

Porting DOOM

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Unfortunately I've got no ATM at home and banks refused to borrow me one... :-(

DOOM

- 1993, those were the times of DOS on the 486
- Used DOS/4GW to work around segmented memory and 640 KB Ram Limit:

```
C:\>dos4gw.exe  
DOS/4GW Protected Mode Run-time Version 1.97  
Copyright (c) Rational Systems, Inc. 1990-1994  
C:\>
```

- Used its own I/O Systems and Memory allocation, so mostly ANSI C
- Used direct manipulation of hardware registers (you could do that on DOS!), also its own (double buffered) VGA Videobuffer
- Engine Source Code was open sourced!
- <https://github.com/id-Software/DOOM>



Chocolate Doom

- Easy portable Sourcecode for Doom, tried to retain original code as good as possible
- Uses SDL Library for Graphics, Sound and Network, so no fiddling with VGA I/O Registers
- Can read .WAD Files of Shareware, Doom I and Doom II
- <https://github.com/chocolate-doom/chocolate-doom>



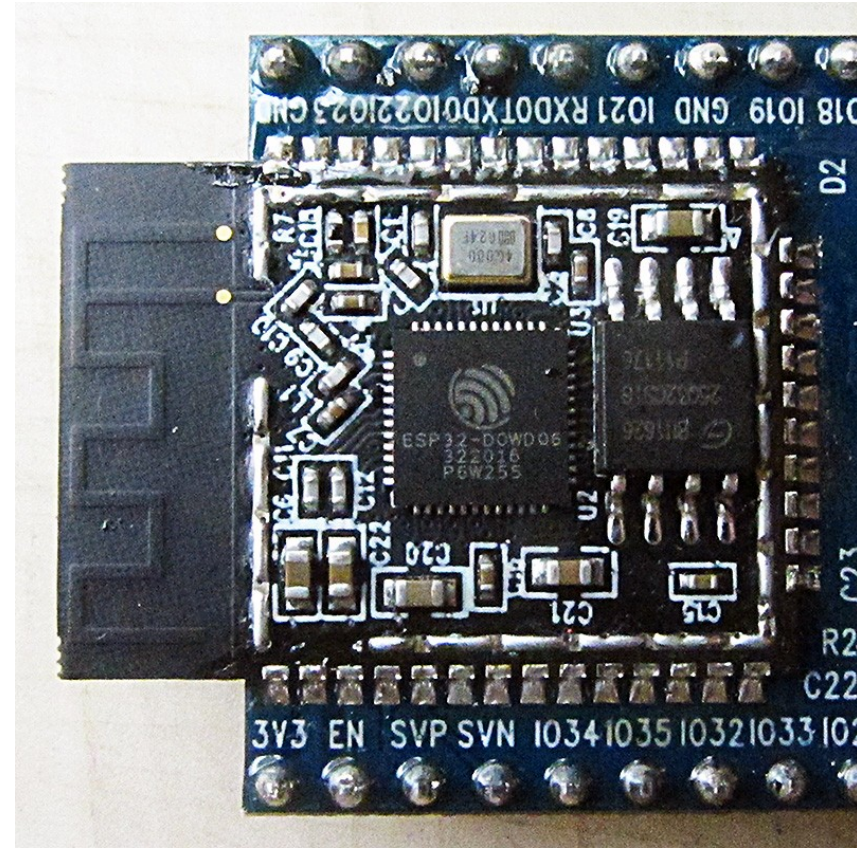
Odroid Go

- Mobile Gaming Console
- Fairly Cheap (~40\$)
- 10 Buttons, Audio, TFT Display, LiPo Battery
- 16 MB Flash, 4 MB RAM
- Uses the ESP32 as main Processor
- Can emulate GameBoy, NES, and many more...
- We don't want to emulate! We want to port!



ESP32

- Cheap (~5\$)
- WiFi, Bluetooth, Dual Xtensa LX 6 Core, 240 MHz
- Can use up to 8 MB of ext. RAM
- Can use up to 16 MB ext. Flash
- Ext. Ram uses (cached) SPI Bus
- Can easily use SD Cards
- Has an MMU



Problems?

- Should not be too hard, there are already Doom, Wolfenstein 3D, Duke Nukem and more ports for the Odroid Go. Some of them also use the SDL Library
- I don't know of any Odroid Go Game having Multiplayer over Bluetooth or Wifi
- At the moment it compiles (yeah) but it crashes on first access to filesystem (should use SD Card here...)
- Serial output is working (thanks to ESP-IDF/FreeRTOS) so debugging by printf() can start
- https://github.com/ThomasChr/doom_odroidgo

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- DOOM Shareware

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 - FOR A PARTICULAR PURPOSE. You are welcome to change and distribute
 - copies under certain conditions. See the source for more information.
- =====

- I_Init: Setting up machine state.

- SDL_SetHint

- SDL_Init

- SDL_GetPrefPath

- Guru Meditation Error: Core 0 panic'ed (LoadProhibited). Exception was unhandled.

- Core 0 register dump:

- PC : 0x40086e91 PS : 0x00060730 A0 : 0x800e83e9 A1 : 0x3ffdca50

- A2 : 0x00000000 A3 : 0xffffffff A4 : 0x000000ff A5 : 0x0000ff00

- A6 : 0x00ff0000 A7 : 0xff000000 A8 : 0x00000000 A9 : 0x3ffdca40

- A10 : 0x0000000a A11 : 0x3ffae948 A12 : 0x3ffb51e0 A13 : 0x00000000

- A14 : 0x3ffae948 A15 : 0x3ffdca10 SAR : 0x00000004 EXCCAUSE: 0x0000001c

- EXCVADDR: 0x00000000 LBEG : 0x40086e91 LEND : 0x40086ea1 LCOUNT : 0xffffffff

-

- ELF file SHA256: 69162eb917bacc28aef9e73791baf54131bd8e94f6a2768ac020b29046d74f27

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- Backtrace: 0x40086e8e:0x3ffdca50 0x400e83e6:0x3ffdca60 0x400fb120:0x3ffdcad0 0x400da10d:0x3ffdcdb0 0x400d7908:0x3ffdcdb40 0x400d55a2:0x3ffdcdd0 0x4008ade9:0x3ffdcdd9

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- Rebooting...

Questions?

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