APPLIED SCIENCES FACULTY

APPS@UCU

Linux course

Linux File systems

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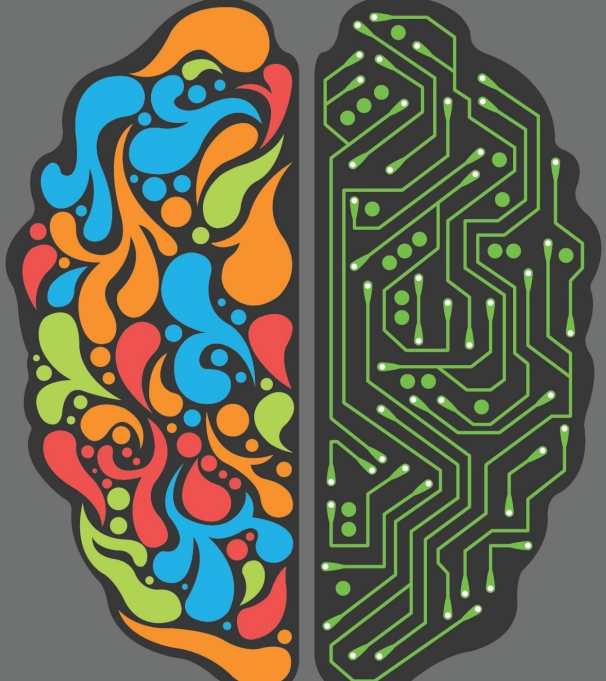
Contents

Intro

- This is not an overview of some hardware memory staff
- Neither a pesentation with deep File systems implementation details
- More about that you should learn at the Operating systems course
- This is just an overview of file systems that system administraitors use in their everyday life
- If you think that you are not a system administrator - think one more time, because you administrate your own system every day

Memory

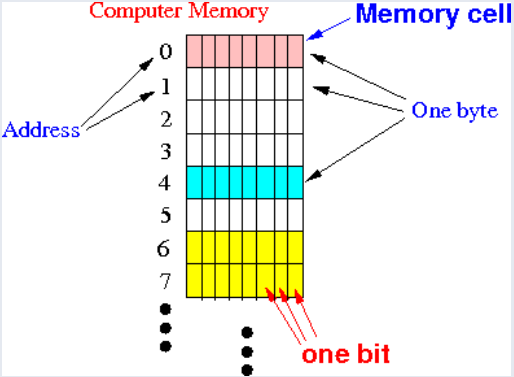


Drives

- All data stored on some physical devices
- It has different storage approaches on each device (HDD, SSD, CD, DVD, Flash, RAM, DDR memory modules)
- But now we are going to overview the memory from user point of view
- How to manage files and file systems, how to chose the most suitable

Memory storage

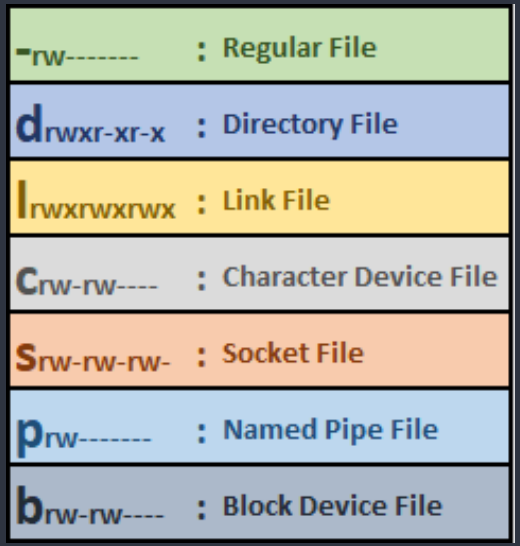
- Memory as abstraction looks like an array, where bites are stored one by one in a row
- File system - a method of data structure that the operating system uses to control how data is stored and retrieved
- A file is an ordered collection of data blocks
- In Linux system, everything is a file and if it is not a file, it is a process
- So File systems are very important for this OS




Everything is a file

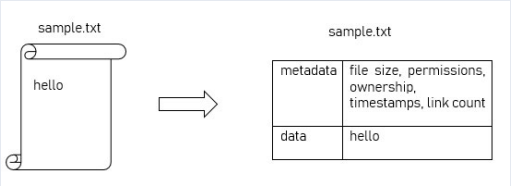
File types

- There are a lot of file types, but the most important for us are:
- Regular Files - some files with data stored inside
- Directories - files, that allowed to group other files and keep tree filesystem structure
- Character files - for simulating character devices as terminals, keyboard, network etc
- Block files - for modelling block devices as disks, flash drives
- Links - entry points to other files
- There are pipes , sockets



File metadata

- File also save a metadata about itself, as:
- Protection, password
- Creator, owner
- Flags (r w x)
- Size
- Creation time, last update time (timestamp)




Kunden-Rechnungen
A – G
+
Gutschrift-rechnung
2015
Kunden-Rechnungen
H – QU
2015
Kunden-Rechnungen
R – Z
2015
Lieferanten-Rechnungen
A – L
2015
Lieferanten-Rechnungen
M – Qu
2015

Fyle systems types overview

- There are several file systems types. Just for your information. the most important will be in orange colour
- Disk file systems for simple disks, a.e. FAT16/32, NTFS, ext2-4, brtfs etc
- Flash file systems - consider speciality of flesh memory devices
- Database file systems - another concept for file management
- Transactional file systems
- Network file systems - acts as a client for a remote file access protocol, providing access to files on a server, a.e. FTP
- Shared disk file systems - a number of machines (usually servers) all have access to the same external disk subsystem
- Flat file systems - no subdirectories, directory entries for all files are stored in a single directory

Linux Filesystems Hierarchy (LFS)

- This topic worth a separate lecture, but lets make it short
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Sources

Sources

- UCU Linux Club
- File systems Wiki
- Linux file systems