FAT stores bytes in little endian. Eg 0002 means 0x0200

BootSector

```
0000000: eb58 906d 6b64 6f73 6673 0000 0201 0200  .X.mkdosfs......
//jmpBoot OEMName BytsPerSec SecPerClus RsvdSecCnt
0000010: 0200 00e8 03f8 0000 2000 4000 0000 0000  ........ .@.....
//NumFATs RootEntCnt TotSec16 Media FATSz16 SecPerTrk NumHeads HiddSec
0000020: 0000 0000 0800 0000 0000 0000 0200 0000  ................
//TotSec32 FATSz32 ExtFlags FSVer RootClus
0000030: 0100 0100 0000 0000 0000 0000 0000 0000  ................
//FSInfo BkBootSec Reserved
0000040: 0000 2983 37d7 024e 4f20 4e41 4d45 2020  ..).7..NO NAME
// DrvNum Reserved1 BootSig VolID VolLab
0000050: 2020 4641 5433 3220 2020 0e1f be77 7cac    FAT32   ...w|.
//VolLab  FilSysType
0000060: 22c0 740b 56b4 0ebb 0700 cd10 5eeb f032  ".t.V.......^..2
0000070: e4cd 16cd 19eb fe54 6869 7320 6973 206e  .......This is n
….
```

```
#first FAT offset = RsvdSecCnt * BytsPerSec
#Bytes per FAT = Fat32Sz * BytsPerSec
#Data offset = (RsvdSecCnt + NumFATs * FAT32Sz) * BytsPerSec
#Root Directory offset = Data offset + (RootClus – 2) * BytsPerSec
#Cluster n offset = Data offset + (n – 2) * BytsPerSec
```

FAT

green and blue one are Fat[0] and Fat[1], so ignore them
red one is means the end of root directory
purple one means a file continues on to cluster 4
yellow one means ends in this cluster.

```
0000400: f8ff ff0f ffff ff0f f8ff ff0f 0400 0000  ................
0000410: ffff ff0f 0000 0000 0000 0000 0000 0000  ................
```

#FAT length = (BytsPerSec * (TotSec32+TotSec16) - DataOffset) / BytsPerSec / SecPerClus

#EOF detection : value>=0x0FFFFFF8

DirEntry (Short file name)

eg. a file called A.TXT

```
0002400: 4120 2020 2020 2020 5458 5420 0064 1d50  A       TXT .d.P
//FileName Extension Attr NTRes CrtTimeTenth CrtTime
0002410: 6f43 6f43 0000 1d50 6f43 0300 3600 0000  oCoC...PoC..6...
//CrtDate LstAccDate FstClusHI WrtTime WrtDate FstClusLO FileSize

#Entry .(0x2E) And ..(0x2E2E): first two entry in a subdirectory
#After deletion: FileName[0] = 0xE5
#Directory: Attr & 0x10 = 0x10, FileSize = 0
#Normal File: Attr & 0x10 = 0
#FstClus = (((uint32_t) le16toh(FstClusHI) ) << 16 + (uint32_t) le16toh( FstClusLO) ) & 0x00FFFFFF
#For empty files: FstClusHI, FstClusLO and FileSize are all 0
```

DirEntry (Long file name)

Eg. a directory called folder

```
0000000: 4120 2020 2020 2020 5458 5420 0064 d96b  A       TXT .d.k
0000010: 6f43 6f43 0000 d96b 6f43 0300 de02 0000  oCoC...koC......
//Here goes the folder entries:
0000020: 4166 006f 006c 0064 0065 000f 00b1 7200  Af.o.l.d.e....r.
0000030: 0000 ffff ffff ffff ffff 0000 ffff ffff  ................
//Status Unicode attr Rsvd Checksum FirstCluster
//Here goes the corresponding 8.3 entries
0000040: 464f 4c44 4552 2020 2020 2010 0064 998a  FOLDER     ..d..
0000050: 7043 7043 0000 998a 7043 0500 0000 0000  pCpC....pC......
```

```
#Status: 01: first LFN, 02: second LFN, ... last LFN: 40 + 0N
#Deleted: status=0xe5
#attr: always 0F
#FirstCluster: always 0
```