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Department: Information Technology

PROJECT NEME:

**Unix SVR4 (OpenSolaris and illumos
distributions) File Management.**

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Outline

- Introduction.
- Some definitions :
 - UNIX SVR4.
 - Open Solaris.
 - illumos.
- File management in OpenSolaris. ■
- the mechanism of File management in OpenSolaris.
- File systems in OpenSolaris.

Introduction

What is file management?

The file management is : a method in the operating system use to control how to store, retrieve, organize and manage the files in the operating system, and facilitate find and use data contained in those files. File management used a data storage device such as hard disk, Without the file management, the information in the hard disk will be like a one piece of data that can not be separated from each other and know where each part starts and ends and what is the next part of it. If we use the file system, we can separate between the parts of information and give each part a name, Thus it will facilitate the separation of files.



UNIX SVR4 : is one of versions produced by AT&T company in cooperation with sun microsystems company, this version depend on UNIX version 7.

Open Solaris : is an open source project created by Sun Microsystems to build a community of developers for the Solaris operating system technology, this project directed for developers, system administrators and users who want to develop and improve operating systems.

illumos is : a collection of software that forms the core of an Operating System. It includes the kernel, device drivers, core system libraries, and utilities, It is derived from Open Solaris, which in turn is derived from the UNIX SVR4.

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File management in Open Solaris

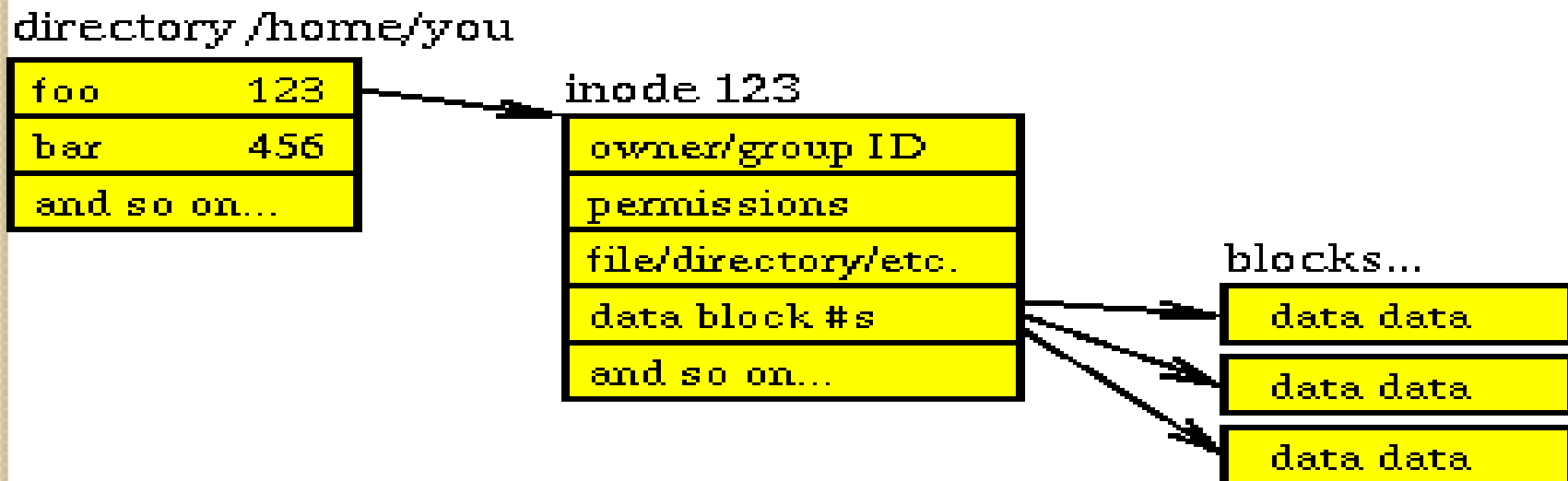
There are three main types of files:

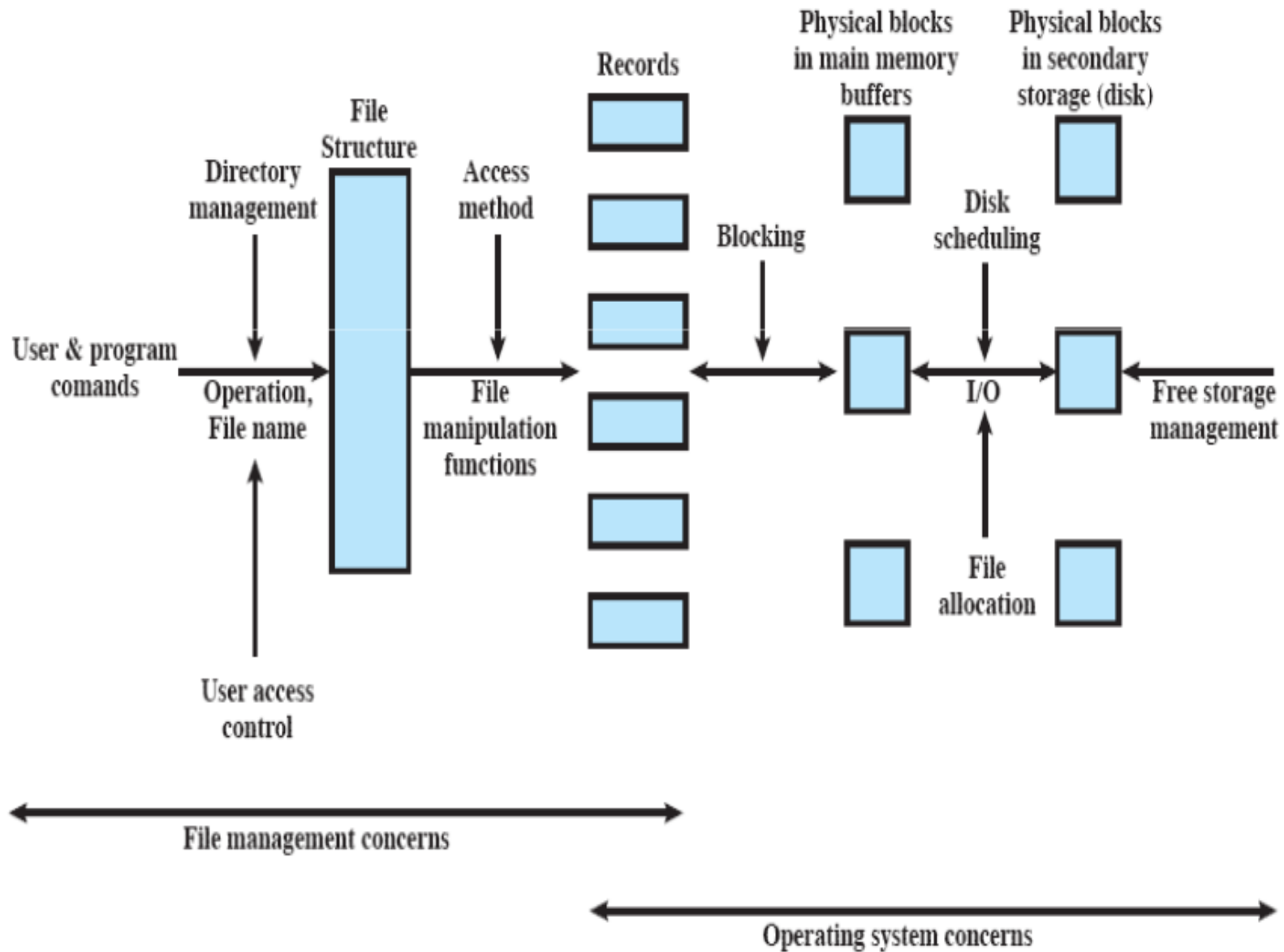
- ❶ Normal Files: an normal file actually holds the user's data or a set of program instructions.
- ❷ Directories: directories store the users files in a "folder" type of structure.
- ❸ Special Files: Special files control access to certain types of hardware such as CD-ROM

Each file system consists of a structure for storing and managing data.

And the file system has three main functions :

- save or know the names of the directories and files.
- know the physical location of the file on the hard drive.
- determine the free and used space of the total hard drive space.






the mechanism of File management in Open Solaris

As we know file management is part of the operating system which enables us to save and organize files in the device.

but how is it done?

The data in the files is saved as parts inside the disc each part or partition has a system file table, The function of this table is referencing to information and how to access them on disk, here the operating system uses what is known as the “inodes”, the inodes are: the records in the disk.



Now will be specified the inode number for each file, and this number is in a table called inode table. SO the inode number in the table is record number of the file, and this record contains the information it is :

- File name.
- User owner file.
- The group to which the file belongs.
- The creation date of the file.
- Last date to read the file.
- The last date of update on the file.

iNode Table

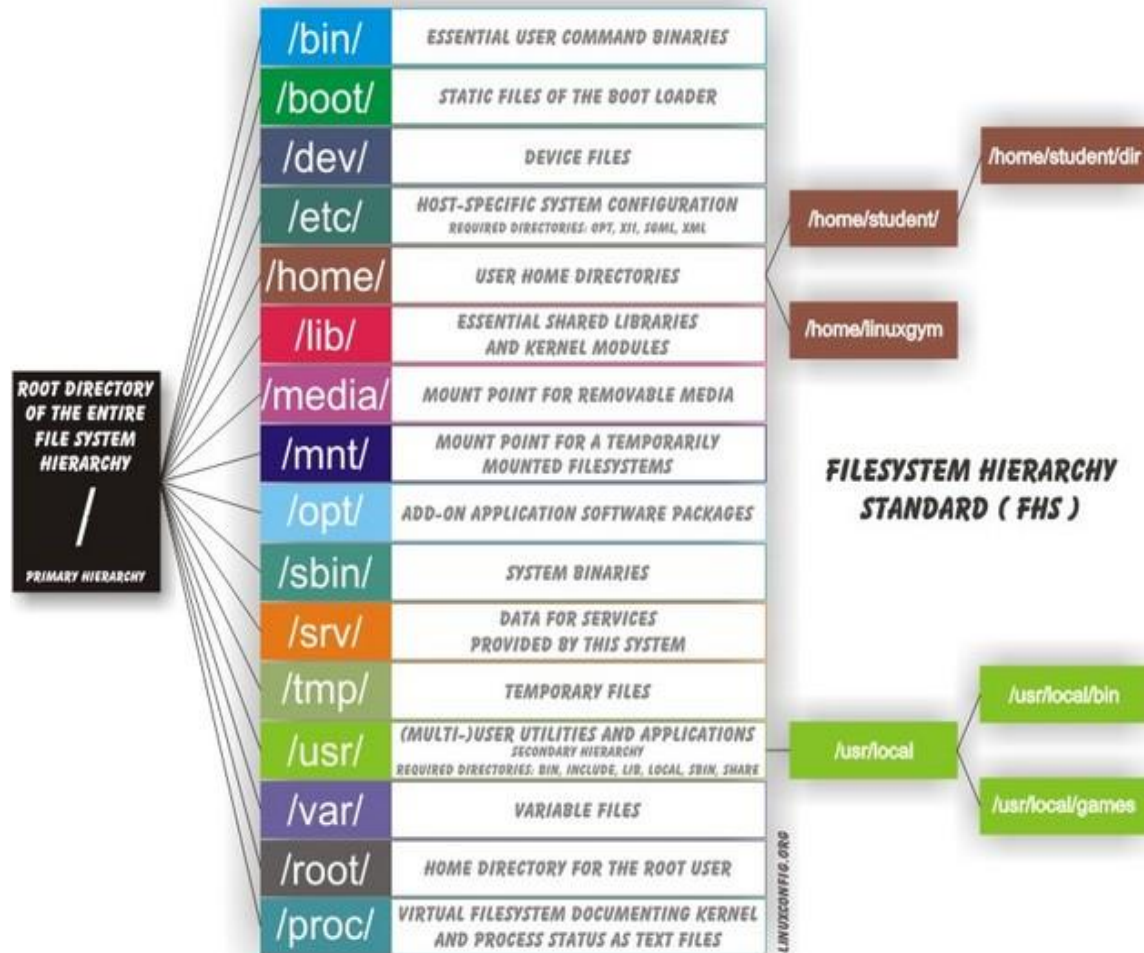
iNode	Meta data
1	file name, uid, gid, perm, date, ... etc
2	file name, uid, gid, perm, date, ... etc
3	file name, uid, gid, perm, date, ... etc
4	file name, uid, gid, perm, date, ... etc
5	file name, uid, gid, perm, date, ... etc
6	file name, uid, gid, perm, date, ... etc
...	
7	file name, uid, gid, perm, date, ... etc

File systems in OpenSolaris

In general there are many file systems used to manage files inside the operating system such as "Fat32 / Ntfs / Ext4 / Btrfs / Zfs", we will be talking about Zfs system just because it is used in Open Solaris file management.

Zfs File System is :Advanced File System designed to find a solution to many of the problems found in previous designs, this system keeps data in front of everything that can be destroyed

The Virtual Structure of the Open Solaris File System



The References

<http://illumos.org/books/dev/intro.html#what-is-illumos> •

http://www.le.ac.uk/oerresources/bdra/unix/page_34.htm •

<http://www.linuxac.org/forum/content/l-home>

<http://linux-2-day.com/2013/10/ext4-ntfs-btrfs>

Thank You!

