CSGE602055 Operating Systems
CSF2600505 Sistem Operasi
Minggu 09: File System & Persistent Storage

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http://rms46.vlsm.org/2/207.html

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Agenda

Week 09: File System & Persistent Storage

- Reference: (OSCE2e ch9/10/11) (UCB 17A/18/19) (UDA P4L2 P4L2) (OLD 07 09) (SUP WEEK09)
- File System Interface
- File Attribute
- File Operation
- Disk Stucture and Organization
- File Systen Types
- Directory
- FS Mounting vs. Volume Based System
- FS Structure and Implementation
- File Control Block
- FS In Memory Structure
- VFS
- Directory Implementation

File Systems

- File System Layers
    - Application Programs
    - Logical File Systems
    - File-Organization Module
    - Basic File Systems
    - I/O Control
    - Hardware Device
- Allocation Method
    - Contiguous
    - Linked
    - Indexed
    - Combined Scheme
- Cache
- STREAMS

Mass Storage Systems

- Mass Storage Structure
  - Solid State Disk
  - Storage Array
  - SAN
  - NAS
  - Scheduling: FCFS, SSTF, SCAN, C-SCAN, C-LOOK.
  - Disk Management
- Linux I/O Scheduling Algorithm.
  - Deadline Scheduler
  - Completely Fair Queueing (CFQ)

FUSE

- the /dev/ directory
  - /etc/fstab: configuration of filesystems
  - /etc/mtab → /proc/mounts: mounted filesystems
  - /proc/swaps: swap filesystems
  - df: checking diskspace and filesystems
  - Device Major and Minor Numbers
  - UUID - Universally Unique IDentifier (128 bits)
  - GUID - Globally Unique IDentifiers: ls -al /dev/disk/by-uuid
  - practically is NOT guaranteed unique
  - FUSE: Filesystem in Userspace

RAID

- RAID 0, 1, 5, 6, 10, 100
- Note (http://www.commodore.ca/windows/raid5/raid5.htm):
    - RAID was created to enhance data performance, reliability and availability.
    - Striping, parity checking and mirroring are three primary functions of RAID systems.
    - RAID performs its functions transparent to the operating system.
    - Systems are typically defined by ranks consisting of five disks each connected to one or two Disk Array Controllers.
    - Different RAID levels provide varying degrees of speed and data protection.
- Lab
    - Visit http://os.vlsm.org/

- This is the end of the presentation.