

CSGE602055 Operating Systems

CSF2600505 Sistem Operasi

Week 01: Review2 & Scripting

Rahmat M. Samik-Ibrahim

University of Indonesia

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

Always check for the latest revision!

REV121 27-FEB-2018

Operating Systems 2018-1 (Room 3114 Tue/Thu)

Class: A (10:00-12:00) | B (13:00-15:00) | C (16:00-18:00)

| Week | Schedule | Topic | OSC9 |
|----------|----------------------|--|----------------|
| Week 00 | 06 Feb - 12 Feb 2018 | Intro & Review1 | Ch. 1, 16 |
| Week 01 | 13 Feb - 19 Feb 2018 | Review2 & Scripting | Ch. 1, 2 |
| Week 02 | 20 Feb - 26 Feb 2018 | Protection, Security, Privacy, & C-language | Ch. 14, 15 |
| Week 03 | 27 Feb - 05 Mar 2018 | I/O, BIOS, Loader, & Systemd | Ch. 13 |
| Week 04 | 06 Mar - 12 Mar 2018 | Addressing, Shared Lib, & Pointer | Ch. 8 |
| Week 05 | 13 Mar - 19 Mar 2018 | Virtual Memory | Ch. 9 |
| Reserved | 20 Mar - 24 Mar 2018 | | |
| Mid-Term | 03 Apr 2018 | 13:00 - 15:30 (UTS) | |
| Week 06 | 05 Apr - 11 Apr 2018 | Concurrency: Processes & Threads | Ch. 3, 4 |
| Week 07 | 12 Apr - 18 Apr 2018 | Synchronization | Ch. 5, 7 |
| Week 08 | 19 Apr - 25 Apr 2018 | Scheduling | Ch. 6 |
| Week 09 | 26 Apr - 05 May 2018 | File System & Persistent Storage | Ch. 10, 11, 12 |
| Week 10 | 14 May - 19 May 2018 | I/O Programming & Network Sockets Programming | |
| Reserved | 22 May - 22 May 2018 | | |
| Final | 23 May - 26 May 2018 | (UAS) | |
| Deadline | 07 Jun 2018 16:00 | Extra assignment deadline | |

● Operating Systems Check List

- ☐ Trace this document from <http://rms46.vlsm.org/2/207.html>
- ☐ Have a decent OS Book and map it to **OSC9**.
- ☐ Create **public** project "os181" on your github.com account.
 - ☐ Write in "README.md" file:
 - Special for Week 00: "**ZCZC Sistem Operasi 2018 Awal (1)**".
 - Add line on Week01: "**ZCZC W01 ...**".
 - On Week02: "**ZCZC W02 ...**".
 - On WeekXX: "**ZCZC WXX ...**".
- ☐ Encode your **QRC** with image size of approximately 250x250 pixels:
"**OS181 CLASS ID GITHUB-ACCOUNT SSO-ACCOUNT SIAK-Full-Name**"
Special for Week 00: Mail your **embedded** QRC to: os181@vlsm.org
with Subject: [W00] CLASS ID SIAK-NAME.
- ☐ Write your Memo (with QRC) **every week**.
- ☐ Using your **SSO** account, login to badak.cs.ui.ac.id via kawung.cs.ui.ac.id.
 - ☐ Check folder badak:///extra/Week00/
 - ☐ Week00: Copy the folder to your home directory:

```
cp -r /extra/Week00/W00-demos/ W00-demos/
```
 - ☐ For WeekXX: Copy the folder to your home directory:

```
cp -r /extra/WeekXX/WXX-demos/ WXX-demos/ (XX=01, 02,... 10).
```
- ☐ **How to improve this document?**

Agenda

- 1 Start
- 2 Agenda
- 3 Week 01
- 4 Free Software
- 5 Software Licenses
- 6 Potpourri
- 7 Scripting
- 8 Demo
- 9 Some Essential Commands
- 10 sed
- 11 awk
- 12 Regex: Regular Expressions
- 13 Week 01: Problems
- 14 Week 01: Summary
- 15 Week 01: Check List
- 16 The End

Week 01: Review2 & Scripting

- Reference: (OSC9-ch1 OSC9-ch2 Scripting demo-w01)
- <http://rms46.vlsm.org/1/70.pdf>
- Intellectual Property Right (IPR)
- Operating System Services
- User Operating System Interface
- System Calls
- Types of System Calls
- System Programs
- Operating System Design and Implementation
- Operating System Structure

Intellectual Property Right (IPR)

- Rahasia Dagang (*Trade Sceret*) — UU no. 30/2000.
- Desain Industri (*Industrial Design*) — UU no. 31/2000.
- Desain Tata Letak Sirkuit Terpadu (*Integrated Circuit Layout Design*) — UU no. 32/2000.
- Paten (*Patent*) — UU no. 14/2001.
- Hak Cipta (*Copyright*) — UU no. 19/2002.
- Konsekuensi HKI
- HKI Perangkat Lunak
- Lisensi Perangkat Lunak: GNU GPL, EULA. Public Domain, Apache, Microsoft Public License.

- Free Software Definition (FSF)

- ① The freedom to run the program as you wish, for any purpose (freedom 0).
- ① The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.
- ② The freedom to redistribute copies so you can help your neighbor (freedom 2).
- ③ The freedom to distribute copies of your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.

- Free Software vs. Open Source Software.

- Copyleft Software.

Software Licenses

- 3-clause BSD license and 2-clause BSD license (BSD-X-Clause)
- Apache License 2.0 (Apache-2.0)
- Artistic License 2.0 (ArtisticLicense2)
- Common Development and Distribution License (CDDL-1.0)
- Eclipse Public License (EPL-1.0)
- Educational Community License 2.0 (ECL2.0)
- Expat License (Expat) aka. MIT license (MIT)
- GNU Affero General Public License v3 (AGPL-3.0)
- GNU All-Permissive License (GNUAllPermissive)
- GNU General Public License (GPL)
- GNU Lesser General Public License (LGPL)
- Microsoft Public License (MS-PL)
- Mozilla Public License 2.0 (MPL-2.0)
- "Public Domain" (PublicDomain)
- X11 License (X11License)

- Mobile/Distributed/Client-Server/Peer-to-Peer Computing.
- Real-Time Computing: Hard Real-Time vs. Soft Real-Time.
- Operating System Comparison: Android, *BSD, GNU/Linux, iOS, Mac OS, Windows.
- Operating System Services: UI (GUI, CLI); Program Executing; I/O Operations; File Systems Manipulation; Communication; Error Detection; Resource Allocation; Accounting; Protection & Security.
- System Calls: Process Control; File Management; Device Management; Information Maintenance; Communications; Protection.
- Application Programming Interface (API)
- Standard C Library.
- System Programs.
- Microkernel System Structure.
- Loadable Kernel Modules.
- Virtualization and Cloud System.

- Readings (do Google!)
 - Machtelt Garrels: Bash Guide for Beginners.
 - Mendel Cooper: An in-depth exploration of the art of shell scripting — Advanced Bash-Scripting Guide.
 - Jan Goyvaerts: Regular Expressions — The Complete Tutorial.
- The ATM Way (Amati, Tiru, Modifikasi)¹.
 - Clone Demo <https://github.com/UI-FASILKOM-OS/demo.git>
 - **GSGS** — **ATM**: Google Sana, Google Sini: Amati, Tiru, Modifikasi!
 - Pilih Media: Badak, BYOD, WSL (Windows 10), CYGWIN.
 - Belajar **login** dan **logout** dengan ssh atau putty².
 - Belajar editor yang bagus punya buatan (**vi**).
- Belajar beberapa perintah **Command-Line Interface (CLI)**.
 - shell (Bash)
 - basic CLI: cat, cd, cp, ls, man, more, mv, rm, touch, wc.
 - vi, sed, awk, git.

¹Romi Satria Wahono sudah menggunakan istilah ini sejak tahun 2007 (Google).

²Sesuai dengan keyakinan dan kepercayaan masing-masing.

Login into BADAk.cs.ui.ac.id

```
demo@badak:~$
demo@badak:~$ PS1=">>>> $ "
>>>> $
>>>> $ git clone https://github.com/UI-FASILKOM-OS/demo.git demo-here
Cloning into 'demo-here'...
remote: Counting objects: 1697, done.
remote: Compressing objects: 100% (64/64), done.
remote: Total 1697 (delta 52), reused 60 (delta 24), pack-reused 1608
Receiving objects: 100% (1697/1697), 11.87 MiB | 3.76 MiB/s, done.
Resolving deltas: 100% (1001/1001), done.

>>>> $ ls -F demo-here/
demos/                demos-170828-2222.zip  demostar.tgz  README.md
demos-170827-1833.zip  demos-170905-0943.zip LICENSE       zzzThis
>>>> $ cd demo-here
>>>> $ ls -F
demos/                demos-170828-2222.zip  demostar.tgz  README.md
demos-170827-1833.zip  demos-170905-0943.zip LICENSE       zzzThis
>>>> $ cd demos/
>>>> $ ls -F
week00-introduction/ week03-boot/          week06-CnFork/      week09-File-Storage-System/
week01-scripting/    week04-pointer-io/    week07-sync-thread/ week10-video-review/
week02-c-and-security/ week05-memory/        week08-scheduling-sockets/
>>>> $ cd week01-scripting/
```

Inside the "week01-scripting" folder

```
>>>> $ pwd
/home/demo/work/demo-here/demos/week01-scripting
>>>> $ ls -al
total 60
drwxr-xr-x  2 demo demo 4096 Sep 11 15:28 .
drwxr-xr-x 13 demo demo 4096 Sep  5 09:43 ..
-rw-r--r--  1 demo demo 4817 Sep 11 15:16 a01-sort-script
-rw-r--r--  1 demo demo 2206 Sep 11 15:27 a02-some-command-lines
-rw-r--r--  1 demo demo  557 Sep  8 22:02 a03-does-it-exist
-rw-r--r--  1 demo demo  581 Sep 11 14:07 a04-finding-EXIST
-rw-r--r--  1 demo demo 1152 Sep 11 14:22 a05-append-a-file
-rw-r--r--  1 demo demo  549 Sep 11 14:25 a06-loop
-rw-r--r--  1 demo demo  745 Sep 11 14:45 a07-tester
-rw-r--r--  1 demo demo 1856 Sep 11 15:08 a08-banding
-rw-r--r--  1 demo demo 1779 Sep  8 21:57 a09-fixfs
-rw-r--r--  1 demo demo  614 Sep  8 21:58 a10-add-numbers
-rw-r--r--  1 demo demo 1068 Sep 11 15:20 a11-mysha1
-rw-r--r--  1 demo demo  367 Sep  8 21:59 .head
lrwxrwxrwx  1 demo demo   15 Sep  4 19:16 .shsh -> a01-sort-script
>>>> $
```

Demo Files(1)

- a01-sort-script: folder sorting; preparing and deleting folder ".ZTEST".
- a02-some-command-lines: demo beberapa perintah CLI.
- a03-does-it-exist
- a04-finding-EXIST
- a05-append-a-file
- a06-loop

Demo Files(2)

- a07-tester
- a08-banding
- a09-fixfs
- a10-add-numbers
- a11-mysha1

Some Essential Commands

man manual. Eg "man man"
ls list directory contents. Eg. "ls -al"
date print or set the system date and time. Eg. "date +%Y"
tee read from standard input and write to standard output and files.
 Eg. "ls -al | tee listing.txt"
diff compare files line by line. Eg. "diff file1.txt file2.txt"
wc print newline, word, and byte counts for each file.
 Eg. "wc file.txt"
sort sort lines of text files. Eg. "sort file1.txt"

- (to do)
- (see OLD 02-scripting)

- (to do)
- (see OLD 02-scripting)

Regex: Regular Expressions

- `^[^]` — matches a beginning-of-line (meaningless).
- `^[^$]` — matches a beginning-of-line + end-of-line (empty line).
- `^hello$` — matches just "hello" in a line.
- `^(From|To|CC):` — matches `^(From:` or `^(To:` or `^(CC:`.
- `[01]?[0-9]|2[0-3]` — 00-23
- `[01]?[4-9]|[012]?[0-3]` — 00-23

Week 01: Problems

- Tugas Minggu 01 (Week 01) ada dua:
 - Memo Week01: to be checked at break of the first lecture of WEEK 01.
 - Try Demo Week01 and write in "README.md" (os181), something like: "ZCZC W01 Telah mencoba demo Week01".

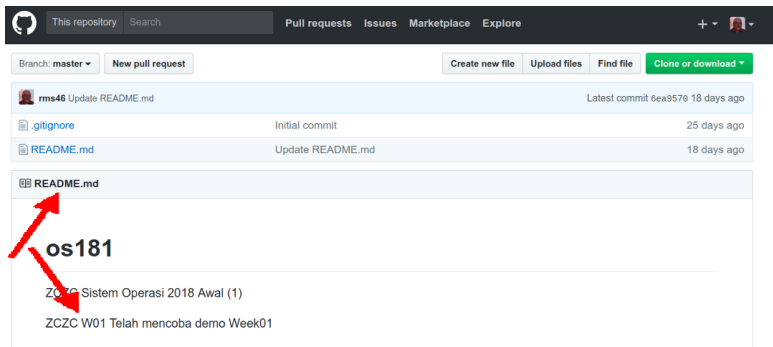


Figure: README.md: ZCZC W01 ...

Week 01: Summary

- Reference: (OSC9 chapter 1 + chapter 2)

☐ **How to improve this document?**

The End

- ☐ This is the end of the presentation.
- ☒ This is the end of the presentation.
 - This is the end of the presentation.