

CSF2600505 Sistem Operasi CSGE602055 Operating Systems Week 00: Intro & Review1

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University of Indonesia

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

Always check for the latest revision!

REV108 25-JAN-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. 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	26 Mar - 03 Apr 2018	(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	07 May - 16 May 2018	I/O Programming & Network Sockets Programming	
Reserved	17 May - 22 May 2018		
Final	23 May - 26 May 2018	(UAS)	
Deadline	07 Jun 2018 16:00	Extra assignment deadline	

Agenda

- 1 Start
- 2 Agenda
- 3 About and how to contact the Lecturer
- 4 Goal
- 5 Assessment
- 6 Schedule
- 7 Resources
- 8 Self Service
- 9 QRCode
- 10 Memo Mingguan / QRC
- 11 Bahan-bahan
- 12 Accounts
- 13 Week 00: Review1
- 14 Managers Set
- 15 Intellectual Property Right (IPR)
- 16 Week 00 Check List
- 17 The End

About and how to contact the Lecturer

- Rahmat M. Samik-Ibrahim
- Bekerja di Universitas Indonesia: sejak 1984¹.
- Pengguna GNU/Linux: sejak 1994.
- VauLSMorg (vlsm.org): sejak 1996.
- Blog: rahmatm.samik-ibrahim.vlsm.org/
 - Blog: 2016/08/panggil-saya-rahmat.html
 - Blog: 2013/10/kumpulan-hal.html
 - Blog: 2011/08/ibu-ke-pasar-membeli-ayam.html
- Facebook: facebook.com/RMS46F/
 - Page Only: No need to be "**ADDED**"
 - You can "**Like**" it, "**Follow**" it, or "**Share**" it.

Kontak/Tanya/Jawab WhatsApp Group **OS181**
(info +62-881-456-XXXX)
Email (Subject:[HELP]) os181@vlsm.org

¹MDCCXXXIV — Universitas Goettingen didirikan: 1734

TOP 10 REALITA

- 1 Nama saya **Rahmat**. Rahmat nama saya. Kalau bukan Rahmat, bukan nama saya!
- 2 Jangan datang lebih lambat dari pada Pengajar! Terdapat dua kesempatan untuk menyusul masuk kelas: T+15 menit dan setelah istirahat.
- 3 Jangan berisik/asyik sendiri dalam kelas dan jangan main "*games*" dan "*chat*" dengan "*gadget*" anda!
- 4 Jangan lupa mempersiapkan diri untuk berpartisipasi dalam kelas!
- 5 Jangan lupa membawa selembarnya (+QRC) untuk membuat memo kuliah!
- 6 Memo kuliah (+QRC) tersebut yang boleh dibawa saat UTS dan UAS.
- 7 Jangan curang!
- 8 Jangan meminjam peralatan selama kuis dan ujian!
- 9 Jangan menghubungi Pengajar untuk masalah Administratif!
- 10 Jangan menjadi "*Puss in Boot*"!

Jangan menjadi Puss In Boot



Figure: Ini Puss in Boot¹.

¹This is a fair use of a DreamWorks/Paramount Picture character.

Goal

Coverage

This is an introduction to a modern operating systems course. It will cover general overview, computer architecture review, operating system overview, IPR, software licenses, GNU/Linux CLI, versioning, scripting, C language overview, protection, security, privacy, gnupg, startup process, I/O, addressing and pointers, memory management, processes and threads, virtual memory, synchronization, mutual exclusion, deadlock, CPU scheduling algorithms, file systems, and I/O programming.

Student-Centered

This course is student-centered where responsibility is in the hands of the students. Students are expected to be prepared for the class meeting.

GNU/Linux

Students will have a thorough understanding of how GNU/Linux provides services by using a Command Line Interface.

85 - ... = A	80 - 85 = A-	75 - 80 = B+	70 - 75 = B
65 - 70 = B-	60 - 65 = C+	55 - 60 = C	50 - 55 = D or C ¹
40 - 50 = D	30 - 40 = E	20 - 30 = E	00 - 20 = E

- **4 SKS:** Alokasikan 12 jam per minggu.
- **No Lab — No Task — No Pop Quiz – No Teaching Assistant.**
- **Active Preparation / Participation / Q&A Only.**
- Partisipasi Pra-UTS: 6 set @ 3 points (=18%).
- UTS: 6 set problems @ 6 points (=36%).
- Partisipasi Pasca-UTS: 5 set @ 3 points (=15%).
- UAS: 5 set problems @ 6 points (=30%).
- Extra untuk nilai C keatas: 1 point¹.
- C-2C untuk nilai C-: upto 5 points¹.

¹Syarat dan Ketentuan Berlaku

Schedule pre MidTerm (UTS)

- Week00 – Intro & Review1 (OSC9-ch01¹ OSC9-ch16 PLB-70).
- Week01 – Review2 & Scripting (OSC9-ch02 Scripting demo-w01²).
- Week02 – Protection, Security, Privacy, & C-language (OSC9-ch14 OSC9-ch15 demo-w02).
- Week03 – I/O, BIOS, Loader, & Systemd (OSC9-ch13 demo-w03).
- Week04 – Addressing, Shared Lib, & Pointer (OSC9-ch08 demo-w04).
- Week05 – Virtual Memory (OSC9-ch09 demo-w05).
- MidTerm (UTS) Week 00 — 05.

¹OSC9: Operating Systems Concepts (9th edition).

²Demo Files.

Schedule post MidTerm (UTS)

- Week06 – Concurrency: Processes & Threads (OSC9-ch03 OSC9-ch04 demo-w06).
- Week07 – Synchronization (OSC9-ch05 OSC9-ch07 demo-w07).
- Week08 – Scheduling (OSC9-ch06 demo-w08).
- Week09 – File System & Persistent Storage (OSC9-10 OSC9-ch11-OSC9-ch12 demo-w09).
- Week10 – I/O Programming & Network Sockets Programming (demo-w10).
- Final (UAS) Week 06 — 10.

- Buku Sistem Operasi yang terbit dalam 10 tahun terakhir, umpama: (OSC9) Abraham Silberschatz, Peter B. Galvin, Greg Gagne: Operating System Concepts, 9th Edition, 2013.
- SUP — (ARSIP)(041_Suplemen) Supplement.
- ETC — (ARSIP)(075_ETC-Video) ETC
- (GITHUB) <https://github.com/UI-FASILKOM-OS/os181>
 - (DEMO) — demos/
 - (SLIDE) — pdf/ — <http://rms46.vlsm.org/2/207.html>
- (UJIAN) — <http://rms46.vlsm.org/2/195.pdf> - 205.pdf
- ARCHIVE (Arsip bahan pengajaran): <https://scele.cs.ui.ac.id/course/view.php?id=126>
 - Enrollment key: "11100001"¹.
- (BADAK) — BADAK:///extra/

¹Kunci akan berubah secara berkala.

- What is your class? A? B? C? D? E? I? M? X?
- Create project (**PUBLIC**) "os181" on your new (or existing) github.com account.
- Check your existing SSO Account (for using badak.cs.ui.ac.id).
- (Week 00) QRCode¹: "OS181
CLASS ID GITHUB-ACCOUNT SSO-ACCOUNT SIAK-Full-Name"
- (Weekly) Memo.
- Informasi Kuliah, Arsip Ujian, dan Demo
 - badak.cs.ui.ac.id/extra/
 - <https://github.com/UI-FASILKOM-OS/os181>
 - <https://rms46.vlsm.org/2/195.pdf> — [195.pdf - 205.pdf].
- BASH Account:
 - Virtual Ubuntu: badak.cs.ui.ac.id (SSO)
 - Ubuntu (BYOD)
 - WSL: Windows 10 Subsystem for Linux
 - Cygwin (Windows)

¹"QR Code" is a registered trademark and wordmark of Denso Wave Inc.

Week 00: Encoding and Decoding a QR Code

```
# OS181:          OS 2018 1st term
# CLASS:          A, B, C, D (reguler), E (Extention),
#                I (International), M (Matriculation), X (ETC).
# ID:            Student ID (NPM). Eg. "1253757175"
# GITHUB-ACCOUNT: Student's GITHUB account. Eg. "cicak.git"
# SSO-ACCOUNT:   Student's SSO account. Eg. "cicak.sso"
# SIAK-FULL-NAME: Student's SIAK name. Eg. "Cicak Bin Kadal"

$ qrencode "OS181 B 1253757175 cicak.git cicak.sso Cicak Bin Kadal" \
-s 7 -o OS181-B-1253757175.png

$ zbarimg OS181-B-1253757175.png
QR-Code:OS181 B 1253757175 cicak.git cicak.sso Cicak Bin Kadal
scanned 1 barcode symbols from 1 images in 0.11 seconds
```



Quick Response Code (QRC) Code
Check yours with a QRC reader app.

Memo Mingguan

- **WAJIB:** mempersiapkan/mempelajari bahan kuliah minggu terkait.
 - telah memahami garis besar bahan minggu terkait.
 - telah mempelajari jenis soal UTS/UAS yang pernah ditanyakan pada masa lalu.
- Telah mempersiapkan diri dengan membuat memo yang ada *QRC*.
 - Harap **TEST** apakah QRC terbaca dengan aplikasi QRC reader.
 - QRC memo akan di-*scan* di kelas pada saat istirahat kuliah pertama minggu terkait¹.
 - tujuan pembuatan memo ialah sebagai "bukti" telah belajar.
 - ISI memo tidak dinilai!
 - Memo yang baik ialah MEMO yang bermanfaat untuk pembuatnya.
- Ujian:
 - Saat UTS dipersilakan membawa hingga 6 lembar memo ber QRC.
 - Saat UAS dipersilakan membawa hingga 5 lembar memo ber QRC.
 - Memo boleh yang pernah ditulis atau boleh juga membuat memo (ber QRC) yang baru.

¹kecuali kuliah minggu 00.

Week 00 Memo Example

[OS181][WEEK: 00 01 02 03 04 05 06 07 08 09 10]
 [http://cms46.vlsu.vn/2/216.docx ===== 06FEB 13FEB 20FEB 27FEB 06MAR 13MAR 05APR 12APR 19APR 26APR 07MAY]
 [CLASS: A B C D E I M X][ID: 1253757175][Name: Cicak Bin Kadal][Rev: 05]

$$\begin{aligned} | \langle x, y \rangle | &\leq \|x\| \|y\| \\ \frac{d\vec{v}}{dt} &= \vec{a} & \frac{d\vec{x}}{dt} &= \vec{v} \\ d\vec{v} &= \vec{a} dt & \frac{d\vec{x}}{dt} &= (\vec{v}_0 + \vec{a}t) \\ \int d\vec{v} &= \int \vec{a} dt & d\vec{x} &= (\vec{v}_0 + \vec{a}t) dt \\ \vec{v} &= \vec{v}_0 + \vec{a}t & \int d\vec{x} &= \int (\vec{v}_0 + \vec{a}t) dt \\ & & \vec{x} &= \vec{x}_0 + \vec{v}_0 t + \frac{1}{2} \vec{a} t^2 \end{aligned}$$



$$\begin{aligned} \hat{H}|\psi_n(t)\rangle &= i\hbar \frac{\partial}{\partial t} |\psi_n(t)\rangle \\ \frac{1}{c^2} \frac{\partial^2 \phi_n}{\partial t^2} - \nabla^2 \phi_n + \left(\frac{mc}{\hbar}\right)^2 \phi_n &= 0 \\ \hbar \frac{\partial}{\partial t} s = s / \hbar \frac{\partial}{\partial t} s &= p_i \text{ os, } i=1, \dots, k. \\ f(Q_i) &= \sum_{d_i=1}^{\infty} \frac{(2d_i-1)!}{(d_i!)^2} Q_i^{d_i} \\ d(x, z) &\leq d(x, y) + d(y, z) \end{aligned}$$

$$\begin{aligned} \frac{d\vec{v}}{dt} &= \vec{a} & \frac{d\vec{x}}{dt} &= \vec{v} \\ d\vec{v} &= \vec{a} dt & \frac{d\vec{x}}{dt} &= (\vec{v}_0 + \vec{a}t) \\ \int d\vec{v} &= \int \vec{a} dt & d\vec{x} &= (\vec{v}_0 + \vec{a}t) dt \\ \vec{v} &= \vec{v}_0 + \vec{a}t & \int d\vec{x} &= \int (\vec{v}_0 + \vec{a}t) dt \\ & & \vec{x} &= \vec{x}_0 + \vec{v}_0 t + \frac{1}{2} \vec{a} t^2 \end{aligned}$$

Figure: Memo: OS181 B 1253757175 cicak.git cicak.sso Cicak Bin Kadal

- Week 00: Send QRC to os181@vlsm.org
 - Subject: [W00] CLASS ID SIAK-NAME
 - Example:
 - Mailto: os181@vlsm.org
 - Subject: [W00] B 125375 Cicak Bin Kadal
 - Insert your QR Code (embedded).
- Masalah Administratif
 - Harap menghubungi SEKRE (Ged. B Lt. 2) untuk segala masalah administratif, terutama absen, sakit, surat sakit, ujian susulan, dst.
 - Harap merampungkan masalah administrasi ujian susulan dalam 6 hari kerja.

Bahan Presentasi:

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

UI-FASILKOM-OS / os181

Unwatch 1 Star 0 Fork 0

Code Issues 0 Pull requests 0 Projects 0 Wiki Insights Settings

Branch: master os181 / pdf

Create new file Upload files Find file History

rms46 rmsbase pdf Latest commit 6ea3f4e 19 hours ago

..		
os00-181.pdf	rmsbase pdf	19 hours ago
os01-181.pdf	rmsbase pdf	19 hours ago
os02-181.pdf	rmsbase pdf	19 hours ago
os03-181.pdf	rmsbase pdf	19 hours ago
os04-181.pdf	rmsbase pdf	19 hours ago
os05-181.pdf	rmsbase pdf	19 hours ago
os06-181.pdf	rmsbase pdf	19 hours ago
os07-181.pdf	rmsbase pdf	19 hours ago
os08-181.pdf	rmsbase pdf	19 hours ago
os09-181.pdf	rmsbase pdf	19 hours ago
os10-181.pdf	rmsbase pdf	19 hours ago
osXX-181.pdf	rmsbase pdf	19 hours ago

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Figure: <https://github.com/UI-FASILKOM-OS/os181/tree/master/pdf>

Bahan Demo

UI-FASILKOM-OS / **os181** Unwatch 1 Star 0 Fork 0

<> Code Issues 0 Pull requests 0 Projects 0 Wiki Insights Settings

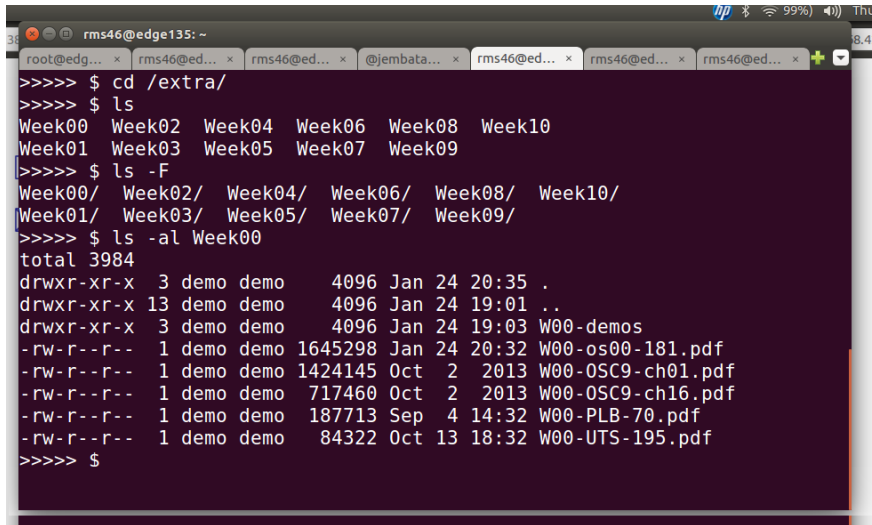
Branch: master os181 / demos / Create new file Upload files Find file History

rms46 rmsbase Week00 Latest commit 2c3ee02 14 hours ago

..		
Week00	rmsbase Week00	14 hours ago
Week01	rmsbase demos	15 hours ago
Week02	rmsbase demos	15 hours ago
Week03	rmsbase demos	15 hours ago
Week04	rmsbase demos	15 hours ago
Week05	rmsbase demos	15 hours ago
Week06	rmsbase demos	15 hours ago
Week07	rmsbase demos	15 hours ago
Week08	rmsbase demos	15 hours ago
Week09	rmsbase demos	15 hours ago
Week10	rmsbase demos	15 hours ago

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Figure: <https://github.com/UI-FASILKOM-OS/os181/tree/master/demos>



```
>>>>> $ cd /extra/
>>>>> $ ls
Week00 Week02 Week04 Week06 Week08 Week10
Week01 Week03 Week05 Week07 Week09
>>>>> $ ls -F
Week00/ Week02/ Week04/ Week06/ Week08/ Week10/
Week01/ Week03/ Week05/ Week07/ Week09/
>>>>> $ ls -al Week00
total 3984
drwxr-xr-x  3 demo demo    4096 Jan 24 20:35 .
drwxr-xr-x 13 demo demo    4096 Jan 24 19:01 ..
drwxr-xr-x  3 demo demo    4096 Jan 24 19:03 W00-demos
-rw-r--r--  1 demo demo 1645298 Jan 24 20:32 W00-os00-181.pdf
-rw-r--r--  1 demo demo 1424145 Oct  2  2013 W00-OSC9-ch01.pdf
-rw-r--r--  1 demo demo  717460 Oct  2  2013 W00-OSC9-ch16.pdf
-rw-r--r--  1 demo demo  187713 Sep  4 14:32 W00-PLB-70.pdf
-rw-r--r--  1 demo demo   84322 Oct 13 18:32 W00-UTS-195.pdf
>>>>> $
```

Figure: BADAK.cs.ui.ac.id:/extra/

SCELE

Academic Links ▾

Panduan Mahasiswa ▾

Dukungan Kuliah ▾

My courses > LAIN-LAIN > Arsip RMS > General > ARSIP

 **Clock** 

 Server: Tue 9:56:21

 **Calendar** 

August 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

EVENTS KEY

 Hide global events

 Hide course events

ARSIP




-  010_OS162
-  013_DEMOS
-  015_Video
-  017_BAHAN-AJAR-LAMA
-  030_Arsip-Ujian
-  040_EXTRA-RMS
-  041_Suplemen
-  050_OSC-Silberschatz
-  060_UJIAN-INTERNASIONAL
-  070_KULIAH-INTERNASIONAL
-  075_ETC-Video
-  080_eDOCs
-  090_KUNYUKS
-  100_Infrastruktur_IT_Modern_2012
-  110_ITIM-REF
-  120_ITIM-Video
-  200_Pemrograman_Sistem

Figure: Lihat juga BADAK.cs.ui.ac.id:/extra/

Rahmat M. Samik-Ibrahim (UI)

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Github (New) Account 1

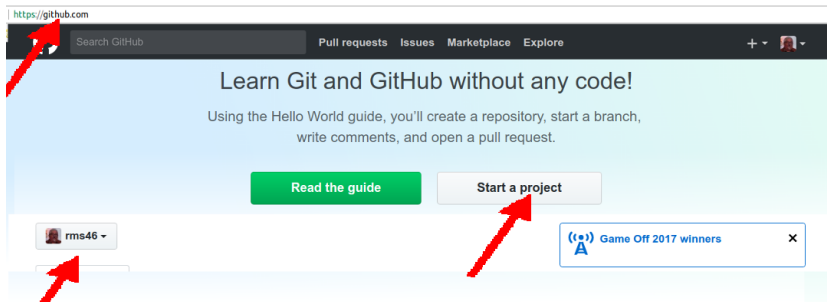


Figure: Github (New) Account 1

Github (New) Account 2

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner

Repository name

 rms46 / os181 

Great repository names are short and memorable. Need inspiration? How about **verbose-garbanzo**.

Description (optional)

ZCZC Sistem Operasi 2018 Awal (1)

☒  **Public**

Anyone can see this repository. You choose who can commit.

☐  **Private**

You choose who can see and commit to this repository.

☒ **Initialize this repository with a README**

This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: **C** Add a license: **None** 

Create repository

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Figure: Github (New) Account 2

Github (New) Account 3

The screenshot shows a new GitHub repository page for user 'rms46' named 'os181'. The repository is currently empty, with 1 commit, 1 branch, 0 releases, and 1 contributor. The main navigation bar includes links for Code, Issues (0), Pull requests (0), Projects (0), Wiki, Insights, and Settings. The repository name 'os181' is prominently displayed, followed by the description 'ZCZC Sistem Operasi 2018 Awal (1)'. Below this, there are buttons for 'Add topics', 'Edit', and a summary of repository statistics. A table lists the initial commit files: '.gitignore' and 'README.md', both committed 'just now'. At the bottom, the repository's README content is visible, showing the repository name 'os181' and its description.

rms46 / os181

Unwatch 1 Star 0 Fork 0

Code Issues 0 Pull requests 0 Projects 0 Wiki Insights Settings

ZCZC Sistem Operasi 2018 Awal (1) Edit

Add topics

1 commit 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find file Clone or download

rms46 Initial commit		Latest commit 8fa42bd just now
.gitignore	Initial commit	just now
README.md	Initial commit	just now

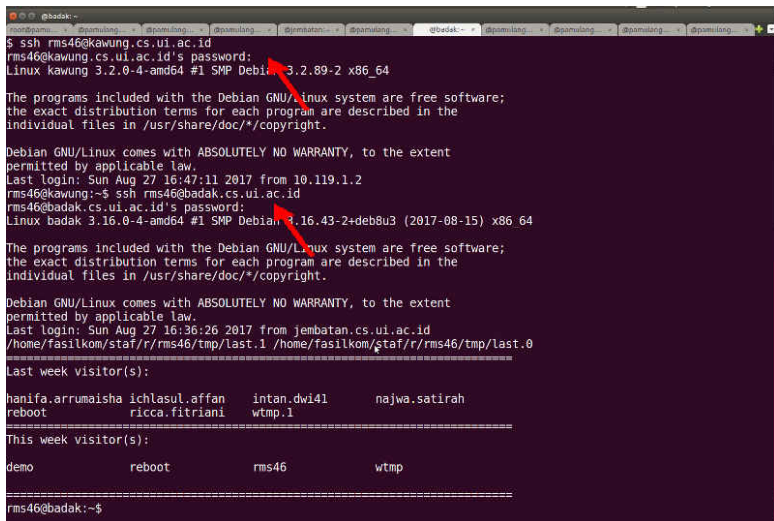
README.md

os181

ZCZC Sistem Operasi 2018 Awal (1)

Figure: Github (New) Account 3

Login: Kawung dan Badak



```
@badak:~  
$ ssh rms46@kawung.cs.ui.ac.id  
rms46@kawung.cs.ui.ac.id's password:  
Linux kawung 3.2.0-4-amd64 #1 SMP Debian 3.2.89-2 x86_64  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Sun Aug 27 16:47:11 2017 from 10.119.1.2  
rms46@kawung:~$ ssh rms46@badak.cs.ui.ac.id  
rms46@badak.cs.ui.ac.id's password:  
Linux badak 3.16.0-4-amd64 #1 SMP Debian 3.16.43-2+deb8u3 (2017-08-15) x86_64  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Sun Aug 27 16:36:26 2017 from jembatan.cs.ui.ac.id  
/home/fasilkom/staf/r/rms46/tmp/last.1 /home/fasilkom/staf/r/rms46/tmp/last.0  
=====
```

Last week visitor(s):			
hanifa.arrumaisha	ichlasul.affan	intan.dwi41	najwa.satirah
reboot	ricca.fitriani	wtmp.1	

```
=====
```

This week visitor(s):			
demo	reboot	rms46	wtmp

```
=====
```

rms46@badak:~\$

Figure: Login: Kawung dan Badak

WSL: Windows Subsystem for Linux

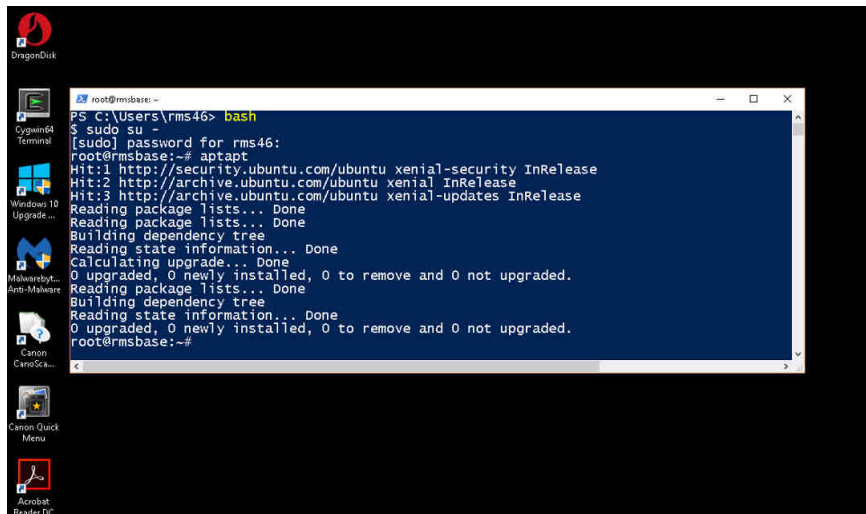
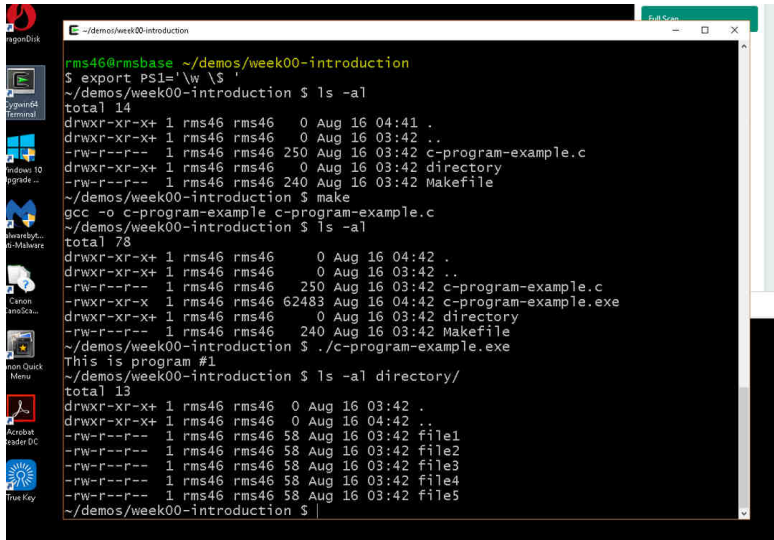


Figure: WSL: Windows Subsystem for Linux



```
~/demos/week00-introduction
rms46@rmsbase ~/demos/week00-introduction
$ export PS1='\w \$ '
~/demos/week00-introduction $ ls -al
total 14
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 04:41 .
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 03:42 ..
-rw-r--r-- 1 rms46 rms46 250 Aug 16 03:42 c-program-example.c
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 03:42 directory
-rw-r--r-- 1 rms46 rms46 240 Aug 16 03:42 Makefile
~/demos/week00-introduction $ make
gcc -o c-program-example c-program-example.c
~/demos/week00-introduction $ ls -al
total 78
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 04:42 .
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 03:42 ..
-rw-r--r-- 1 rms46 rms46 250 Aug 16 03:42 c-program-example.c
-rwxr-xr-x 1 rms46 rms46 62483 Aug 16 04:42 c-program-example.exe
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 03:42 directory
-rw-r--r-- 1 rms46 rms46 240 Aug 16 03:42 Makefile
~/demos/week00-introduction $ ./c-program-example.exe
This is program #1
~/demos/week00-introduction $ ls -al directory/
total 13
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 03:42 .
drwxr-xr-x+ 1 rms46 rms46  0 Aug 16 04:42 ..
-rw-r--r-- 1 rms46 rms46 58 Aug 16 03:42 file1
-rw-r--r-- 1 rms46 rms46 58 Aug 16 03:42 file2
-rw-r--r-- 1 rms46 rms46 58 Aug 16 03:42 file3
-rw-r--r-- 1 rms46 rms46 58 Aug 16 03:42 file4
-rw-r--r-- 1 rms46 rms46 58 Aug 16 03:42 file5
~/demos/week00-introduction $
```

Figure: Cygwin

Program Example (Week 00)

```
$ cat c-program-example.c
/* (c) 2016-2017 Rahmat M. Samik-Ibrhaim
 * REV01 Sun Aug 20 15:01:12 WIB 2017
 * START Fri Jan 01 00:00:00 WIB 2016
 * This is a free software.
 * To compile:
 * $ gcc -o c-program-example c-program-example.c
 * To execute:
 * $ ./c-program-example
 */
```

```
#include <stdio.h>
```

```
void main() {
    printf("This is program #1\n");
}
```

Makefile

```
$ cat Makefile
```

```
# (c) 2016-2017 Rahmat M. Samik-Ibrahim  
# REV01 Tue Aug 22 14:45:14 WIB 2017  
# START Fri Jan 01 00:00:00 WIB 2016  
# This is a free Makefile configuration.  
# Just run:  
# % make
```

```
ALL:  c-program-example
```

```
c-program-example: c-program-example.c  
    gcc -o c-program-example c-program-example.c
```

```
clean:  
    rm -f c-program-example
```

Week 00: Demo Directory

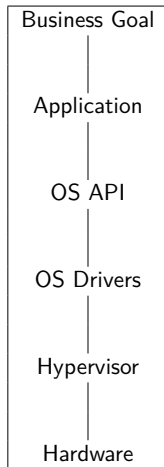
```
$ ls -al
total 44
drwxr-xr-x  3 rms46 rms46  4096 Aug 28 18:45 .
drwxr-xr-x 13 rms46 rms46  4096 Feb 28 18:50 ..
-rw-r--r--  1 rms46 rms46   334 Aug 23 20:17 c-program-example.c
-rw-r--r--  1 rms46 rms46   319 Aug 23 20:17 Makefile
-rw-r--r--  1 rms46 rms46 23606 Aug 28 18:26
                                           QuickResponseCode.docx
```

```
$ make
gcc -o c-program-example c-program-example.c
$ ./c-program-example
This is program #1
$ ls -al
total 56
.....
$ make clean
rm -f c-program-example
$
```

Week 00: Review part 1

- Reference: (OSC9 ch1/16 PLB-70)
- What is an Operating Systems?
 - Definition: Resource Allocator & Control Program.
 - Why taking an Operating Systems class?
- Computer Organization Review
- The Manager Set
 - Process Manager, Memory Manager, I/O Manager, Storage Manager.
- Protection and Security
 - A/Symateric Encryptions.
 - GNUPG.
- Virtualization
 - Hypervisor type 0, 1, 2
 - Paravirtualization, Emulators, Containers.
- Intellectual Property Rights
 - Free / Open Source Software, Propriety Software.
 - Copyright, Copyleft, Software Licenses.

The Layers



Computer Organization Review

- You should understand:
 - von Neumann Model.
 - Buses, Bridges, Transfer Rate, Clock.
 - Memory: DDR, DDR-2, ...
 - Cache, Buffer, Spool.
 - Direct Memory Access (DMA).
 - Port & Memory Mapped I/O.
 - CPU: privilege/kernel/supervisor mode and user mode.
 - Hardware Limitation.
 - Priority: Read vs Write.
 - Interrupts: Polling & Vectored.
 - Multiprocessors: Symmetric vs. Asymmetric.
 - Multicore & Multithreading.
 - Clustered Systems.
 - Numbers: base 2, base 8, base 10, base 16.
 - Base 2: 110010101010_2
 - Base 8: $01234567_8 = 000\ 001\ 010\ 011\ 100\ 101\ 110\ 111_2$
 - Base 10: $012\ 345\ 679$
 - Base 16: $9AB\ CDEF_{16} = 1001\ 1010\ 1011\ 1100\ 1101\ 1110\ 1111_2$

Block Diagram

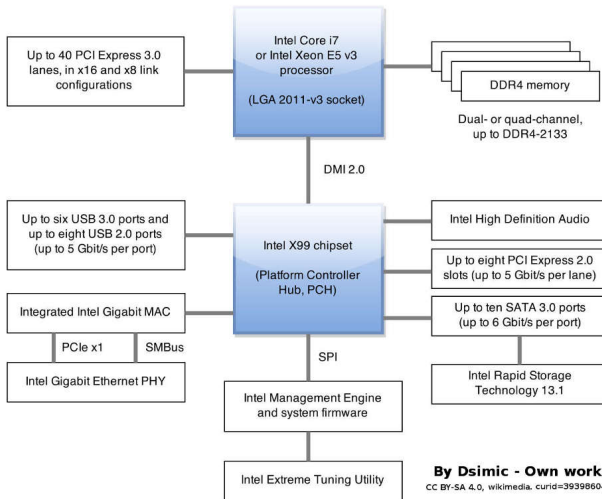


Figure: Block Diagram

APIC (Advanced Programmable Interrupt Controller)

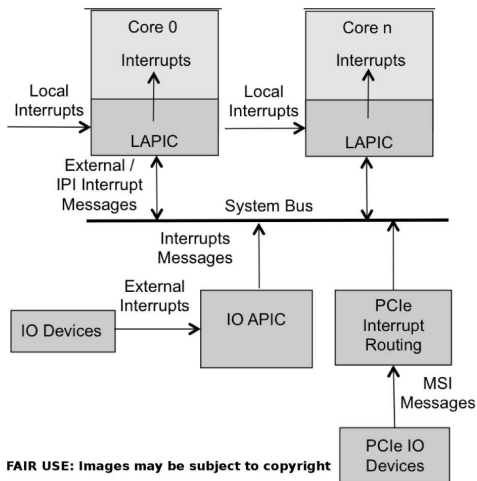
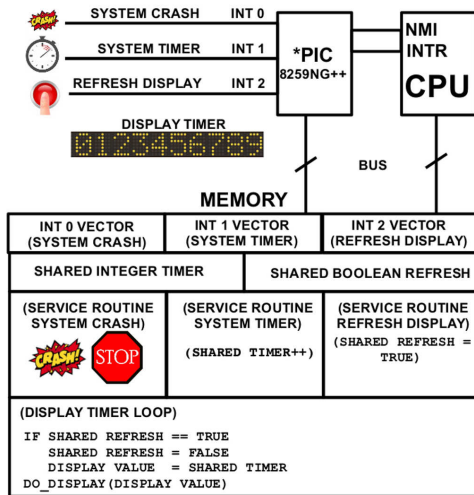


Figure: APIC (Advanced Programmable Interrupt Controller)

Interrupt Handling



(c) 2017 VauLSMorg – This is a free picture

Figure: Interrupt Handling with PIC (Programmable Interrupt Controller)

Managers Set

- Process:
 - Creating/Deleting; Suspending/Resuming; Synchronization; Communication; Scheduling
- Memory:
 - Tracking; Move In/Move Out; Allocating/Deallocating.
- Storage/File System:
 - Create/Delete; Open/Close; Read/Write.
- Mass Storage:
 - Scheduling; Allocating; Free Space.
- I/O:
 - Buffering; Caching; Spooling.
 - Interfacing (driving).
- Protecting & Security:
 - Protecting.
 - Security.

Intellectual Property Right (IPR)

- <http://rms46.vlsm.org/1/70.pdf>
- Konsep Hak Kekayaan Intelektual (HKI)
 - 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.

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- X11 License (X11License)

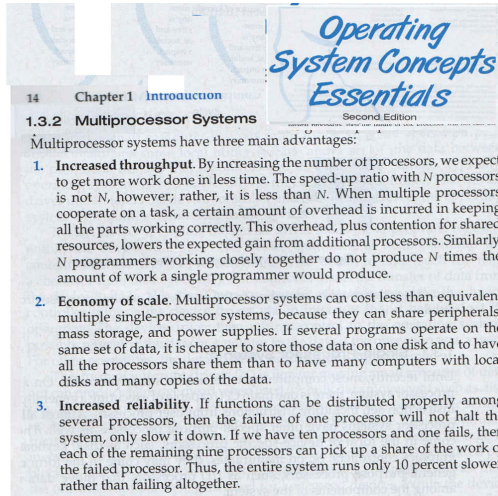


Figure: **T / F** The advantages of a multiprocessor system include: increased throughput, economy of scale, and increased reliability.

Week 00 Check List

- ☐ Try to login to badak.cs.ui.ac.id via kawung.cs.ui.ac.id with your SSO account.
- ☐ Check folder badak:///extra/Week00/
- ☐ Create project "os181" on your new (or existing) github.com account.
- ☐ Write in "README.md" file:
"ZCZC Sistem Operasi 2018 Awal (1)"
- ☐ Encode your QRC.
- ☐ Mailto: os181@vlsm.org (Subject: [W00] CLASS ID SIAK-NAME)
- ☐ Write "Memo Week00" + your QRC.

The End

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