CSE 461

5-3-2018

RAID 0: Striping of data.

RAID 1: Mirroring of data.

RAID 2: (7,4) parity, 7 drives with 4 data drives and 3 parity drives.

RAID 3:

RAID 5: RAID 0 with parity support, parity split across the drives.

RAID 10: RAID 5 with mirroring.

CD relies on sequential access. Each block is 2,048 bytes and 270,000 sectors.

DVD’s consist of multiples tracks on a single surface with 4,171,712 sectors and 2,048 byte blocks.

The DOS file system: The first block consists of the boot block, the next block the FAT, followed by a block for the copies of the FAT, the ROOT directory and then the remaining space for the data blocks.

Unix / Linux file system: The first block in the drive is the boot block, then the super block (contains meta data information), then the i-node blocks (stores the properties of files, and finally the storage / data blocks.

The super block contains; the file system size, volume label, size of the drive in use, read only flag, number of i-nodes, number of free i-nodes, arrary of 100 i-nodes, number of free storage blocks, arrary of 100 free storage blocks.

The i-node contains; type of file (regular, directory, link), uid (User ID), gid (Group ID), file mode (9 bits split in to groups of3 witch represent read, write and exacuate prilages for the file for the User, Group and World respectively), dates (last accessed, created, modified).

(For reference, the following would cause a major issue if ran. Use up all adviialbe i-nodes and cause a crash of the system.)

$x=1

While(true) {touch $x

$x = $x + 1}

Blocks in file; 10 to 13 blocks in a file.

If more then the indirect block number is used. The indirect block is a list of more blocks that belong to the file. If 1,024 byte blocks and 64 bit block numbers then 128 blocks numbers in indirect block (1,024 / 8).

A double indirect block is a list of blocks that each point to a single indirect block. Therefore the number of blocks that can be stored in a double in direct block is 2^14 (size of the single indirect \* the number of blocks in the double indirect block).

A triple indirect block consists of single indirect blocks which then each point to another single indirect block, 2^21 blocks total.

Therefore max file size is 10 + 128 + 2^14 + 2^21 blocks.

Directories consist of a name and an i-node.

Windows NTFS file system: File system acts as a database of files. Uses MFT (Master File Table) which consists of fixed length recoards of 1,024 bytes each. Files are stoared in recoards which contain both metadata information and actual file data. If more space is needed for a file then multiple recoards are used for a single file.