

Files



Files

```
8b 08 40 92 24 ff e7 ee b9 09  
41 c4 d7 d1 cc 02 a3 38 51 4f  
a1 45 19 d3 96 8e cf 30 e3 a5  
48 7d 36 65 bc bf a0 22 4a c1  
3a 1f d8 4d 4a 6d 36 1e 83 0f  
22 fa c3 4a 50 15 9e 03 4a 4a  
7f 03
```

A *computer file* is a block of information stored and maintained by the operating system on a computer. The file remains available for programs to use after the current program has finished (by being stored in secondary storage—the hard drive). Computer files are the modern counterpart of paper documents kept in offices and libraries.

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```

A computer file is a one-dimensional, sequence of data. All data is stored by a computer as binary bits. The smallest manageable unit of data is generally the 8-bit byte, so files and other basic structures of data are build from integral numbers of bytes.

(Boolean data—representable by just one-bit—is out of luck; it is not an important enough case to justify the extra overhead.)

Text Files

Text files are a special case of (binary) files. A character encoding is used to interpret the bytes of the file as characters of natural language text. Since these files are meant to be read by people, they have lines. For historical reason character encodings have assigned non-characters to bytes. In the past, certain bytes/characters were meant to control transmission or display, but except for the line terminator these byte patterns are obsolete or a nuisance, so it is best to avoid them.

```
A B C D E nl F G nl
```

File System

OS maintains a (hierarchically) organized collection of files. Unix influence: tree-oriented, directory are files, etc.

`/root/directory/subdirectory/file`



File System

