Systemy operacyjne

The notes were prepared on the basis of Marc Rochkind's book "Advanced UNIX Programming (2nd edition)". May contain copied content of this book or its loose interpretation.

Introduction

Kinds of UNIX files:

- Regular files
- Directories
- Symbolic links
- Special files
- Named pipes (FIFOs)
- Sockets

REGULAR FILES
Contains bytes of data organized into a linear array and are stored on disk. Reads/writes start at byte location specified by the file offset which can be any value (even beyond the end of the file).
It is impossible to insert/delete bytes into/from middle of a file. Two or more process can read and write at the same time but the result is unpredictable. To maintain order there are file-locking facilities and semaphores. Files don't have names but i-numbers. This is an index into an array of i-nodes, kept at the front of each region of disk that contains a UNIX file system. I-node include following information:

- type of file,
- owner user and group ID,
- permissions,
- size in bytes,
- time of last access, last modification and last status change,
- pointer to file content.

DIRECTORIES AND SYMBOLIC LINKS
Directories allow refer to file by name so almost always is are used to access to files. Each directory consists table with name and i-number. This pair is called a link. When the UNIX kernel is told to access a file by name, it automatically looks in a directory to find the i-number. Kernel keeps track of the i-number of current directory for each process (it's called relative path). An absolute path begins with a '/'.

It is possible that two or more links are refer to the same i-number (It means that file may have more than one name).