Porting DOOM

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

DOOM

- 1993, those where 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 it's 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
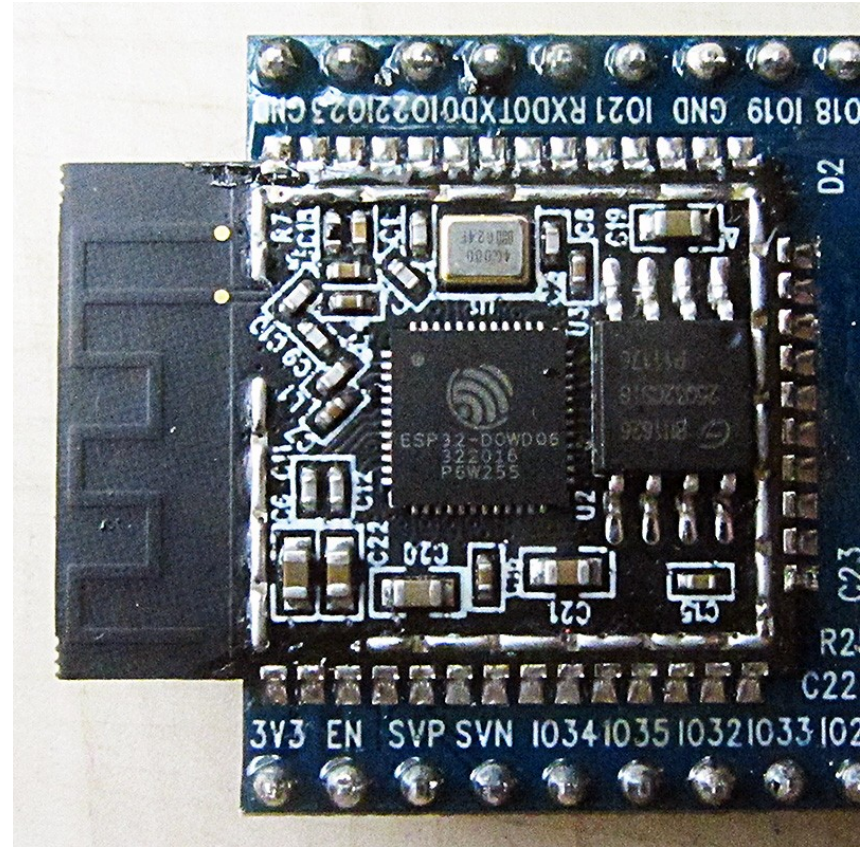
Problems?

- 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

```
=================================================================
•                    DOOM Shareware
•=================================================================
• Chocolate Doom Odroid Go is free software, covered by the GNU General Public
• License.  There is NO warranty; not even for MERCHANTABILITY or FITNESS
• 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     : 0xfffffffc  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
•
•Backtrace: 0x40086e8e:0x3ffdca50 0x400e83e6:0x3ffdca60 0x400fb120:0x3ffdcad0 0x400da10d:0x3ffdcb00 0x400d7908:0x3ffdcb40
 0x400d55a2:0x3ffdcd70 0x4008ade9:0x3ffdcd90
•
•Rebooting...
```

Questions?

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