宏:

```
#define BY2PG 4096 // bytes to a page
#define NBLOCK 1024 // The number of blocks in the disk.
#define BY2BLK BY2PG

// include/drivers/dev_disk.h
#define DEV_CONS_ADDRESS 0x10000000
#define DEV_CONS_LENGTH 0x00000020
#define DEV_CONS_PUTGETCHAR 0x0000
#define DEV_CONS_HALT 0x0010

// include/drivers/dev_cons.h
#define DEV_DISK_ADDRESS 0x13000000
#define DEV_DISK_OFFSET 0x0000
#define DEV_DISK_OFFSET_HIGH32 0x0008
#define DEV_DISK_ID 0x0010
#define DEV_DISK_START_OPERATION 0x0020
#define DEV_DISK_STATUS 0x0030
#define DEV_DISK_BUFFER 0x4000
#define DEV_DISK_BUFFER_LEN 0x200
/*  Operations:  */
#define DEV_DISK_OPERATION_READ 0
#define DEV_DISK_OPERATION_WRITE 1


//
#define PTE_DIRTY 0x0002 // file system block cache is dirty
/* IDE disk number to look on for our file system */
#define DISKNO 1
#define BY2SECT 512         /* Bytes per disk sector */
#define SECT2BLK (BY2BLK / BY2SECT) /* sectors to a block */

/* Disk block n, when in memory, is mapped into the file system
 * server's address space at DISKMAP+(n*BY2BLK). */
#define DISKMAP 0x10000000

/* Maximum disk size we can handle (1GB) */
#define DISKMAX 0x40000000

struct Block {
    uint8_t data[BY2BLK];
    uint32_t type;
} disk[NBLOCK];

struct Super {
    uint32_t s_magic;   // Magic number: FS_MAGIC
    uint32_t s_nblocks; // Total number of blocks on disk
    struct File s_root; // Root directory node
};

struct File {
```

```
    char f_name[MAXNAMELEN]; // filename
    uint32_t f_size;     // file size in bytes
    uint32_t f_type;     // file type
    uint32_t f_direct[NDIRECT];
    uint32_t f_indirect;

    struct File *f_dir; // the pointer to the dir where this file is in, valid
only in memory.
    char f_pad[BY2FILE - MAXNAMELEN - (3 + NDIRECT) * 4 - sizeof(void *)];
} __attribute__((aligned(4), packed));


uint32_t nbitblock; // the number of bitmap blocks.
uint32_t nextbno;   // next availiable block.

struct Super super; // super block.

// Block block.type:
enum {
    BLOCK_FREE = 0,
    BLOCK_BOOT = 1,
    BLOCK_BMAP = 2,
    BLOCK_SUPER = 3,
    BLOCK_DATA = 4,
    BLOCK_FILE = 5,
    BLOCK_INDEX = 6,
};
```