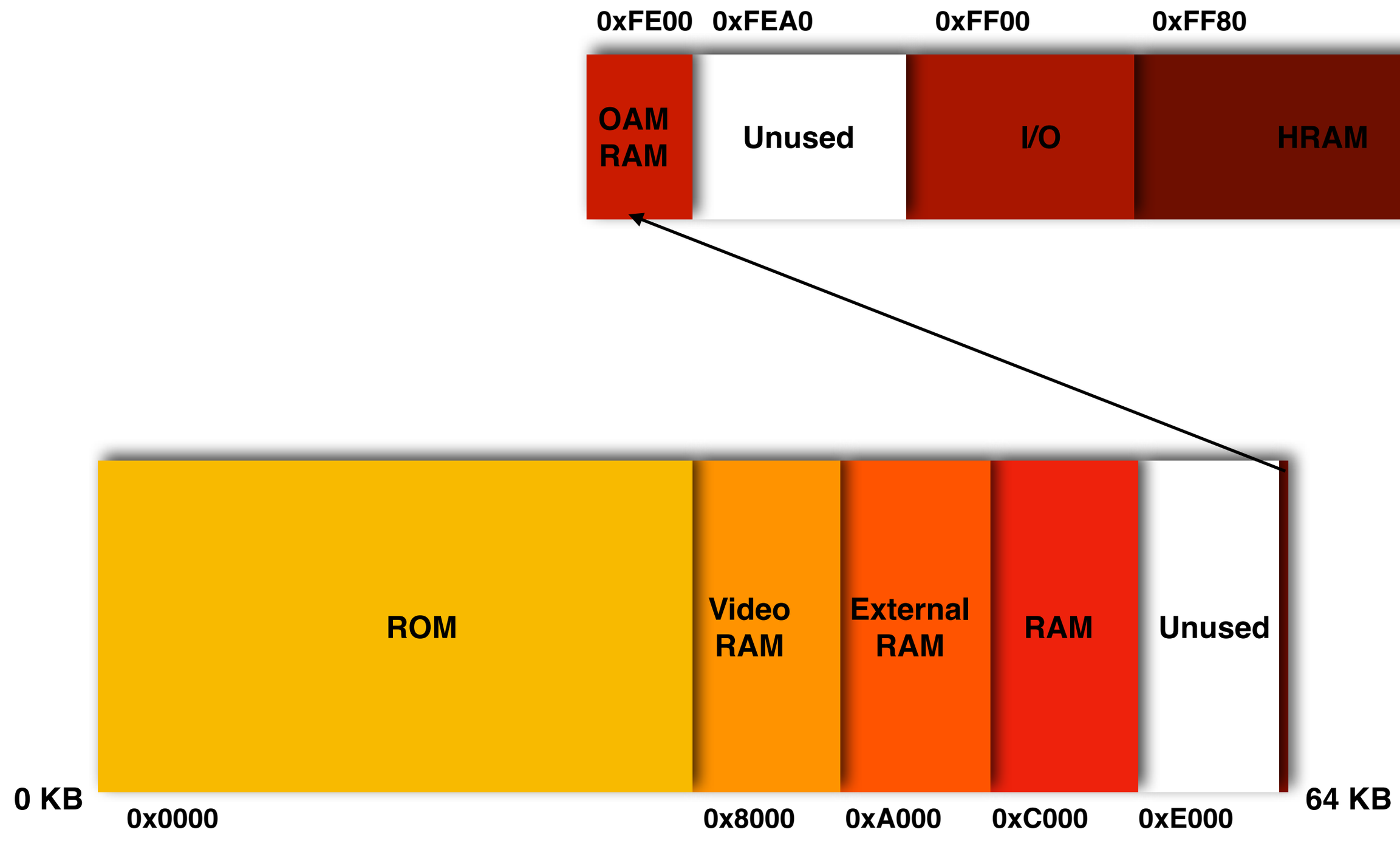


Image credit: Michael Steil

Memory Map


ROM
Video RAM
External RAM
RAM
Unused
0 KB
64 KB
0x0000
0x8000
0xA000
0xC000
0xE000

Memory Map

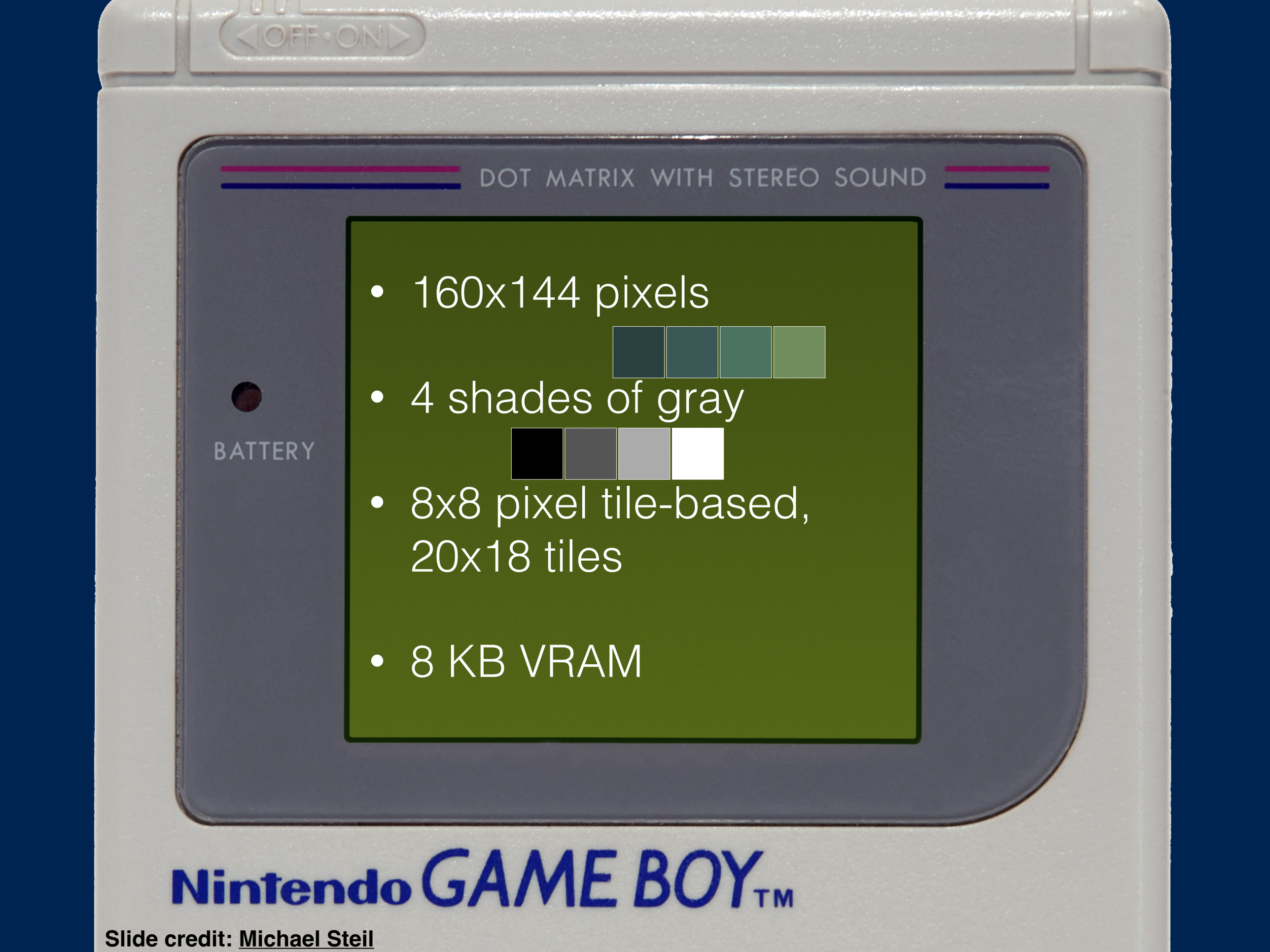

0xFE00
0xFEA0
0xFF00
0xFF80
OAM RAM
Unused
I/O
HRAM
ROM
Video RAM
External RAM
RAM
Unused
0 KB
64 KB
0x0000
0x8000
0xA000
0xC000
0xE000

Game Boy Bootrom:
A Clever Piracy Check

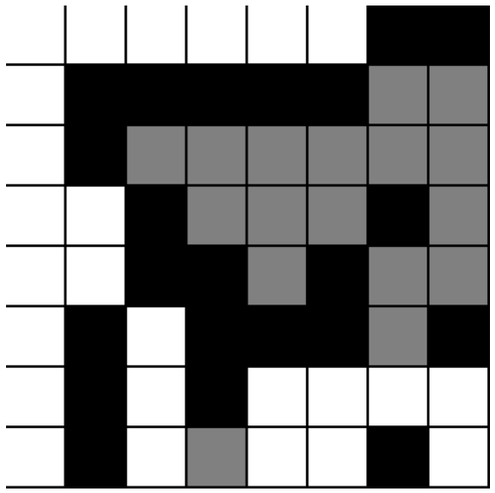
```
    ; ===== Nintendo logo comparison routine =====

Addr_00E0:
    LD HL,$0104          ; $00e0 ; point HL to Nintendo logo in cart
    LD DE,$00a8          ; $00e3 ; point DE to Nintendo logo in DMG rom

Addr_00E6:
    LD A,(DE)            ; $00e6
    INC DE               ; $00e7
    CP (HL)              ; $00e8 ;compare logo data in cart to DMG rom
    JR NZ,$fe            ; $00e9 ;if not a match, lock up here
    INC HL               ; $00eb
    LD A,L               ; $00ec
    CP $34               ; $00ed ;do this for $30 bytes
    JR NZ, Addr_00E6     ; $00ef

    LD B,$19             ; $00f1
    LD A,B               ; $00f3
Addr_00F4:
    ADD (HL)             ; $00f4
    INC HL               ; $00f5
    DEC B                ; $00f6
    JR NZ, Addr_00F4     ; $00f7
    ADD (HL)             ; $00f9
    JR NZ,$fe            ; $00fa ; if $19 + bytes from $0134-$014D  don't add to $00
                         ;       lock up
```

Graphics

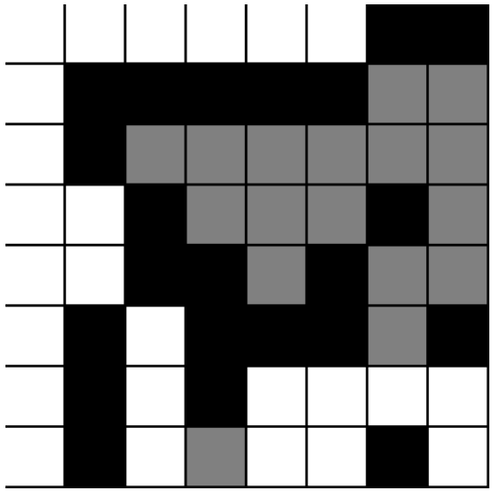
Slide credit: Michael Steil

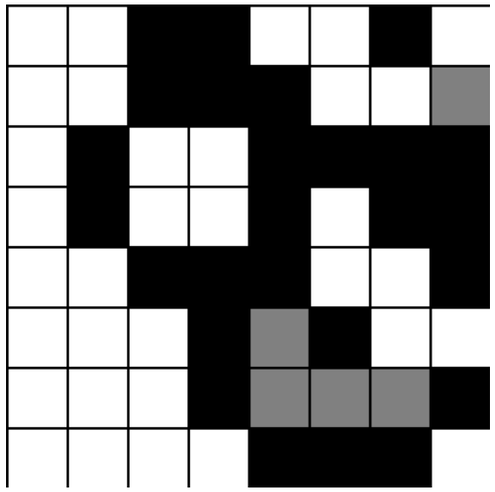


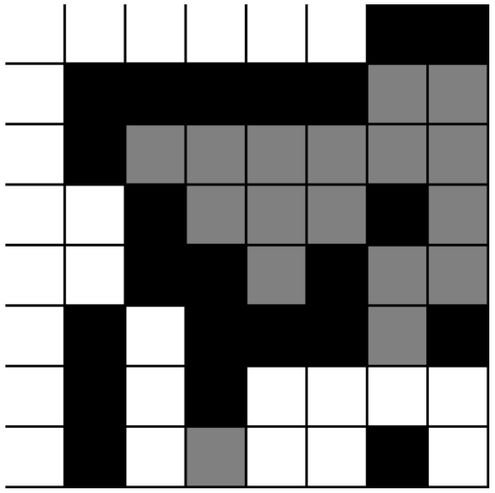
Slide credit: Michael Steil

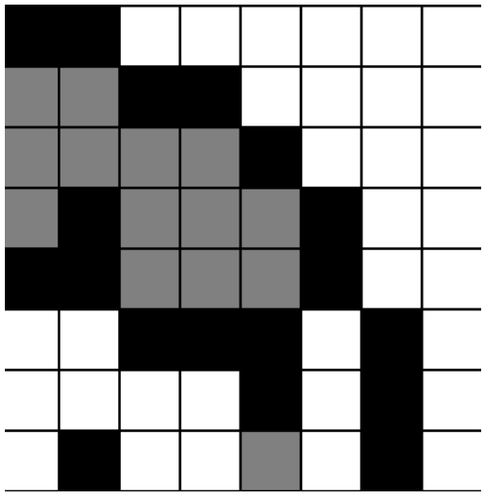


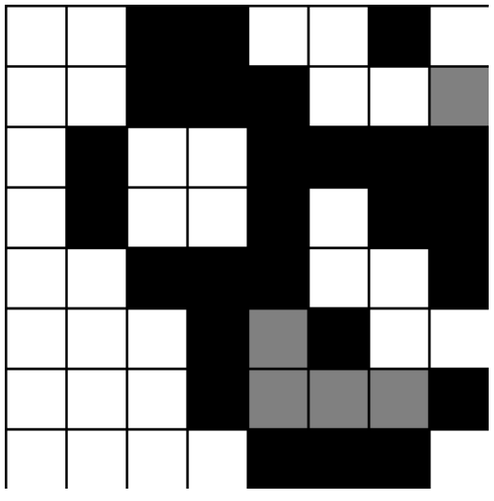
Who's that sprite?...

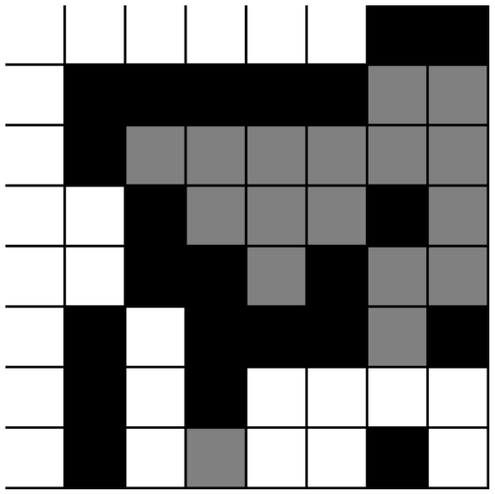


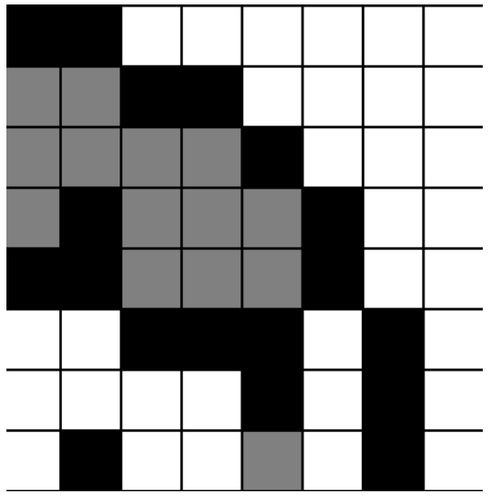


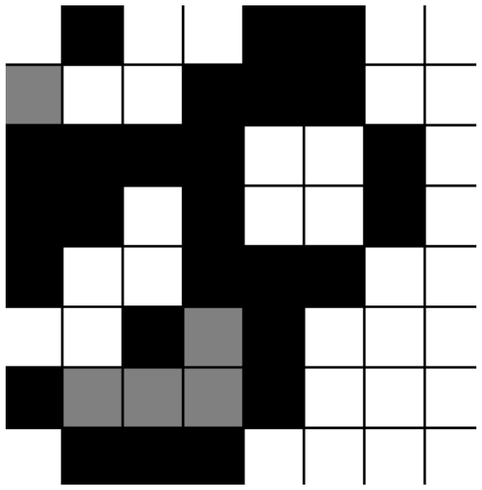


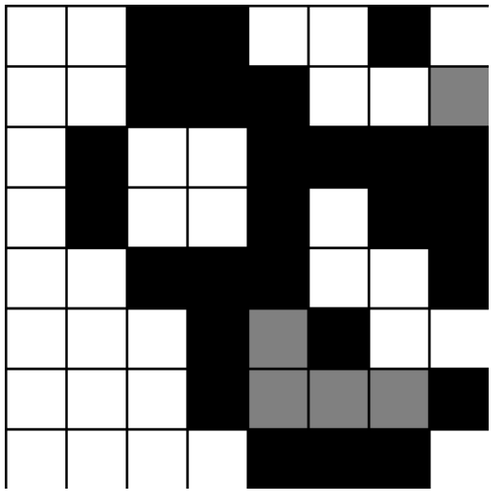


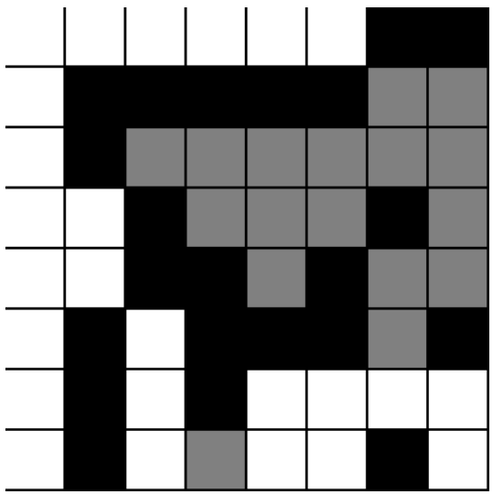


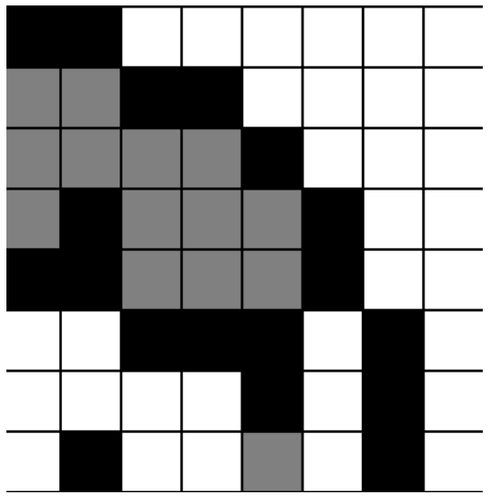


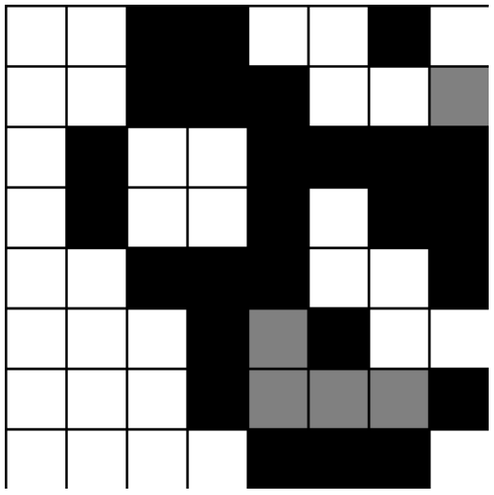


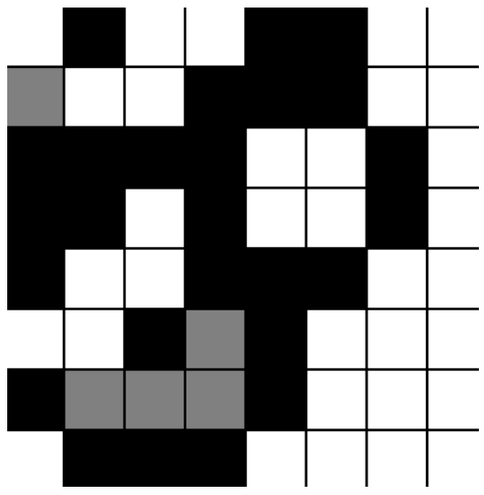


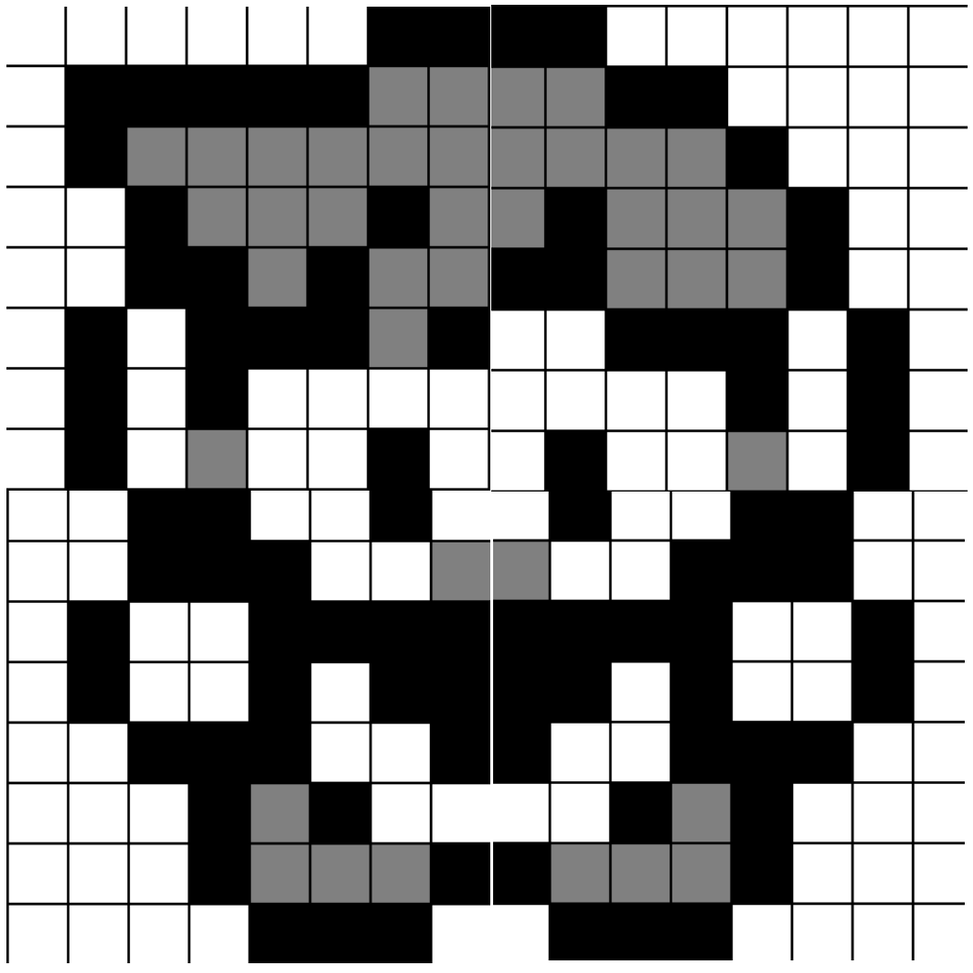






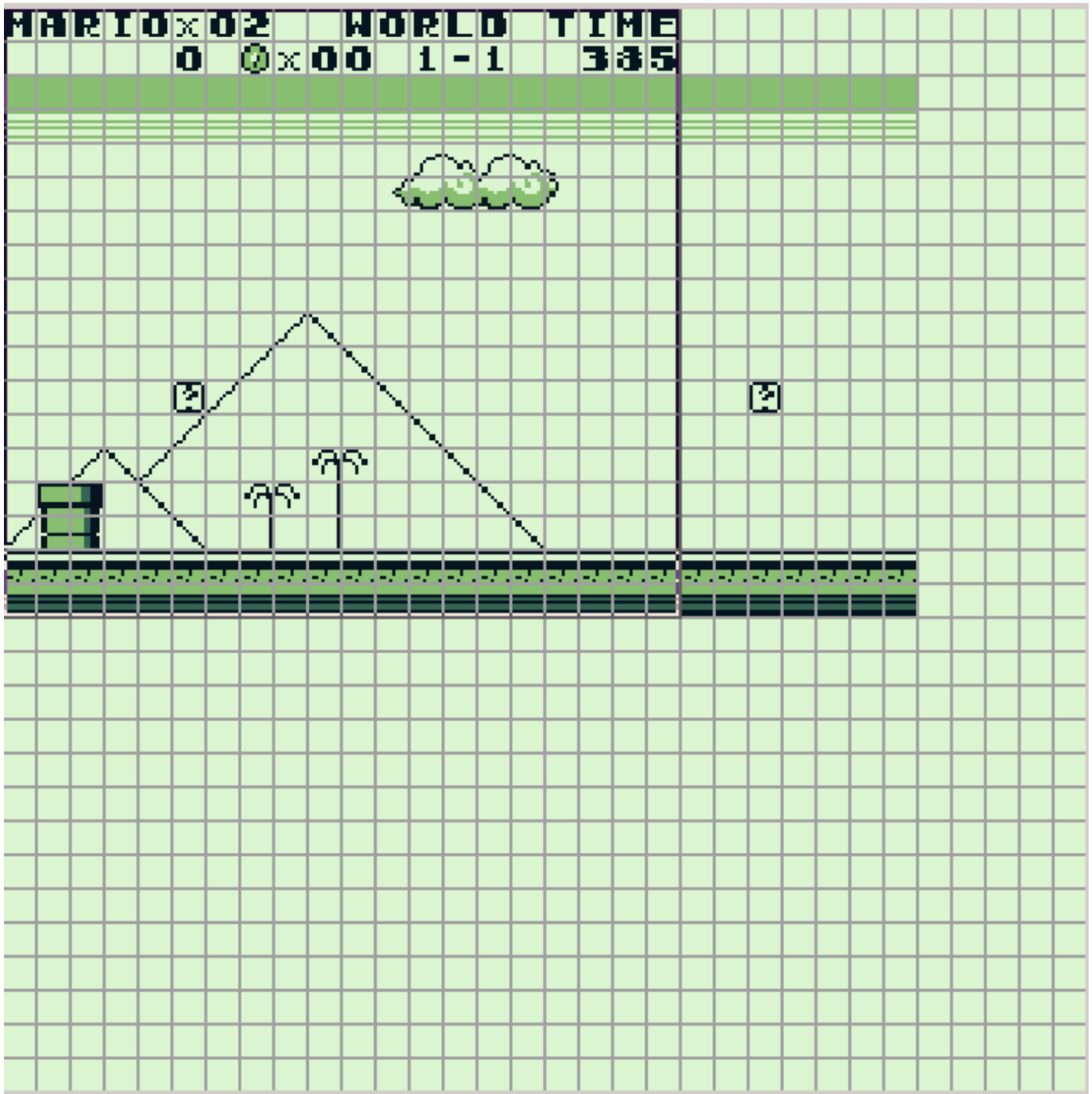






It's 16x16 Gary
from Pokémon Red/Blue!

Tiles



Background

Visual Studio | Marketplace

Visual Studio Code > Programming Languages > RGBDS Z80

RGBDS Z80

Donald Hays | 1,057 installs | 2,838 downloads | ★★★★★ (1) | Free

Language service for RGBDS GB Z80.

Install Trouble Installing?

GAME BOY

PROGRAMMING MANUAL

Version 1.1

rednex / rgbds

Watch 47 | Unstar 541 | Fork 69

Code | Issues 49 | Pull requests 3 | Security | Insights

GameBoy Developers Kit (GBDK)

Highlights | Bug tracking/FAQ | Status | Changes | Downloading and Installing | Tools | The Example Programs | Guidelines | Troubleshooting | Links | Contact

Download (latest is 2.95-3)
CVS | Source / Linux / win32

Documentation
HTML | HTML tarball | PDF | Old docs

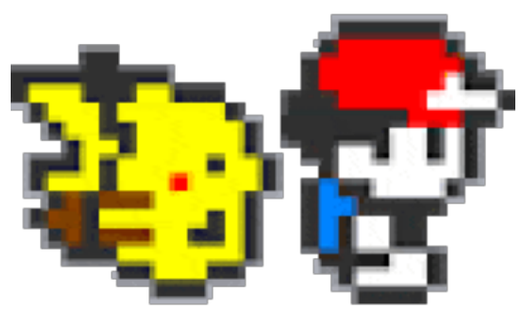
Branch: master | New pull request | Create new file | Upload files | Find File | Clone or download

ISSOtm Update docs on char escapes in macro args ...

Latest commit 9faa5c7 3 days ago

How to keep learning

https://bit.ly/fsn-gb-dev



Thank you!