These are some "maps" for the second extended file system which were compiled by Scott D. Heavner (**sdh@po.cwru.edu**). Sorry there is no real descriptions for anything, but read the docs/man pages that came with e2fsprogs and the "Introduction to the Minix Fs" included in the lde distribution and you should get a pretty good idea of what is going on. You don't need to know everything to hack a FS, but it helps. These tables just make it easier to figure out what you are actually editing. Please direct any comments or corrections back to the author. You are free to distribute this document to anyone in any medium as long as this notice remains intact.

BLOCK 0: UNUSED

This block is reserved for OS boot code.

BLOCK 1: SUPERBLOCK

From <linux/ext2_fs.h>

```
/*
 * Structure of the super block
 */
struct ext2_super_block {
        unsigned long  s_inodes_count;  /* Inodes count */
        unsigned long  s_blocks_count;  /* Blocks count */
        unsigned long  s_r_blocks_count;/* Reserved blocks count */
        unsigned long  s_free_blocks_count;/* Free blocks count */
        unsigned long  s_free_inodes_count;/* Free inodes count */
        unsigned long  s_first_data_block;/* First Data Block */
        unsigned long  s_log_block_size;/* Block size */
        long           s_log_frag_size; /* Fragment size */
        unsigned long  s_blocks_per_group;/* # Blocks per group */
        unsigned long  s_frags_per_group;/* # Fragments per group */
        unsigned long  s_inodes_per_group;/* # Inodes per group */
        unsigned long  s_mtime;         /* Mount time */
        unsigned long  s_wtime;         /* Write time */
        unsigned short s_mnt_count;     /* Mount count */
        short          s_max_mnt_count; /* Maximal mount count */
        unsigned short s_magic;         /* Magic signature */
        unsigned short s_state;         /* File system state */
        unsigned short s_errors;        /* Behaviour when detecting errors */
        unsigned short s_pad;
        unsigned long  s_lastcheck;     /* time of last check */
        unsigned long  s_checkinterval; /* max. time between checks */
        unsigned long  s_reserved[238]; /* Padding to the end of the block */
};
```

Ext2 Super Block Entry																
	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0x00	Inodes count				Blocks count				Reserved blocks count				Free blocks count			
0x10	Free inodes count				First data block				Log block size				Log fragment size			
0x20	Blocks per group				Fragments per group				Inodes per group				Mount time			
0x30	Write time				Mount count		Max mount count		Magic signature		File system state		Error behaviour		Padding	
0x40	Time of last check				Max time between checks				Padding to end of block							

BLOCK:2

From <linux/ext2_fs.h>

```
struct ext2_group_desc
{
        unsigned long  bg_block_bitmap;         /* Blocks bitmap block */
        unsigned long  bg_inode_bitmap;         /* Inodes bitmap block */
        unsigned long  bg_inode_table;          /* Inodes table block */
        unsigned short bg_free_blocks_count;    /* Free blocks count */
        unsigned short bg_free_inodes_count;    /* Free inodes count */
        unsigned short bg_used_dirs_count;      /* Directories count */
        unsigned short bg_pad;
        unsigned long  bg_reserved[3];
};
```

Ext2 Group Descriptor Entry

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0x00	Blocks bitmap block				Inode bitmap block				Inodes table block				Free blocks count		Free inodes count	
0x10	Directories count		Padding		Reserved				Reserved							

INODES

From <linux/ext2_fs.h>

```
/*
 * Structure of an inode on the disk
 */
struct ext2_inode {
        unsigned short i_mode;          /* File mode */
        unsigned short i_uid;           /* Owner Uid */
        unsigned long  i_size;          /* Size in bytes */
        unsigned long  i_atime;         /* Access time */
        unsigned long  i_ctime;         /* Creation time */
        unsigned long  i_mtime;         /* Modification time */
        unsigned long  i_dtime;         /* Deletion Time */
        unsigned short i_gid;           /* Group Id */
        unsigned short i_links_count;   /* Links count */
        unsigned long  i_blocks;        /* Blocks count */
        unsigned long  i_flags;         /* File flags */
        unsigned long  i_reserved1;
        unsigned long  i_block[EXT2_N_BLOCKS];/* Pointers to blocks */
        unsigned long  i_version;       /* File version (for NFS) */
        unsigned long  i_file_acl;      /* File ACL */
        unsigned long  i_dir_acl;       /* Directory ACL */
        unsigned long  i_faddr;         /* Fragment address */
        unsigned char  i_frag;          /* Fragment number */
        unsigned char  i_fsize;         /* Fragment size */
        unsigned short i_pad1;
        unsigned long  i_reserved2[2];
};
```

Ext2 Group Descriptor Entry																
	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0x00	File mode		Owner UID		Size (bytes)				Access time				Creation time			
0x10	Modification time				Deletion time				Group id		Links count		Blocks count			
0x20	File flags				Reserved				Zone #0				Zone #1			
0x30	Zone #2				Zone #3				Zone #4				Zone #5			
0x40	Zone #6				Zone #7				Zone #8				Zone #9			
0x50	Zone #10				Zone #11				Indirect Zone				Double Indirect Zone			
0x60	Triple Indirect Zone				NFS File version				File ACL				Directory ACL			
0x70	Fragment address				Fragment number	Fragment size	Padding		Reserved							

DIRECTORIES

From <linux/ext2_fs.h>

```
/*
 * Structure of a directory entry
 */
#define EXT2_NAME_LEN 255

struct ext2_dir_entry {
        unsigned long  inode;                   /* Inode number */
        unsigned short rec_len;                 /* Directory entry length */
        unsigned short name_len;                /* Name length */
        char           name[EXT2_NAME_LEN];     /* File name */
};
```

Ext2 Directory Entry																
	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0x00	Inode number				Entry length		Name length		Filename (variable len)							